

Quarterly Reports

FY 2022 Second Quarter

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

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The Environmental Studies Program (ESP) Quarterly Reports include summaries of the Bureau of Ocean Energy Management (BOEM) environmental studies completed each quarter. These studies inform BOEM's policy decisions on the development of energy and mineral resources on the Outer Continental Shelf (OCS).

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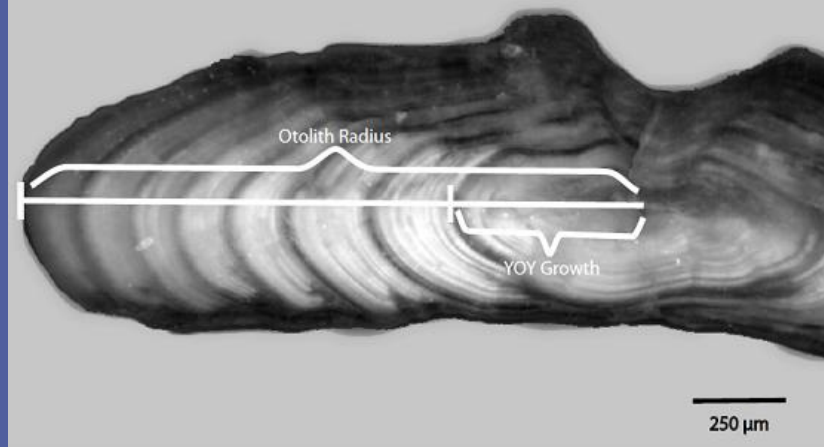
Arctic Cisco Genetics and Otolith Microchemistry

ESPIS Link: <https://marinecadastre.gov/espis/#!/search/study/100348>

Conducted by: U.S. Geological Survey (USGS)

National Studies List: AK-06-08

Study Products (available in ESPIS): Final report



Photomicrograph of transverse section of an Arctic cisco otolith. Measurement axis is the line going down the longitude of the otolith, and young-of-the-year (YOY) growth and otolith radius with hashes

Purpose/Information Use:

Arctic cisco or Qaaktaq (*Coregonus autumnalis*) are an important subsistence resource for the village of Nuiqsut, Alaska. Subsistence users have expressed concern over declines in harvests and size of Arctic cisco from the Colville River. Issues concerning population of origin, life history and recruitment variation over time, and changes in migration and diet of Arctic cisco ranked high in a list of critical research elements developed by the local community in a workshop hosted by the U.S. Minerals Management Service (MMS), now BOEM, in November 2003. Based on the outcomes of the workshop, MMS developed a set of research questions concerning Arctic cisco in the Colville River an

d requested that the USGS implement a study developing and applying scientific tools and techniques to address those questions. The study improved our understanding of Arctic cisco ecology and increased BOEM's capacity to anticipate potential impacts of development activities on Arctic cisco.

Findings/Results:

- Study results provided support for the "Mackenzie hypothesis," which suggests that Arctic cisco found in Alaskan rivers originate from the Mackenzie River, Canada.
- Researchers found no evidence of genetic differentiation among Arctic cisco collected from the Colville River and five Mackenzie River spawning populations. Model-based clustering methods also supported genetic mixing between sample collections from the Colville River and Mackenzie River basin.
- Otolith (hard, calcium carbonate structures located directly behind the brain of bony fishes) microchemistry confirmed repeated, annual movements of Arctic cisco between low-salinity habitats in winter and marine waters in summer. Harvest data supported the hypotheses that salinity affects the distribution of sub-adults within the Colville River and that wind patterns affect recruitment of Arctic cisco to the Colville River.

Final Report:

Zimmerman CE, von Biela VR. 2014. Molecular and otolith tools investigate population of origin and migration of Arctic cisco found in the Colville River, Alaska. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management. 107 p. Report No.: OCS Study BOEM 2014-020.

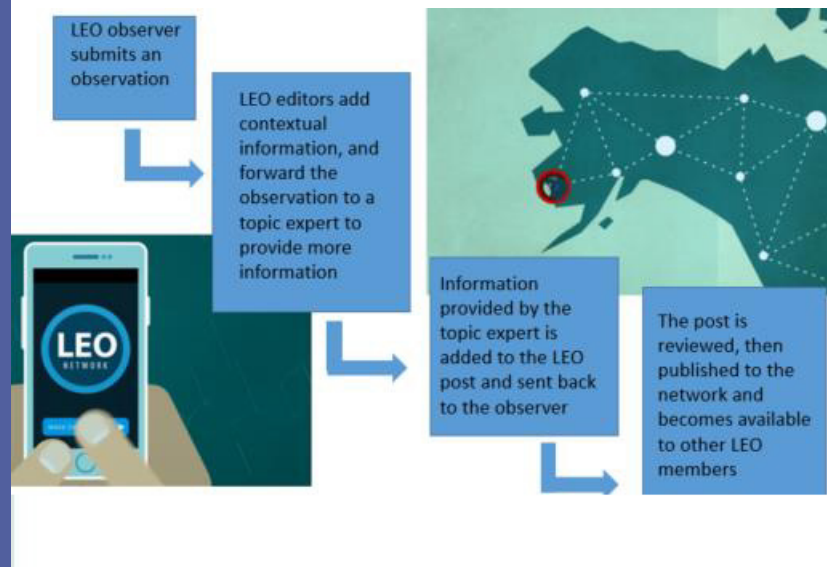
Community Based Monitoring: LEO Network

ESPIS Link: <https://marinecadastre.gov/espis/#/search/study/100138>

Conducted by: Alaska Native Tribal Health Consortium

National Studies List: AK-16-05

Study Products (available in ESPIS): Final report, technical summary



LEO Network editorial process

Purpose/Information Use:

The Local Environmental Observer (LEO) Network is a virtual platform for documenting and sharing unusual environmental events that potentially impact individual and community health. LEO staff connect observers of the events to individuals and organizations who can provide more information about the event; the staff also develop online posts collaboratively written by the observer, scientific consultants, regional residents, and topic experts. The Alaska Native Tribal Health Consortium has administered the LEO Network since 2012, reaching out to Tribal environmental professionals in rural communities, as well as other service agencies, statewide. This particular project began in October 2016 with the purpose of recruiting Alaskan residents as local observers of environmental change, specifically targeting areas affected by potential development projects, such as the North Slope and Cook Inlet regions. BOEM will use the results of this study to improve our understanding of local environmental events in the Alaska region.

Findings/Results:

- Over 900 members were recruited to the LEO Network during this project period. Overall, outreach was more successful in the Cook Inlet region.
- During the project period, staff from 74 organizations provided consultants on one or more LEO observations. LEO staff also provided observation reviews to the Alaska One Health Group, the U.S. Fish and Wildlife and Coastal Observation and Seabird Survey Team (COASST) seabird die-off response group, and the Marine Mammal Investigation Team.
- Super observer peer groups and corresponding consultant groups emerged organically through seasonal collections of observations describing changes to fish health, changes in weather patterns, changes in the timing of plant blooms, and instances of seabird mortalities and ticks.

Final Report:

Brubaker MY, Brook MJ, Lujan EN, Mack DD. 2021. Community based monitoring in Arctic and Cook Inlet coastal zones: extension of the Local Environmental Observer (LEO) Network. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management. 28 p. Report No.: OCS Study BOEM AK-2021-050.

Updating Status and Trends of Seabirds and Forage Fish in Lower Cook Inlet

ESPIS Link: <https://marinecadastre.gov/espis/#!/search/study/100139>

Conducted by: U.S. Geological Survey

National Studies List: AK-16-09

Study Products (available in ESPIS): Final report



Monitoring productivity of Common Murres

Purpose/Information Use:

Monitoring seabird populations and forage fish stocks in lower Cook Inlet—an oil and gas lease area—has been a BOEM priority for decades. This study sought to assess the status and trends of marine birds and forage fish around two seabird colonies in lower Cook Inlet to document immediate and long-term impacts of the North Pacific marine heatwave of 2014–2016 on the marine ecosystem. From 2016 to 2019, researchers conducted at-sea surveys for marine birds concurrently with acoustic-trawl surveys for forage fish. Researchers also gathered demographic information on Common Murres and Black-legged Kittiwakes at the colonies. The results of the study will be used to mitigate potential impacts from future energy development on fish and wildlife populations, and to assess the impact of potential oil spills.

Findings/Results:

- Although fish biomass indices were greatest in 2016–2017, the forage community was largely dominated by juvenile fish with low nutritional value following a collapse of key species of forage fish during the marine heatwave. Lowest fish biomass was observed in 2018, coincident with a marked decline in the at-sea abundance of many seabirds around colonies.
- In comparison with historical (1996–1999) bird colony surveys, kittiwake population counts decreased by more than 73% at Chisik Island and by 8–26% at Gull Island. Similarly, murre counts decreased at Chisik Island by 72% and by more than 20% at Gull Island.
- The study also reported unusually high levels of predator disturbance (egg predation, flushing adults from plots) and unprecedented numbers of adult birds in poor body condition (“skinny murres”), particularly in 2018.
- In summary, the impacts of the heatwave on seabirds and their forage base were severe and extended for several years beyond the heatwave itself.

Final Report:

Mayumi A, Schoen A, Piatt J, Marsteller C, Drew G. 2021. Monitoring the recovery of seabirds and forage fish following a major ecosystem disruption in Lower Cook Inlet. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management. 50 p. Report No.: OCS Study BOEM 2021-031.

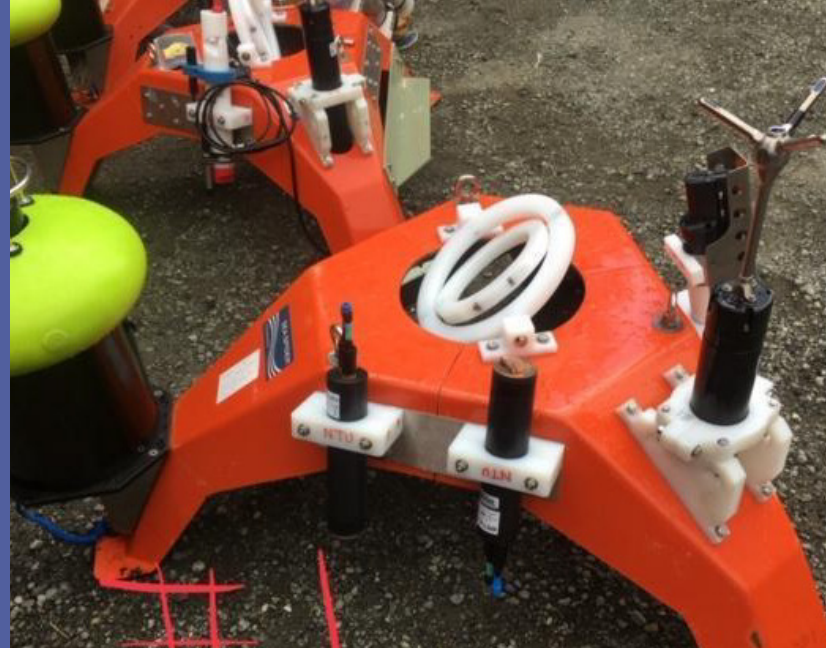
Wave Energy Converter Impact Assessment

ESPIS Link: <https://marinecadastre.gov/espis/#!/search/study/100214>

Conducted by: University of Alaska Fairbanks;
University of Arizona

National Studies List: AK-17-02

Study Products (available in ESPIS): Final report,
technical summary



Oceanographic bottom-mount mooring used to collect PAM data

Purpose/Information Use:

Yakutat is a community along the northeast coast of the Gulf of Alaska that has been identified as a potential site for generating renewable, wave-based electricity to lessen reliance on diesel fuel for electricity generation. In this study, researchers used fisheries monitoring, hydrographic information, and passive acoustic monitoring (PAM) to assess the potential for environmental impacts of deploying wave energy converters offshore of Yakutat. Between late June 2018 to mid-September 2019, scientists deployed bottom-mount moorings instrumented with Acoustic Doppler Current Profilers, conductivity/temperature/pressure loggers, turbidity sensors, and hydrophone packages for ambient noise at three depths (50 ft, 80 ft, and 130 ft). BOEM will use the results of this study as baseline data to assess impacts to protected species and/or essential fish habitat of any future marine energy projects in the region.

Findings/Results:

- Researchers documented the seasonal acoustic occurrence of at least five species of marine mammals, including two endangered species, in the survey area (adjacent to Cannon Beach). Scientists also determined seasonal ambient noise levels. Based on the overall low densities and species diversity in the survey area, hydrokinetic devices deployed in this area are not expected to negatively impact marine mammals.
- Scientists updated and comprehensively documented over 28 fish species occurring in the survey area. Again, given overall low densities and species diversity, hydrokinetic devices deployed in this area are likely to have fewer fish interactions, compared to those deployed in surrounding habitats (e.g., Ocean Cape, Yakutat Bay).
- Survey measurements showed that the seafloor at the study site is constantly changing due to high energy wave events that occur throughout the year.

Final Report:

Kasper J, Castellote M, Seitz A, Stafford K, Courtney M, Brown E. 2021. Yakutat wave energy converter impact assessment. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management. 221 p. Report No.: OCS Study BOEM 2021-055.

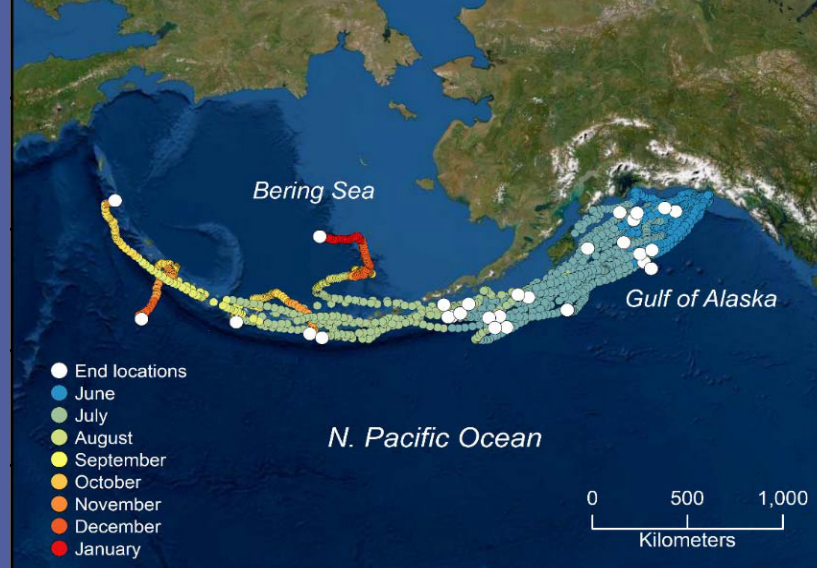
Ocean Migration and Behavior of Steelhead Kelts in the Northern Gulf of Alaska, Examined with Satellite Telemetry

ESPIS Link: <https://marinecadastre.gov/espis/#!/search/study/100279>

Conducted by: University of Alaska Fairbanks

National Studies List: AK-19-02-07

Study Products (available in ESPIS): Final report, technical summary



End locations of satellite tags (white dots) attached to steelhead from the Situk River, 2018-2020; circles color-coded by month denote daily locations of tagged steelhead estimated from a statistical model (hidden Markov model)

Purpose/Information Use:

Although steelhead, *Oncorhynchus mykiss*, is an iconic species found throughout the North Pacific rim, little is known about this species' oceanic ecology. This study used pop-up satellite archival tags (PSATs) to investigate the migratory routes and habitats used by steelhead kelts (adult steelhead that survive after spawning and return to the sea to feed) in the North Pacific Ocean. Researchers attached PSATs to steelhead kelts (16 in 2018; 12 in 2019, and 35 in 2020) from the Situk River, AK. While externally attached to a fish, the tags measured and recorded temperature, depth, and ambient light intensity data every 2-10 seconds. On preprogrammed dates, or due to mortality or other events, the tags released from the fish, floated to the ocean surface, and transmitted archived data to overhead Argos satellites. BOEM will use the results of this study to better understand the potential interactions between steelhead and offshore development activities.

Findings/Results:

- PSATs provided evidence of extensive post-spawning migrations of Situk River steelhead that extended to the western North Pacific Ocean and as far north as the central Bering Sea.
- Because tagged steelhead mainly occupied continental shelf and slope habitats, they showed extensive occupation of Outer Continental Shelf planning areas throughout the Gulf of Alaska, Aleutian Islands, and Bering Sea.
- Results from this project corroborate past research suggesting that steelhead predominantly occupy surface waters and that their distribution is largely influenced by sea surface temperatures of ~41-59°F.

Final Report:

Seitz AC, Courtney MB. 2021. Ocean migration and behavior of steelhead kelts in Alaskan OCS oil and gas lease areas, examined with satellite telemetry. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management. 28 p. Report No.: OCS Study BOEM 2021-067.

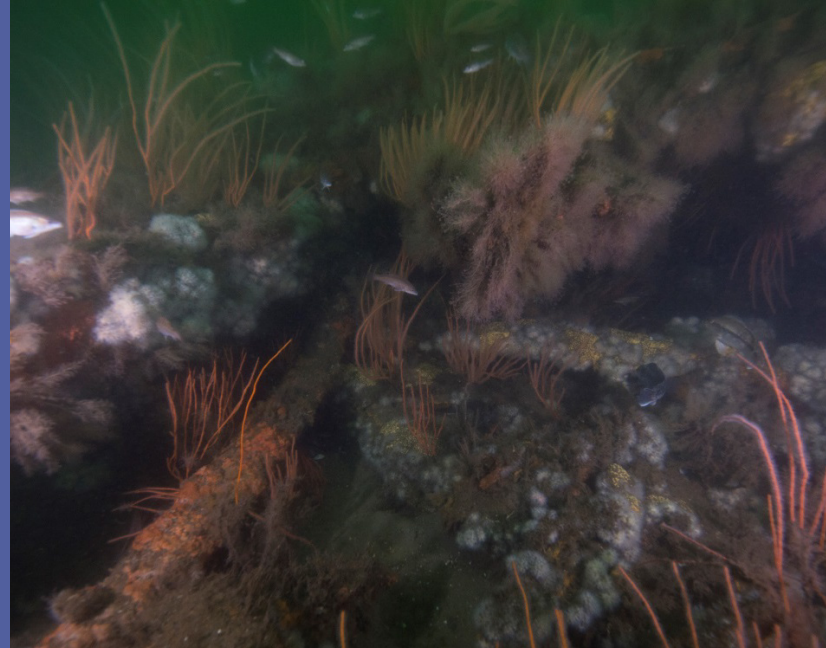
Archaeological Scientific and Technical Services in Support of Renewable Energy Development on the Atlantic Outer Continental Shelf

ESPIS Link: <https://marinecadastre.gov/espis/#!/search/study/100112>

Conducted by: BOEM; National Ocean and Atmospheric Administration, Office of National Marine Sanctuaries

National Studies List: AT-16-x20

Study Products (available in ESPIS): Final reports



Wreckage remains at a target site in the Maryland WEA

Purpose/Information Use:

As of October 2022, there are 27 active commercial wind power leases along the Atlantic Coast from Massachusetts to North Carolina. BOEM requires baseline archaeological data within each wind energy area (WEA) to 1) make sound decisions about how to minimize impacts; 2) form post-construction comparisons during monitoring of environmental changes that might be discernable later; and 3) assist in meeting BOEM's responsibilities under Sections 106 and 110 of the National Historic Preservation Act and the National Environmental Policy Act. This study sought to identify, in five study areas, geophysical targets (e.g., side-scan sonar contacts and magnetic anomalies) that may prove to be archaeological resources that should be avoided. BOEM will use such archaeological identification and ground-truthing of these targets to make informed, responsible decisions regarding offshore wind development.

Findings/Results:

- Maryland WEA: investigated 8 sites; recommended avoidance buffers at 4 sites.
- Virginia Commercial WEA: investigated 13 sites; recommended avoidance buffers at 9 sites.
- North Carolina Kitty Hawk WEA: investigated 6 sites; recommended avoidance buffers at 2 sites.
- North Carolina Wilmington West and East WEAs: investigated 8 sites; recommended avoidance buffers at 5 sites.
- New York Bight Lease and Call Area: investigated 10 sites; recommended avoidance buffers at 4 sites.

Final Report:

Hoffman W, Hoyt J, Sassorossi W. 2021. New York collaborative archaeological survey. Sterling (VA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 54 p. Report No.: OCS Study BOEM 2021-077.

See also final reports for four other survey areas.

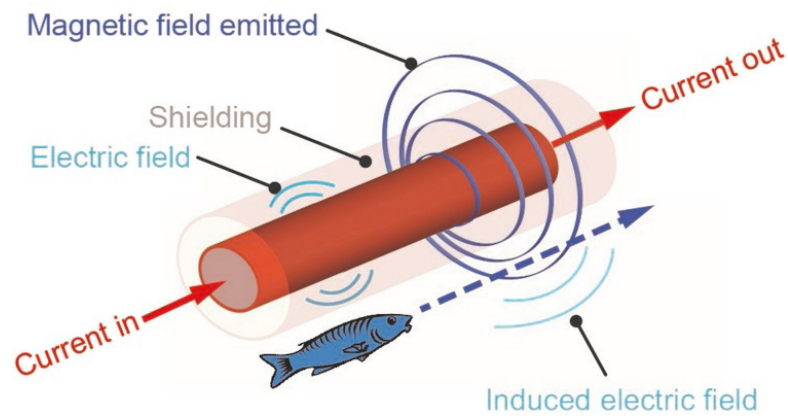
EMF (Electromagnetic Field) Impacts on American Eel Movement and Migration

ESPIS Link: <https://marinecadastre.gov/espis/#!/search/study/100230>

Conducted by: University of Rhode Island

National Studies List: AT-17-x11

Study Products (available in ESPIS): Final report, technical summary



A simple representation of a subsea high voltage direct current cable and emitted EMF

Purpose/Information Use:

Expanding the offshore wind (OSW) industry would increase the number of high voltage subsea cables. As a result, marine species may increase their encounters with the cables and electromagnetic fields (EMFs) emitted by cables. Of particular concern are magnetoreceptive species (animals that can detect the Earth's magnetic field), such as the migratory American eel (*Anguilla rostrata*). The consequences of magnetoreceptive species encountering cable EMFs during long distance migrations are not known. This study used an existing subsea electrical cable, the Cross Sound Cable (CSC) in Long Island Sound, as a proxy for future OSW high voltage cables. The study conducted in situ measurement and characterization of cable EMF to develop realistic EMF modeling. Researchers then used the model in conjunction with novel acoustic tagging technology (which provided fine-scale eel movement data) to assess the response of silver eels (adult American eels) to the EMF encountered from the cable during their outward migration to sea. BOEM will use the data from the study to better understand the potential impact of EMF on magnetoreceptive species.

Findings/Results:

- Both direct current (DC) and alternating current (AC) EMFs were measured from the CSC. The amplitude of the DC magnetic field was greater than the AC magnetic field, but the spatial extent of the two magnetic fields were similar.
- Researchers detected a total of 21 eels in the vicinity of the cable in year 1 and 17 eels in year 2.
- Eels responded to the DC magnetic field; they increased their speed with increasing DC magnetic fields and moved more purposefully.
- While the eels did alter their behavior, they were found on either side of the cable route, suggesting that the CSC was not an absolute barrier to migratory movement. Further research is needed to understand the cumulative effect of multiple encounters with high voltage subsea cables.

Final Report:

Hutchison ZL, Sigray P, Gill AB, Michelot T, King J, 2021. Electromagnetic field impacts on American eel movement and migration from direct current cables. Sterling (VA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 146 p. Report No.: OCS Study BOEM 2021-83.

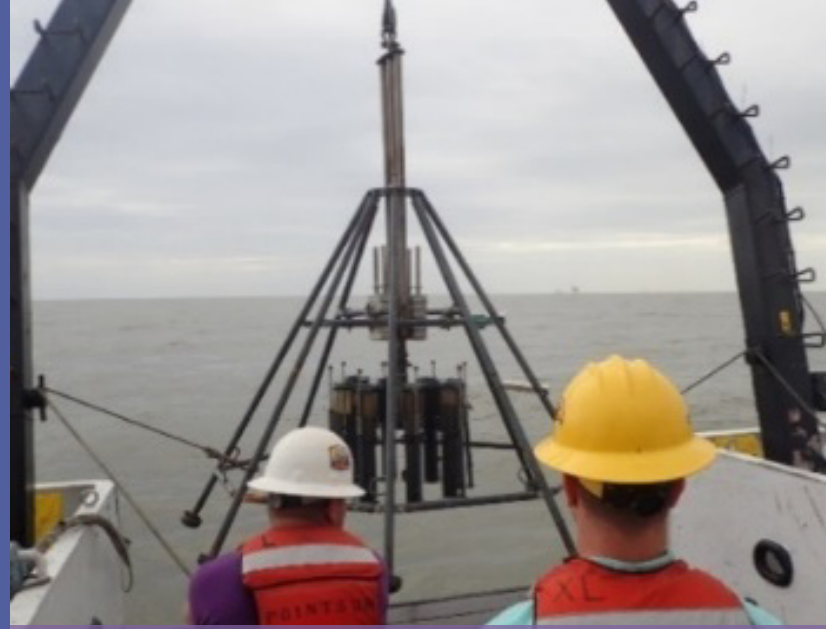
Mass Wasting Processes and Products of the Mississippi Delta Front: Data Synthesis and Observation

ESPIS Link: <https://marinecadastre.gov/espis/#/search/study/100346>

Conducted by: Louisiana State University

National Studies List: GM-09-01-14

Study Products (available in ESPIS): Final report, technical summary



Operation of the multicorer used for core collection during the 2017 pilot study

Purpose/Information Use:

BOEM and its predecessor agency, the Minerals Management Service, have invested considerable resources in improving our understanding of sediment deposition, stability, mass wasting (the movement of sediments down slope under the influence of gravity), and other sediment-transport processes on the Mississippi River Delta Front (MRDF). BOEM needs this information to better predict seabed phenomena (e.g., submarine landslides) that may impact oil and gas exploration and production activities. However, the last major comprehensive seabed mapping program was conducted in the late 1970s. As a result, information needed to understand seabed hazards and risks is generally outdated and/or too sparsely distributed to allow hazard evaluation for the entire region. This project synthesized many industry data sets collected since 1980 and conducted two pilot studies (in 2014 and 2017) along with new modeling studies of sedimentary and morphodynamic (how the seafloor adjusts to waves, currents, and tides) processes. BOEM will use the results of this study to determine how to best design a future comprehensive study of the MRDF.

Findings/Results:

- The study found that landslide-triggering mechanisms are not well understood. Only large-scale catastrophic failures have been widely documented in the literature, but this study demonstrates that flows and failures happen even during periods when major hurricane strikes do not occur.
- Waves are widely recognized as important triggers for mudflows, but most of the work on this topic has been conducted using oversimplified linear wave models. Predictive models used to date, as this study shows, underpredict the forces applied by real ocean waves to the seabed.
- Existing advanced geochronological and geological analytical methods can help provide detailed information on the rates and distributions of mudflows in time and space, but these methods have mostly been applied outside of the most dynamic regions of the MRDF.

Final Report:

Bentley SJ, Xu K, Georgiou IY, Maloney J. 2022. Mass wasting processes and products of the Mississippi delta front: data synthesis and observation. New Orleans (LA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 158 p. Report No.: OCS Study BOEM 2022-007.

Social Impacts of the Deepwater Horizon Oil Spill on Coastal Communities Along the U.S. Gulf of Mexico

ESPIS Link: <https://marinecadastre.gov/espis/#/search/study/100347>

Conducted by: University of Arizona

National Studies List: GM-12-x11

Study Products (available in ESPIS): Final report, technical summary



Floodwall in Plaquemines Parish, Louisiana

Purpose/Information Use:

This study was developed to describe and analyze direct and indirect socioeconomic consequences of the Deepwater Horizon disaster in the Gulf of Mexico region. Because impacts of large oil spills are determined by their specific characteristics and the natural and human environments in which they occur, the effects of the Deepwater Horizon oil spill cannot be predicted from previous spills. This study built on the findings of an earlier BOEM study of the initial socioeconomic impacts of the Deepwater Horizon oil spill and used ethnography (the scientific description of the customs of individual peoples and cultures) to document the unfolding, varied, and unique impacts of that event. The results of this study provide a reliable source of information and analysis that BOEM, and other Federal and State institutions, can use to support future assessments and decision making. More broadly, this research contributes significantly to the general understanding of the ongoing impacts of the Deepwater Horizon oil spill.

Findings/Results:

- Though debates continue about the nature, extent, and duration of the Deepwater Horizon's economic, ecosystem, and human health effects, the disaster's social effects persisted throughout the study period.
- Across the study communities, neither the duration nor severity of socioeconomic impacts from the spill were determined simply by the continued presence of oil. Whether or not oiling occurred or persisted, people in all study communities were affected by the disaster, though those effects were conditioned by previous events and responses.
- Because each community has a unique combination of demographic, economic, and sociocultural factors, the effects in each place were different.
- Attempts to average across communities the effects of any single variable (e.g., population change, per capita income, or changes in livelihood strategies) risk rendering all effects invisible.

Final Report:

Austin D, Luchetta J, Phaneuf VM, Simms J. 2022. Social impacts of the Deepwater Horizon oil spill on coastal communities along the US Gulf of Mexico. New Orleans (LA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 143 p. Report No.: OCS Study BOEM 2022-0214.

Assessment of Mud-Capped Dredge Pit Evolution on the Outer Continental Shelf (OCS) of Northern Gulf of Mexico

ESPIS Link: <https://marinecadastre.gov/espis/#!/search/study/100207>

Conducted by: Louisiana State University

National Studies List: GM-14-03-05

Study Products (available in ESPIS): Final report, technical summary

Purpose/Information Use:

Approximately 90% of the Mississippi-Atchafalaya River system sediment load is suspended mud and only about 10% is sand. It is important for BOEM to know the location of the sand resources and understand how they formed. Although several prominent sandy shoals off the Louisiana coast are too far offshore to make extraction cost-effective, there are discrete sand deposits located closer to shore. Such deposits are often associated with ancient river channels that flowed across the OCS when sea levels were lower. These channels were filled with sandy sediments as sea levels rose and were then buried by mud deposition from modern-day rivers. This study sought to quantify the evolution of these “mud-capped” dredge pits and predict pit evolution based on model simulations. BOEM will use the results of this study to gain a better understanding of mud-capped dredge pits and also evaluate the effectiveness of existing dredging mitigations (e.g., setback distances from pipelines) to determine if cultural resources and oil and gas infrastructure are being protected.

Final Report:

Xu KH, Bentley SJ, Li C, Chaichitehrani N, Obelcz J, O’Connor M, et al. 2019. An assessment of mudcapped dredge pit evolution on the outer continental shelf of the Gulf of Mexico. New Orleans (LA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 89 p. Report No.: OCS Study BOEM 2022-006.



Pictures of a tripod deployed inside the Sandy Point dredge pit (left: before deployment; right: after retrieval)

Findings/Results:

- Hydrodynamic processes (waves, currents, and tides) are important drivers of sediment transport and the evolution of dredge pits.
- Spatially, survey data generally show two to three layers of flow (i.e., different current speeds at different depths) over the dredge pits.
- Sediment delivered to the dredge pits can come from the 1) collapse of pit walls; 2) resuspension of nearby seabed sediment; and/or 3) settling of river plume sediment.

Discerning Behavioral Patterns of Sea Turtles in the Gulf of Mexico to Inform Management Decisions

ESPIS Link: <https://marinecadastre.gov/espis/#!/search/study/100167>

Conducted by: U.S. Geological Survey (USGS)

National Studies List: NT-16-07

Study Products (available in ESPIS): Final report, technical summary



US Geological Survey Biologist Andrew G. Crowder during release of a satellite tagged loggerhead sea turtle; photograph by the US Geological Survey

Purpose/Information Use:

Globally, sea turtles are a high priority for protection, and research projects on these imperiled species are focused on those studies that are likely to result in improvements in monitoring and management for population recovery. In this study, BOEM and the USGS collaborated to collect geographic and dive data for sea turtles in the northern Gulf of Mexico (GOM). All turtles were captured via trawling and then tagged and released. The study conducted trawling at four study sites off the coasts of Florida, Mississippi, and Louisiana in conjunction with dredging projects that used relocation trawling as a way to move turtles out of the path of the dredge to reduce the number of turtles potentially harmed during the dredging process. The results of the study will help BOEM enhance proactive strategies to meet future challenges associated with the spatial overlap of protected species and the extraction of key energy and mineral resources.

Findings/Results:

- The USGS captured and tagged 50 turtles with satellite tags funded by BOEM and 27 additional turtles tagged with satellite tags funded by other projects.
- For the 50 turtles with BOEM tags, 24 were Kemp's ridley and 26 were loggerhead. Tracking ranged from 3 to 192 days, and none of the turtles left the GOM. On average, loggerhead turtles dived for 15–30 minutes and spent 16% of their time at the surface, whereas Kemp's ridley turtles typically dived for less than 15 minutes and spent 10% of their time at the surface.
- Seasonal movements could not be evaluated as the majority of satellite tags only transmitted for an average of four months. This time frame was due to the high fouling rates (the rate at which organisms attach themselves to objects in the water) found in the northern GOM, rather than the failure of tagging equipment or tag attachment procedures.

Final Report:

Hart KM, Lamont MM. 2021. Discerning behavioral patterns of sea turtles in the Gulf of Mexico to inform management decisions. New Orleans (LA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 78 p. Report No.: OCS Study BOEM 2021-088.

Department of the Interior Mission

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management

The mission of the Bureau of Ocean Energy Management is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program

The mission of the Environmental Studies Program (ESP) is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM's Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).

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