Bureau of Ocean Energy Management | Environmental Studies Program

Quarterly Report FY 2017 Third Quarter

Latest Reports and Study Profiles Posted to the Environmental Studies Program Information System (ESPIS)

BOEM
Bureau of Ocean Energy Management

September 2017

Contents

During the third quarter of fiscal year (FY) 2017, BOEM posted new findings from 14 studies to the Environmental Studies Program Information System (ESPIS). Below are report titles, summaries of the findings, links to documents and related peer-reviewed journal articles. New study awards are listed on the next to last page. Visit ESPIS at https://marinecadastre.gov/espis/#/.

ALASKA REGION

ATLANTIC REGION

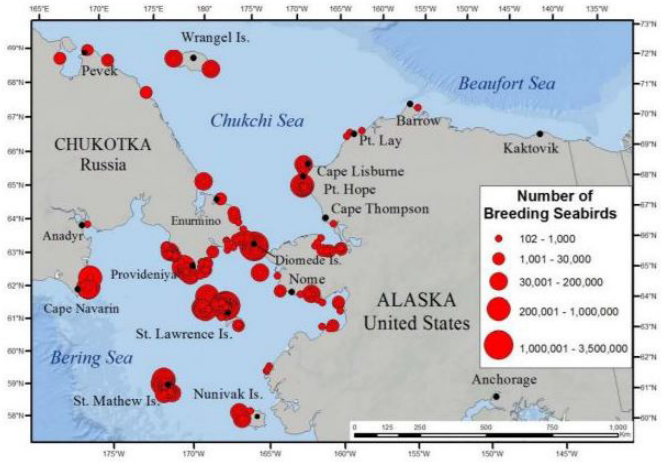
GULF OF MEXICO REGION

NATIONAL OR MULTI-REGION

Seabird Distribution and Abundance in the Chukchi and North Aleutian Basin Offshore Environment

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/26827
Conducted by: U.S. Fish and Wildlife Service, 2010–2016
National Studies List: AK-10-10

Location of seabird colonies north of 60° N latitude in the US and Russia. Red dots indicate seabird colonies.



Purpose: To obtain data on seabird distribution, species composition, and relative abundance in the Chukchi Sea and North Aleutian Basin. Placing seabird observers on research vessels is a cost-effective means to gather this data.

Findings

- Late-summer and fall movement of seabirds into the eastern Chukchi Sea, with primary hotspots of foraging activity in the Bering Strait, Hope Basin, the southern Hanna Shoal region, and areas around Barrow Canyon.
- Bird abundance in the Chukchi Sea peaked in September, with about 10 species comprising >90 % of all birds; included local breeders, birds that breed elsewhere in Alaska, and long-distance migrants.
- Observed over 100 species of seabirds and 25 marine mammal species.
- Expands the available time-series from three to four decades, updates previous information that is more than a decade old, and fills important geographic and seasonal gaps for seabirds, especially in winter and in the western part of Lower Cook Inlet.

Study Products

Kuletz KJ, Labunski EA. 2017. Seabird Distribution and Abundance in the Offshore Environment, Final Report. US Dept. of the Interior, Bureau of Ocean Energy Management, Alaska OCS Region. OCS Study BOEM 2017-004. Provided to BOEM by the U.S. Fish and Wildlife Service. 59 p, plus appendices.

To date, 17 peer-reviewed journal articles resulted from this study and are available through the ESPIS link.

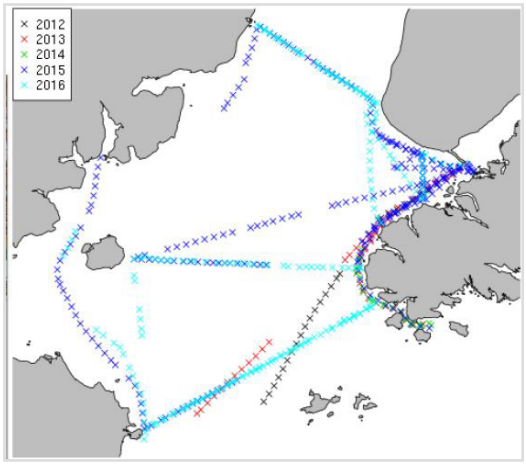
How BOEM Will Use this Information

- Related to lease sale areas and adjacent ocean planning areas
- Use in environmental impact statements and environmental assessments under the National Environmental Policy Act (NEPA), and to assure protection of marine birds under the Endangered Species Act (ESA)
- Submit the data to the North Pacific Pelagic Seabird Database (NPPSD), to BOEM's Alaska office, and affiliated ecosystem projects

Ecological Processes in Lower Cook Inlet and Kachemak Bay Alaska: Seabird Observations

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/26938
Conducted by: U.S. Fish and Wildlife Service, 2014–2017
National Studies List: AK-14-x11

Lower Cook Inlet survey effort, 2012–2016



Purpose

- To support an at-sea survey program for seabird observations in Lower Cook Inlet (LCI). This vessel-based study was in collaboration with the Exxon Valdez Oil Spill Trustee Council-Gulf Watch Alaska Program. Surveys included a minimum one observer across four seasons.
- To estimate the spatial distribution, species composition and species relative abundance for marine birds in designated and potential planning areas from previous years of observations in the Gulf Watch Alaska program.

Findings

- Data from 1434 km of at-sea transects, spread over three years and four seasons, considerably expand the available time-series from three to four decades, update previous information that is more than a decade old, and fill important geographic and seasonal gaps for seabirds, especially in winter and in the western part of Lower Cook Inlet.
- Intensive survey of Kachemak Bay expanded population trend data for marine birds, which now spans 2005–2007, 2011, and 2016. The study identified 19 species of seabirds and six species of marine mammals.
- Area is of human and commercial interest, biologically rich throughout the year, and supports several species of conservation concern (e.g., Aleutian terns, Kittlitz's murrelet, Steller's Eider).

Study Products

Renner M, Kuletz KM, Labunski E. 2017. Seasonality of Seabird Distribution in Lower Cook Inlet. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2017-004. 46 p.

How BOEM Will Use this Information

- Oil and gas development in the Cook Inlet, and decisions related to Lease Sale 244 conducted on June 21, 2017
- Process the data for entry into the North Pacific Pelagic Seabird Database for future accessibility and to facilitate management decisions for marine bird use of planning areas
- Coordinate with Ecological Processes Work group members and BOEM to discuss synthesis of bird observation data coupled with other physical and biological data

Alaska Coastal Marine Institute: Annual Report 23, Calendar Year 2016

ESPIS Link: https://www.boem.gov/ESPIS/5/5615.pdf
Conducted by: Alaska Coastal Marine Institute, 2011–2016
National Studies List: AK-13-03-01

Purpose: To compile an overview of studies completed by the Coastal Marine Institute at the University of Alaska Fairbanks in partnership with 11 other organizations and to provide an update on ongoing research.

Report Includes Findings on the Following CMI Studies

- Crude Oil Infiltration and Movement in First-year Sea Ice (ongoing)
- Development and Testing of a Low-cost Satellite-tracked Ice Drifter for Arctic Alaska (ongoing)
- Alaska Monitoring and Assessment Survey of Estuaries within the National Petroleum Reserve-Alaska (ongoing)
- Development of an Autonomous Carbon Glider to Monitor Sea-Air CO2 Fluxes in the Chukchi Sea (ongoing)
- Fate and Persistence of Oil Spill Response Chemicals in Arctic Seawater (ongoing)
- Migration Trends for King and Common Eiders and Yellow-billed Loons past Point Barrow in a Rapidly Changing Environment (ongoing)
- Identifying Sources of Organic Matter to Benthic Organisms in the Beaufort and Chukchi OCS (ongoing)
- Northern Alaska Sea Ice Project Jukebox (ongoing)
- Measuring Wave Forces along Alaska's Coastal Sea Ice (ongoing)
- Addendum to Report on Sensitivity to Hydrocarbons and Baselines of Exposure in Marine Birds on the Chukchi and Beaufort Seas (completed) (see page 6 in this Quarterly Report)

Study Products

Alaska Coastal Marine Institute. 2016. Annual Report 23, Calendar Year 2016. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2017-015. 62 p.

How BOEM Will Use this Information

- Environmental reviews related to offshore oil and gas development
- Long-term monitoring

Sensitivity to Hydrocarbons and Baselines of Exposure in Marine Birds on the Chukchi and Beaufort Seas

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/26896
Conducted by: University of Alaska Fairbanks, 2013–2016
National Studies List: AK-13-03-02

Purpose

- To evaluate baselines of hydrocarbon exposure in selected avian species of subsistence importance (king eider, common eider, and greater white-fronted goose) in the Chukchi and Beaufort Seas.
- To characterize a broad suite of marine birds with species-specific liver cell lines and a suite of reference compounds, including crude oil.
- To provide guidance on further selection of suitable bio-indicator species based on their cell culture responses and sensitivity to hydrocarbon exposure.

How BOEM Will Use this Information

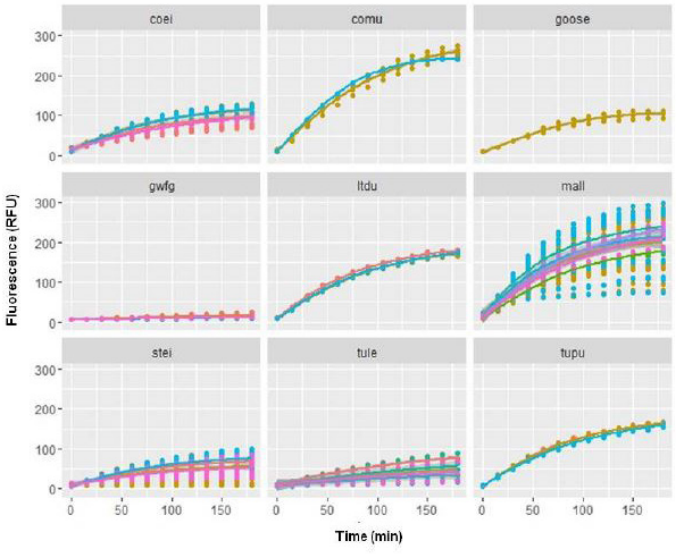
- Management and conservation of natural resources potentially impacted by development
- Inform future monitoring of avian population health
- Identify sensitive species, and plan future assessments in the event of an oil spill
- Provide a metric for evaluating the success of remediation efforts, should they occur

Findings

- Provides guidelines for collecting liver samples from hunter-killed specimens and reference data set for enzyme activity in three species of importance to subsistence.
- Observes differences in species responses to hydrocarbons in controlled laboratory dosing studies of species-specific cell lines, offering guidance to selection of candidate indicator species for monitoring exposure.

Study Products

Hollmén TE, Riddle AE. 2016. Sensitivity to Hydrocarbons and Baselines of Exposure in Marine Birds on the Chukchi and Beaufort Seas. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2016-064. 58 p.



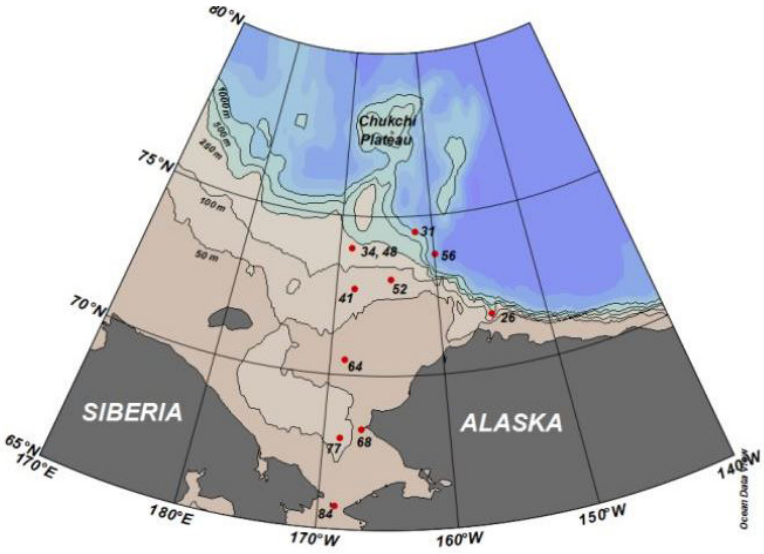
Results showing sensitivity of nine avian species to various chemicals and ompounds

Distribution and Abundance of Select Trace Metals in Chukchi and Beaufort Sea Ice

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/26902
Conducted by: University of Alaska Fairbanks, 2013–2016
National Studies List: AK-13-03-04

Purpose

- To build on previous monitoring studies of background trace metal concentrations in rivers, snow, seawater, and sediments from the Alaskan North Slope development area.
- To collect some of the first trace-metal-clean sea ice samples from seawater, snow, and sea ice in the nearshore Beaufort Sea prior to the 2015 spring thaw, specifically in the Colville River Delta after a full winter of sea ice growth.
- To gain understanding of the cycling of trace metals in Arctic environments impacted by sea ice.



Chukchi trace metals sampling stations

Findings

- Results from the Chukchi Sea show trace metal values that are oceanographically consistent with water masses originating from the Pacific Ocean through Bering Strait.
- Variability in metal concentrations from south to north reflect different currents, surface and subsurface water masses, and interactions with resuspended sediment.
- Trace metal micronutrients such as iron and zinc show decreases in surface waters in the northern Chukchi shelf when compared to the Bering Strait, suggesting that biological productivity likely plays an important role in regulating surface trace metal concentrations.

How BOEM Will Use this Information

- Data on background levels of trace metals in sea ice will be useful if a spill were to impact the sea ice cover in the Beaufort Sea shelf.
- Data could be of further use if incorporated into models.

Study Products

Rember R, Aguilar-Islas AM, Domena V. 2016. Distribution and abundance of select trace metals in Chukchi and Beaufort Sea ice. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2016-079. 47 p.

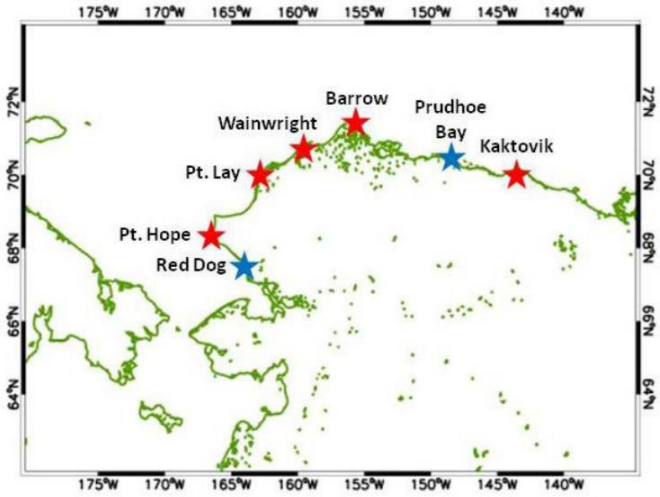
Sea Level Measurements along the Alaskan Chukchi and Beaufort Coasts

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/26914
Conducted by: University of Alaska Fairbanks, 2014–2015
National Studies List: AK-13-03-09

Purpose

- To understand the relationships among sea level, circulation, and ice movement along the Chukchi-Beaufort coast.
- To obtain year-round data by adding five new sea level recorders to the two existing gauges on the lower Chukchi and Prudhoe Bay on the Beaufort.
- At 600 miles or 1,000 kilometers apart, the two existing long-term NOAA tide gauges at Red Dog dock and Prudhoe Bay were too few and too distant to use effectively in systematically investigating relationships between local sea level and ocean processes along the entire Chukchi-Beaufort coast.

Locations of existing NOAA tide gauges (blue stars) and the communities near pressure sensor deployments (red stars)



Findings

- The presence of landfast sea ice slows both tidal and non-tidal sea level signals in Elson Lagoon.
- Remotely forced shelf waves represent a significant contribution to non-tidal sea level along the Alaskan Chukchi and Beaufort coasts.
- Non-tidal sea level variations in Elson Lagoon are best correlated with lagged, alongshore winds near Pt. Lay, Alaska.
- Eastern Elson Lagoon (Dease Inlet-Admiralty Bay) appears to serve as a temporary reservoir for the Meade River spring freshet (spring melt).

How BOEM Will Use this Information

- Verify the model's use in BOEM's Oil Spill Risk Analysis (OSRA)
- Share the information with the public to inform coastal protection and engineering design

Study Products

Okkonen SR. 2016. Sea Level Measurements along the Alaskan Chukchi and Beaufort Coasts. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2016-075. 26 p.

ESPIS also includes access to one associated data product, Elson Lagoon sea level and tidal harmonics.

Social Indicators in Coastal Alaska: Arctic Communities

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/26845
Conducted by: Stephen R. Braund & Associates, 2016–2017
National Studies List: AK-11-09

Purpose

- To survey 684 heads of households in the Arctic coastal communities of Point Hope, Point Lay, Wainwright, Utqiagvik (Barrow), Nuiqsut and Kaktovik to assess the sense of well-being of residents and effects, if any, related to oil and gas (O&G) activities.
- The consultant and a board of Inupiat community representatives selected by Taqulik Hepa, Department of Wildlife Management, North Slope Borough, developed the social indicators (SI), which were compared with survey questions administered as early as 1974. The social domains closely paralleled those identified by the Arctic Council, and covered economic well-being, health and safety, cultural continuity, local control, education, physical environment and overall well-being.

Findings

- Measures of well-being were compared by community, gender, over decades, and across regions and countries.
- North Slope residents scored high on measures of well-being when compared over time and across the Arctic—58 percent "very satisfied" with life in 2016.
- Nuiqsut, the community closest to North Slope oil and gas development, was more likely to report impact experiences during subsistence activities.
- At this time, petroleum development is not negatively affecting satisfaction with the amount of fish and game available locally, nor is it impacting satisfaction with opportunities to fish and hunt.

How BOEM Will Use this Information

Apply long-term, quantifiable data from four base surveys conducted between 1974 and 2016 to understand stability, change, resilience and vulnerability related to oil and gas activities

Scale and unit of analysis: community & household

Studied various measures of well-being in relation to gender

Four surveys over 5 decades: 1977, 1988, 2003, 2016

Cross-cultural

Study Products

Braund SR. 2017. Social Indicators in Coastal Alaska: Arctic Communities, Final Report. Prepared by Braund & Associates for the U.S. Department of the Interior, Alaska OCS Region, Anchorage, AK. Technical Report No. BOEM 2017-035. 538 p.

Community Web Access to Weather Research & Forecasting (WRF) Atmospheric Model Outputs (1979–2013) and Meteorological Station and Buoy Data (1979–2009)

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/100119
Conducted by: Seward Association for the Advancement of Marine Science, 2016–2017
National Studies List: AK-16-03

Purpose

To make selected surface fields from the Chukchi-Beaufort High-resolution Atmospheric Reanalysis (CBHAR) model output from a 31-year period (1979–2009), the associated meteorological observational data from 1979–2009, and the air quality WRF model output from 2009–2013 available for open use by scientific research communities and the general public. The information includes regional data from Alaska, Canada, Russia, and the Beaufort and Chukchi Seas. The results are derived from OCS Study BOEM 2013-0119.

Findings

- This study represents the first time the CBHAR, air quality WRF model, and observational database are publicly available in an interactive mapping platform.
- The results of this study are interactive layers that can be quickly and easily explored so users can download only what they want.
- The data is available at the Alaska Ocean Observation System data portal, http://portal.aoos.org/, and linked to previously developed visualization and analysis tools.

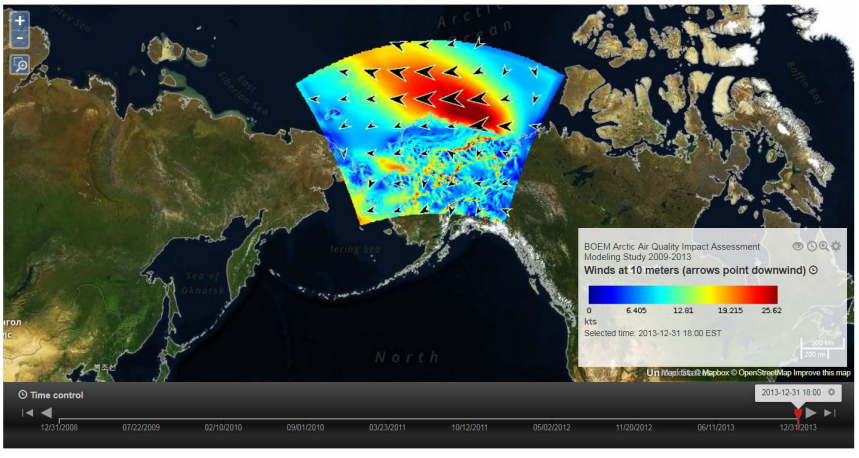
How BOEM Will Use this Information

- Run query tools on air quality and meteorological data
- Visualize and extract subsets of the model results and observational data for external use

Study Products

Seward Association for the Advancement of Marine Science. 2017. Community Web Access to Weather Research & Forecasting (WRF) Atmospheric Model Outputs (1979-2013) and Meteorological Station and Buoy Data (1979-2009).

AOOS Ocean Data Explorer catalog entry for the Chukchi Beaufort High-resolution Atmospheric Reanalysis. (link)



Produced with the query tool, this chart shows winds at 10 meters above the surface on December 31, 2013

Real-time Opportunity for Development Environmental Observations (RODEO)

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/100122
Conducted by: HDR EOC, 2016–2017
National Studies List: AT-14-01

Purpose

- To observe and record key observations, data, findings, and results from real-time visual and sediment monitoring surveys conducted during the laying of a cable from Rhode Island to Block Island in support of the Block Island Wind Farm Project.
- To record visual observations of the installation process and measure suspended sediment concentrations in the water column during the project's second construction phase.

Block Island Wind Farm, Rhode Island

Findings

The results indicated that there was no measurable sediment plume created during the laying of the cable.

How BOEM Will Use this Information

To evaluate environmental effects of future facilities and generate data to improve the accuracy of models and analysis criteria employed to establish monitoring controls and mitigations.

Study Products

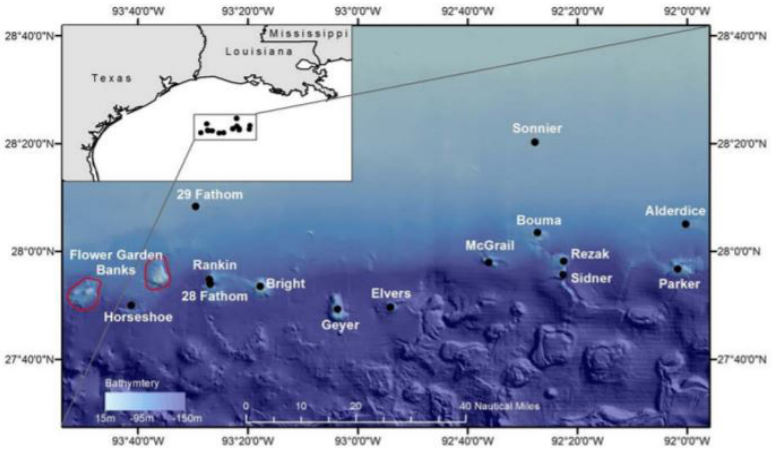
James E, Smith K, Gallien DR, Khan A. 2017. Observing Cable Laying and Particle Settlement During the Construction of the Block Island Wind Farm. Final Report to the U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs. OCS Study BOEM 2017-027. 225 p.

Deepwater Reconnaissance of Potentially Sensitive Biological Features Surrounding Shelf-edge Topographic Banks in the Northern Gulf of Mexico

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/100031
Conducted by: Louisiana Universities Marine Consortium (LUMCON), 2011–2017
National Studies List: GM-11-01b

Purpose

- To document the physical character of potentially sensitive shelf-edge features, characterize the associated sessile (non-mobile) benthic communities, and analyze the relationship between physical and biological factors on 14 topographic banks in the Northern Gulf of Mexico (GOM).
- To determine and compare the species occurrence, dominant species, abundance, percent-live cover, distribution, and diversity of sessile epibenthos within the study sites; identify any new species or extended distributions that occur for particularly rare, threatened, endangered, endemic, or protected species.



Map of the study region

Findings

- Physical: characterized three main groups of banks.
- Biological: identified four primary species groups and correlation to the banks.
- Positive correlation between species richness and bottom relief on banks in the northern GOM.

How BOEM Will Use this Information

- Apply to analyses of potential impacts from OCS oil and gas activities on potentially sensitive biological habitats and sessile (non-mobile) benthic communities
- Determine the need for protective management measures in the vicinity of this habitat

Study Products

Sammarco PW. 2016. Deepwater reconnaissance of potentially sensitive biological features surrounding shelf-edge topographic banks in the northern Gulf of Mexico. New Orleans (LA): US Dept. of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region. OCS Study BOEM 2017-024. 109 p.

ESPIS includes two peer-reviewed journal articles on this study and data files hosted by the Smithsonian National Museum of Natural History, Invertebrate Department.

Gulf SERPENT: Establishing a Deepwater Plankton Observation System Using Industrial Remote Operating Vehicles (ROVs)

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/100017
Conducted by: Louisiana State University, 2007–2012
National Studies List: GM-92-42-133

Purpose

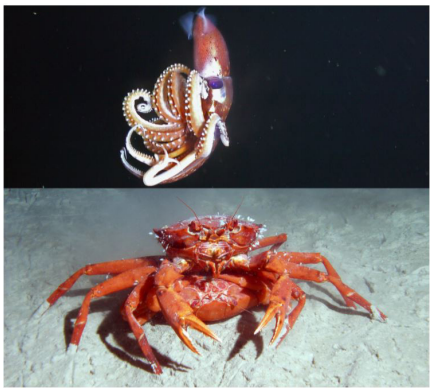
- To observe deep marine life near or on offshore oil and gas structures by using industrial ROVs for scientific research when they are in operational standby for industry.
- To learn what species are present, where they occur, when they are present, and what they are doing.
- The SERPENT Project is a global partnership between academia and the petroleum industry to study deep sea biodiversity and ecology. BOEM became a funding partner in 2006. The acronym stands for **S**cientific and **E**nvironmental **R**OV **P**artnership using **E**xisting I**N**dustrial **T**echnology.

Findings

- Documented megaplankton, micronekton, and benthic megafauna around deepwater exploration and production platforms between 2007 and 2013.
- Documented a variety of fauna known to exist in the Gulf of Mexico, and newly-documented taxa.
- Spatial occurrences of planktonic and demersal and benthic deepsea organisms; vertical distributions; behavioral observations; first in situ observations of oarfish, manefish, giant deepsea jellyfish, and a deepsea squid in the Gulf of Mexico.

How BOEM Will Use this Information

The project provided long-term monitoring and determined the following for future efforts: what organisms are present, depth distributions, geographic distributions, relative abundance, and seasonality.



A squid and red crab from the deep Gulf of Mexico

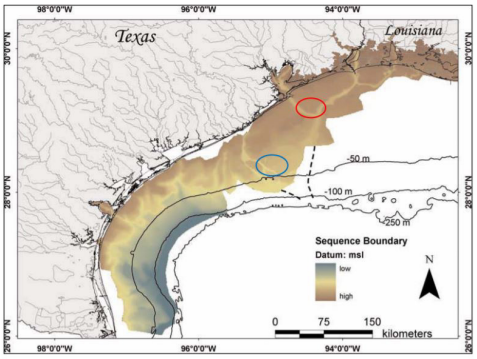
Study Products

Benfield MC, Kupchik M.J. 2017. Gulf SERPENT: Establishing a Deepwater Plankton Observation System Using Industrial Remotely-Operated Vehicles. New Orleans (LA): U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region. OCS Study BOEM 2017-003. 278 p.

Currently ESPIS contains six peer-reviewed articles and data products in the Gulf SERPENT database.

Examining and Testing Potential Prehistoric Archaeological Features on the Gulf of Mexico Outer Continental Shelf

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/27302
Conducted by: Louisiana State University, Coastal Marine Institute, 2007–2014
National Studies List: GM-92-42-136



Map showing study area in relation to relic river channels

Purpose

- To conduct geophysical survey and physical sampling offshore Texas at four high-probability features identified for their potential as prehistoric archaeological remains.
- To employ different analyses from those used previously to identify submerged paleolandscapes with archaeological potential.

Findings

The combined results from this study confirm that geographical and operational environments can be detected by geophysical data (acoustic surveys and physical sampling).

- Submerged landforms and environments that supported prehistoric subsistence systems can be detected by geophysical data (acoustic survey and physical sampling).
- Pollen species identified in the cores from High Island (HI 178) and Galveston (GA 426) represented food sources utilized by prehistoric inhabitants including plant species that were cultivated by later populations.
- Sediment analyses indicated that each study area provided hospitable environments and contained resources known to have been utilized by prehistoric inhabitants.
- Future coring or sediment sampling strategies should be designed to allow for pollen analysis relative to seasonality or other indicators which would allow for distinction between likely periods for wildfire so as to identify modification of the operational environment.
- Radiocarbon dates from this study confirm that archaeological horizons exist offshore that correlate with known periods of occupation by Paleoindians and Early Archaic peoples in Texas and Louisiana.

How BOEM Will Use this Information

- Determine if landforms potentially containing preserved prehistoric sites are being identified correctly through BOEM's required geophysical surveys
- Evaluate recommended enhancements to BOEM's current prescribed survey methodology for identifying submerged prehistoric sites on the OCS

Study Products

Evans AM. 2016. Examining and Testing Potential Prehistoric Archaeological Features on the Gulf of Mexico Outer Continental Shelf. New Orleans (LA): U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region. CMI Study 2016-015. 366 p.

Study to Revise and Update BOEM's Market Simulation Model (MarketSIM)

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/100169
Conducted by: SC&A, Inc., 2016–2017
National Studies List: NT-16-x20

Purpose

- To update the MarketSim model and report, and refine those previously developed in support of BOEM's Five Year OCS Oil and Gas Leasing Program for 2017–2022.
- As a part of the Five Year Program decision process, BOEM conducts a cost-benefit, or "net benefits," analysis of the social value of production and related activities anticipated from the program proposal for the initial analysis, the social value of the potential activities associated with the unleased, undiscovered, economically recoverable oil and gas resources in each OCS planning area.
- The analysis has three basic components: Net Economic Value, Net Environmental and Social Costs, and Consumer Surplus Benefits. Estimates of the third of these components are produced by the Market Simulation Model (MarketSim).

Findings

The incremental changes to MarketSim include:

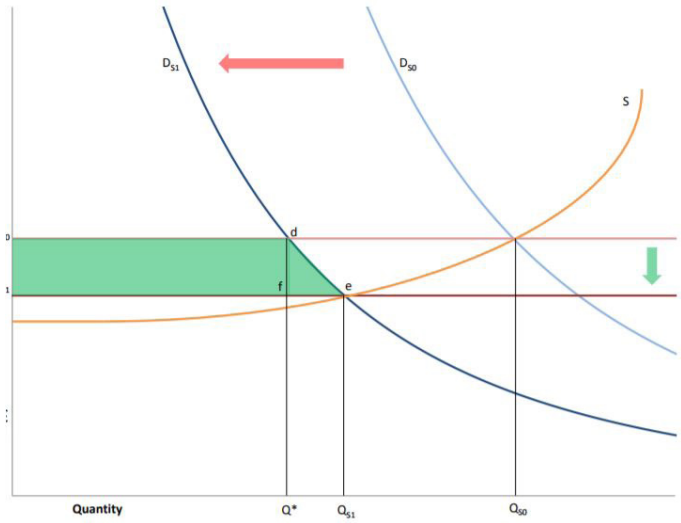
- Changes to reflect the elimination of the Oil Export Ban
- Revisions to directly incorporate production estimates from the Alaska offshore (as provided by the Energy Information Administration [EIA] in their Annual Energy Outlook [AEO])
- Data updates to include 2016 AEO data from specialized BOEM runs from the EIA

How BOEM Will Use this Information

Measure the energy market response to new production on leases issued in different planning areas under a specific five year program.

Study Products

Industrial Economics, Inc. 2017. Consumer Surplus and Energy Substitutes for OCS Oil and Gas Production: the 2017 revised Market Simulation Model (MarketSim). US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2017-039. 36 p.



Secondary market consumer surplus

MAG-PLAN Atlantic 2016: Economic Impact Model for the Atlantic Program Area; Updating MAG-PLAN Gulf of Mexico and Assessing Applicability to New Five-Year Program Areas

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/100054
Conducted by: Eastern Research Group, Inc., 2014–2017
National Studies List: GM-14-x10

Construction of an oil platform in the Gulf of Mexico

Purpose

- To develop MAG-PLAN Atlantic, a model that estimates the economic impacts of industry spending arising from a potential oil and gas lease sale in the Atlantic Ocean.
- Based on the version of MAG-PLAN for the Gulf of Mexico (which was also updated within this study contract), MAG-PLAN Atlantic is BOEM's first economic impact model for the Atlantic, and covers Virginia, North Carolina, South Carolina, and Georgia.
- BOEM integrates economic, social, and environmental values into its decision-making processes. To support these analyses, BOEM developed MAG-PLAN, a two-stage input-output model to estimate employment, personal income, and similar economic impacts from OCS oil and gas activities. BOEM's Gulf and Alaska offices have used MAG-PLAN models for more than 10 years.

Findings

- BOEM now has a methodologically-sound and user-friendly model to estimate the economic impacts of oil and gas exploration and development activities in the Atlantic Program Area. The model is internally consistent with the Gulf of Mexico model, thus providing BOEM with comparability in its analyses across regions.
- Model results depend on the input exploration and development scenarios, which would be prepared if an Atlantic lease sale were considered in a future Five Year National Oil and Gas Program.

Study Products

Kaplan MF, Marvakov J, Meade B, Ertis D. 2017. MAG-PLAN Atlantic 2016: economic impact model for the Atlantic Program Area. New Orleans (LA): US Dept. of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region. OCS Study BOEM 2017-008. 104 p.

How BOEM Will Use this Information

- To estimate employment, personal income, and similar economic impacts from OCS oil and gas activities
- To understand the regional consequences of potential future oil and gas development in the Atlantic
- To support planning, decision making and environmental assessments related to the management of mineral resources on the Atlantic OCS

New Study Awards from April–June 2017

Nearshore Food Web Structure on the OCS in Cook Inlet, Alaska

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/100199
Conducted by: University of Alaska, Fairbanks, Coastal Marine Institute (CMI)
Estimated Period of Performance: May 2017–September 2019
The overarching goal of the study is to identify the food web structure (trophic levels and trophic niche use) of the nearshore macroalgal-based systems in Cook Inlet, to provide an assessment of the potential vulnerability of the nearshore food webs, and to establish a benchmark for monitoring changes in food web characteristics over time. The subtidal and intertidal areas are home to many grazing invertebrates which provide an important source of prey for marine and terrestrial mammals, birds, other invertebrates and humans and are particularly susceptible to oil spills. Updated information from this study will be important to understanding and assessing potential impacts of an oil spill in Cook Inlet.

Microbial Biodegradation of Alaska North Slope Crude Oil in Arctic Marine Sediments

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/100198
Conducted by: University of Alaska, Fairbanks, Coastal Marine Institute (CMI)
Estimated Period of Performance: May 2017–May 2020
To better assess the fate of oil spilled in the Arctic marine environment, there is a need to understand the oil biodegradation potential in Arctic sediments. This study proposes to perform laboratory incubation studies to investigate the biodegradation of fresh and weathered crude oil in sediments under both aerobic and anaerobic conditions in order to assess biodegradation rates and to identify oil degrading microbes.

Using Trace Elements in Pacific Walrus Teeth to Track the Impacts of Petroleum Production in the Alaskan Arctic

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/100196
Conducted by: University of Alaska, Fairbanks, Coastal Marine Institute (CMI)
Estimated Period of Performance: June 2017–September 2018
Walrus teeth contain an unusually large cementum layer, which is laid down seasonally in dark and light bands. Trace elements are included in the matrix of the tooth cementum in concentrations that reflect those of the environment in which the animal lives and feeds. By measuring these trace element concentrations, the lifetime history of an animal's exposure to specific trace elements may be reconstructed. This method has the potential to capture seasonal or annual exposure events, as well as increases in element exposure within an individual's lifetime.

Biophysical and Chemical Observations II

ESPIS Link: https://marinecadastre.gov/espis/#/search/study/27034
Conducted by: Stantec Consulting Services, Inc.
Estimated Period of Performance: April 2017–April 2019
The goals of this study are to: identify and delineate areas of high biological productivity, as well as relative sensitivities and resiliencies to changes in environmental conditions within ecosystem components; provide a qualitative and quantitative description of the biogeochemical-physical interactions and feedback processes in ice free and ice covered areas; and provide a detailed spatio-temporal description of ocean currents at different depths along the Beaufort continental shelf, including ice covered areas.

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