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Air Quality Study

Completed (2019) — Air Emissions Associated with Decommissioning Operations for Pacific Outer Continental Shelf Oil and Gas Platforms

This study by MRS Environmental, Inc. developed estimates of air pollutants expected for all phases of decommissioning Pacific OCS oil and gas facilities, including from offshore and associated onshore operations. It also determined which local regulations will be required and how they will be applied to ensure regulatory compliance within the jurisdictions to support NEPA analyses for decommissioning the facilities.

Report (BOEM 2019-016):

Volume I: https://espis.boem.gov/final%20reports/BOEM_2019-016.pdf

Volume II: https://espis.boem.gov/final%20reports/BOEM_2019-016_M.pdf

Database: <https://www.boem.gov/BOEM-DEEP-TOOL/>



Biological Studies: Platform Ecology – Fish

Ongoing (2021–2023) — The Environmental Status of Artificial Structures Offshore California

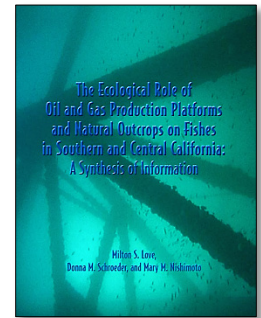
This study by the Southern California Marine Institute will use relevant ecological indicators (e.g., biodiversity, biomass, productivity) to improve understanding of how local and/or regional factors influence the variation in environmental status observed in marine infrastructure/facility/obstruction habitats within the Pacific Region, especially offshore California. Study results will assist BOEM in evaluating proposed plans that involve significant amounts of marine infrastructure (which function as de facto artificial reefs) and to gain insight in determining if existing energy infrastructure affects other uses of the outer continental shelf.

Study Profile: <https://www.boem.gov/pc-20-02>

Completed (2003) — The Ecological Role of Oil and Gas Production Platforms and Natural Outcrops on Fishes in Southern and Central California: A Synthesis of Information

This study by the University of California, Santa Barbara, in cooperation with the U.S. Geological Survey, synthesized information collected from 1995 to 2001 on fishes living around eight platforms and eight natural rock outcrops (reefs) at similar depths to better understand how offshore platforms contribute to fish populations and fishery productivity offshore southern and central California. It characterized the fish assemblages around platforms and natural reefs, examined how oceanography affects patterns of recruitment and community structure of reef fishes, and described patterns of fish diversity and abundance among habitat types.

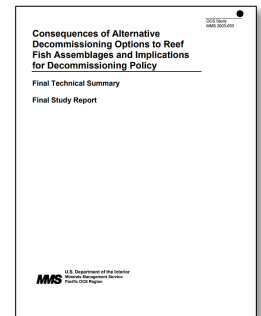
Report (MMS 2003-032): <https://espis.boem.gov/final%20reports/183.pdf>



Completed (2003) — Consequences of Alternative Decommissioning Options to Reef Fish Assemblages and Implications for Decommissioning Policy

This study by the University of California, Santa Barbara estimated potential ecological effects of decommissioning platforms offshore southern California (through total or partial removal) on regional fish population and assemblages. It also examined whether scientific information has influenced decommissioning policy offshore California and in the Gulf of Mexico.

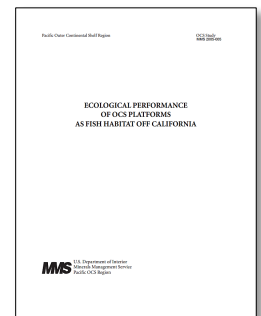
Report (MMS 2003-053): <https://espis.boem.gov/final%20reports/3552.pdf>



Completed (2005) — Ecological Performance of OCS Platforms as Fish Habitat off California

This study by the University of California, Santa Barbara determined certain aspects of the ecological performance of fishes living on offshore platforms compared to those living on natural reefs offshore California, including larval production, growth rate, and mortality rate of various species.

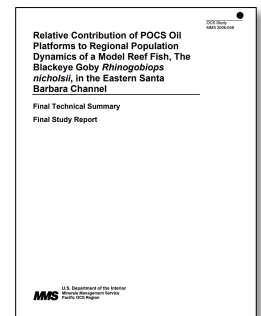
Report (MMS 2005-005): <https://espis.boem.gov/final%20reports/3471.pdf>



Completed (2006) — Relative Contribution of POCS Oil Platforms to Regional Population Dynamics of a Model Reef Fish, The Blackeye Goby *Rhinogobiops nicholsii*, in the Eastern Santa Barbara Channel

This study by the University of California, Santa Barbara tested whether platforms in the eastern Santa Barbara Channel influence the regional population abundance of the blackeye goby, the most common demersal fish found on the platforms. It found that populations at the test site (Platform Gina) are not a significant part of the regional stock of the species, indicating that the platform's removal or in-situ modification (through decommissioning) would not have an important influence on the species' regional abundance and population dynamics.

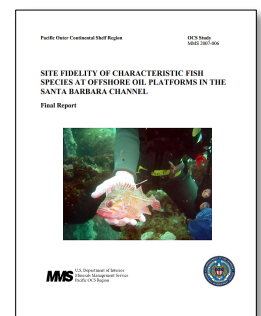
Report (MMS 2006-048): <https://espis.boem.gov/final%20reports/4381.pdf>



Completed (2007) — Site Fidelity of Characteristic Fish Species at Offshore Oil Platforms in the Santa Barbara Channel

This study by California State University, Long Beach monitored 15 species of fishes at three platforms in the eastern Santa Barbara Channel (Gail, Gilda, and Grace). Individuals were monitored using acoustic telemetry to determine the residence time, site fidelity, and movement patterns. It also determined the degree to which site fidelity varies among individuals, species, and platforms.

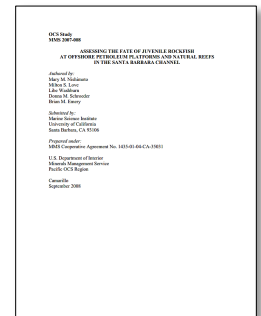
Report (MMS 2007-006): <https://espis.boem.gov/final%20reports/4931.pdf>



Completed (2008) — Assessing the Fate of Juvenile Rockfish at Offshore Platforms and Natural Reefs in the Santa Barbara Channel

This study by the University of California, Santa Barbara investigated the role of ocean currents in delivering juvenile rockfishes to offshore platforms in the eastern Santa Barbara Channel (Gilda and Gail). It also assessed the likelihood of fish recruits encountering natural reef habitat if the platforms were removed and if survival would be compromised in the absence of the platforms.

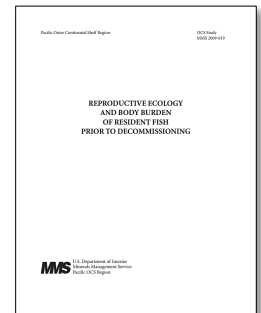
Report (MMS 2007-008): <https://epis.boem.gov/final%20reports/4865.pdf>



Completed (2009) — Reproductive Ecology and Body Burden of Resident Fish Prior to Decommissioning

This study by the University of California, Santa Barbara examined possible contaminants in fishes living around platforms offshore southern California and compared contaminant levels in several species at platform and natural habitats. It also assessed the reproductive health of fish from platforms and natural habitats.

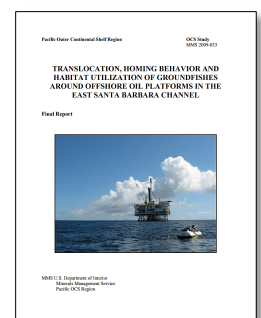
Report (MMS 2009-019): <https://epis.boem.gov/final%20reports/4916.pdf>



Completed (2009) — Translocation, Homing Behavior and Habitat Utilization of Groundfishes around Offshore Oil Platforms in the East Santa Barbara Channel

This study by California State University, Long Beach determined whether groundfishes translocated from platforms in the Santa Barbara Channel (Gail, Gilda, and Grace) to a natural reef of comparable depth would home back to their sites of capture or take residency at their new location and, conversely, whether fishes translocated from a natural reef to a platform (Grace or Gilda) would return to their home reef.

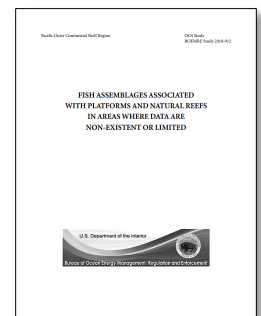
Report (MMS 2009-033): <https://epis.boem.gov/final%20reports/4914.pdf>



Completed (2010) — Fish Assemblages Associated with Platforms and Natural Reefs in Areas where Data Are Non-existent or Limited

This study by the University of California, Santa Barbara surveyed fish assemblages and habitats at 20 platforms and 110 natural reefs offshore southern and central California to fill information gaps about the comparative importance of platforms and reefs as fish habitat, and to analyze the potential environmental consequences of platform decommissioning on local or regional fish populations. It also compared fish assemblages at two platforms – one with relatively little jacket complexity (Gail) with one that is more complex (Eureka) – to assess the role of habitat complexity in structuring fish assemblages.

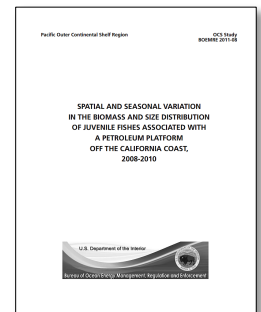
Report (BOEMRE 2010-012): <https://epis.boem.gov/final%20reports/5046.pdf>



Completed (2011) — Spatial and Seasonal Variation in the Biomass and Size Distribution of Juvenile Fishes Associated with a Petroleum Platform off the California Coast, 2008-2010

This study by the University of California, Santa Barbara surveyed fish assemblages at seven platforms, seven natural reefs, and three shipwrecks offshore southern and central California to fill information gaps about the spatial and depth variability in recruitment of juvenile fishes to platforms and natural reefs. It elucidated the importance of the platform as a depth-stratified fish habitat as compared to adjacent natural reefs of comparable depths, and it estimated the potential environmental consequences of partial platform removal on local and regional fish populations.

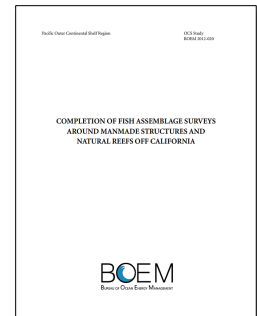
Report (BOEMRE 2011-08): <https://epis.boem.gov/final%20reports/5105.pdf>



Completed (2012) — Completion of Fish Assemblage Surveys around Manmade Structures and Natural Reefs off California

This study by the University of California, Santa Barbara surveyed fish assemblages at 11 platforms (some of which had never been surveyed) and two natural reefs offshore southern California, including a wide range of structures occupying a diversity of water depths, geographic locations, and water masses. It also estimated species densities at both platform and natural reef habitats, and synthesized the new data to describe the ecological performance of platforms as rockfish habitat and rockfish producers.

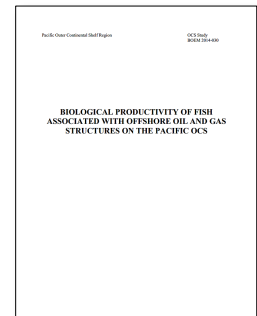
Report (BOEM 2012-020): <https://espis.boem.gov/final%20reports/5188.pdf>



Completed (2014) — Biological Productivity of Fish Associated with Offshore Oil and Gas Structures on the Pacific OCS

This study by Vantuna Research Group determined and compared the productivity of fish communities on 16 platforms to those on seven natural reefs offshore southern California and to published estimates of production from other marine ecosystems. It also evaluated the potential effects of partial platform removal on the biomass and production of the fish communities on the 16 platforms.

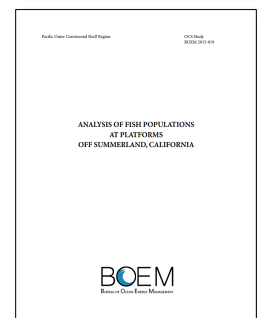
Report (BOEM 2014-030): <https://espis.boem.gov/final%20reports/5387.pdf>



Completed (2015) — Analysis of Fish Populations at Platforms off Summerland, California

This study by the University of California, Santa Barbara surveyed fish assemblages at eight platforms (A, B, C, Habitat, Henry, Hillhouse, Hogan, and Houchin) offshore Summerland, California. It also compared the assemblages with those at two other platforms at similar bottom depths in the Santa Barbara Channel (Holly and Gilda).

Report (BOEM 2015-019): <https://espis.boem.gov/final%20reports/5588.pdf>



Biological Studies: Platform Ecology – Biota Other Than Fish

Ongoing (2019-2024) — Understanding Biological Connectivity Among Offshore Structures and Natural Reefs

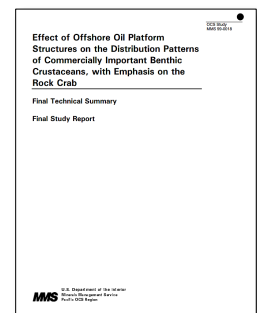
This study by the University of California, Santa Barbara is assessing genetic similarities/differences among native and non-native marine invertebrates near platforms, harbors, shipwrecks, and natural reefs offshore southern California in order to better understand the biological connectivity of larvae among artificial and natural habitats and the role that platforms may have in enabling the spread of non-native species to unpopulated areas.

Study Profile: <https://www.boem.gov/PC-19-04-profile/>

Completed (1999) — Effect of Offshore Oil Platform Structures on the Distribution Patterns of Commercially Important Benthic Crustaceans, with Emphasis on the Rock Crab

This study by the University of California, Santa Barbara tested whether commercially important crab species occurred in higher densities beneath a platform in the Santa Barbara Channel (Holly) compared to adjacent soft-bottom habitat. It also characterized the spatial and temporal patterns of crab recruitment to the platform, including the importance of the platform invertebrate community as potential habitat and food source for crabs.

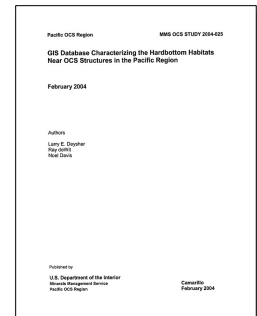
Report (MMS 99-0018): <https://espis.boem.gov/final%20reports/4331.pdf>



Completed (2004) — GIS Database Characterizing the Hardbottom Habitats Near OCS Structures in the Pacific Region

This study by Ocean Imaging compiled geophysical survey maps and biological reports from 1977 to 2002 to identify the locations and habitat characteristics of hardbottom features within 2 miles of OCS structures (including platforms, pipelines, and power cables) offshore southern California. It also developed a GIS database that can be used to determine the potential for damage to sensitive habitats during decommissioning activities for the OCS structures.

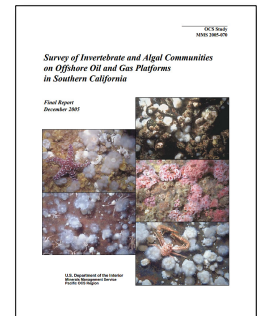
Report (MMS 2004-025): <https://espis.boem.gov/final%20reports/4997.pdf>



Completed (2005) — Survey of Invertebrate and Algal Communities on Offshore Oil and Gas Platforms in Southern California

This study by Continental Shelf Associates, Inc. determined abundance, density, and depth distribution/vertical zonation characteristics of invertebrate and algal communities on selected platforms and natural reefs offshore southern and central California. It also quantified biomass production estimates of the platform communities (and natural reef communities, where practical), and evaluated the relative importance of platform-associated invertebrate and algal communities to the ecology of the region.

Report (MMS 2005-070): <https://espis.boem.gov/final%20reports/3407.pdf>



Completed (2016) — Characterizing and Quantifying California Sea Lion (*Zalophus californianus*) Use of Offshore Oil and Gas Platforms in California

This study by the National Marine Fisheries Service/Alaska Fisheries Science Center characterized California sea lion use of five platforms offshore southern California (Elly, Gina, Habitat, Heritage, and Harvest) over a two-year period. Abundance, seasonal use patterns, and age/sex class structure were evaluated to assess the net benefit of platforms for sea lions and to provide data needed for permitting of future decommissioning activities.

Report (BOEM 2016-009): <https://espis.boem.gov/final%20reports/5571.pdf>



Completed (2019) — Understanding the Role of Offshore Structures in Managing Potential *Watersipora* Invasions

This study by the University of California, Santa Barbara surveyed the distribution and abundance of a non-native bryozoan on 23 platforms and natural reefs in the Southern California Bight, and elucidated the role that offshore artificial structures may have in linking and affecting biological communities. The study results will inform environmental reviews of conventional energy activities (including decommissioning of platforms) offshore southern and central California.

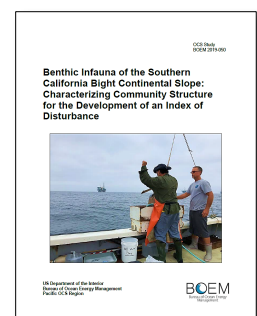
Report (BOEM 2019-001): https://espis.boem.gov/final%20reports/BOEM_2019-001.pdf



Completed (2019) — Disturbance Index Development for the Pacific OCS

This study was a partnership between BOEM and the Southern California Coastal Water Research Project to characterize the ecological condition of two previously unanalyzed soft-bottom habitats within the Southern California Bight (SCB). Habitats near four oil platforms (A, B, C, and Hillhouse) were found to be in reference condition using a well-established assessment framework. The report also presents the first effort since the 1950s to characterize the soft-bottom communities of the outer continental shelf and upper slope regions (200 to 1,000 meters) of the SCB. Three distinct slope/shelf habitats were identified, and the results indicate that traditional assessment approaches like those used around the oil platforms may not apply to these deeper habitats.

Report (BOEM 2019-050): https://espis.boem.gov/final%20reports/BOEM_2019-050.pdf



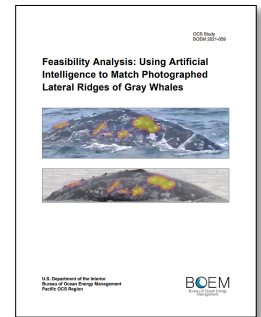
Other Biological Studies

Ongoing (2020–2022) — Assessing and Advancing Individual Matching Accuracy of Photographed Gray Whales Using Artificial Intelligence

This study by Wild Me is proceeding in two phases. The first phase tested the feasibility of using machine learning algorithms to match lateral ridges of individual gray whales (*Eschrichtius robustus*), and has been completed. The second phase is focusing on increasing the accuracy of these algorithms to match laterally photographed gray whales. Complementing existing efforts funded by NOAA's National Marine Fisheries Service Southwest Fisheries Science Center, this study aims to use artificial intelligence to better understand the distribution, status, and sensitivities of this species. Products will be incorporated into an open-source distributed database.

Study Profile: <https://www.boem.gov/pr-21-gry>

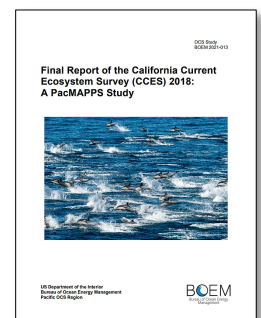
First Report (BOEM 2021-059): <https://www.boem.gov/BOEM-2021-059>



Completed (2021) — Pacific Marine Assessment Partnership for Protected Species (PacMAPPS) – California Current

This study was a partnership between BOEM, the National Marine Fisheries Service, and the U.S. Navy to conduct shipboard surveys of marine mammals, seabirds, and, to the extent possible, sea turtles in the Pacific. The data collected during a 2018 survey of the California Current Ecosystem (Baja California, California, Oregon, and Washington) will help BOEM evaluate potential effects of proposed energy activities on protected species, that includes an ecosystem-level context, including in areas of interest for renewable energy development (California, Oregon) and for conventional energy decommissioning (California).

Report (BOEM 2021-013): https://espis.boem.gov/final%20reports/BOEM_2021-013.pdf

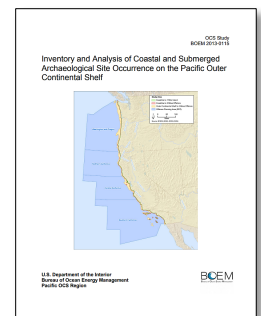


Cultural & Archaeological Studies

Completed (2013) — Inventory and Analysis of Coastal and Submerged Archaeological Site Occurrence on the Pacific OCS

This study by ICF International assessed the potential for submerged prehistoric sites on the California, Oregon, and Washington Outer Continental Shelf (OCS), and identified coastal properties and significant coastal cultural resources subject to potential visual impacts from offshore energy development. It also produced a proprietary inventory of known, reported, and potential historic shipwrecks.

Report (BOEM 2013-0115): <https://espis.boem.gov/final%20reports/5357.pdf>



Completed (2017) — Characterizing Tribal Cultural Landscapes

This effort, led by the National Oceanic and Atmospheric Administration, collaborated with the Yurok Tribe of California, Grand Ronde Tribe of Oregon, and Makah Tribe of Washington to develop best practices for consultation through implementation of a cultural landscape approach. Each Tribe employed this approach to develop their own unique case studies. This information will likely be important to future consideration of all BOEM-authorized actions.

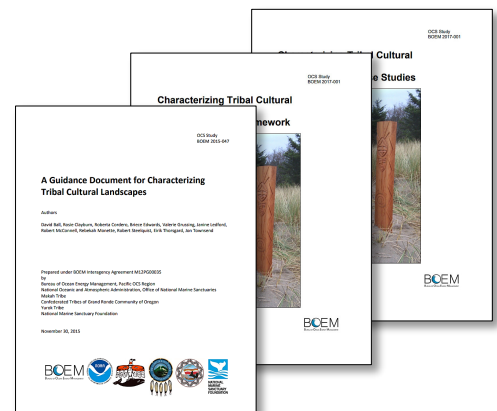
Guidance Document (BOEM 2015-047): <https://www.boem.gov/2015-047/>

Report (BOEM 2017-001):

Volume I: <https://www.boem.gov/BOEM-2017-001-Volume-1/>

Volume II: <https://www.boem.gov/BOEM-2017-001-Volume-2/>

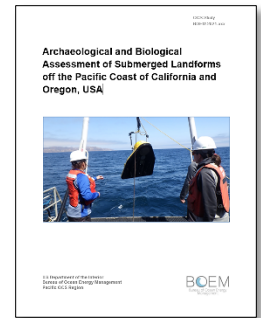
Webinar: <https://www.boem.gov/Science-Exchange-8/>



Completed (2021) — Archaeological and Biological Assessment of Submerged Landforms off the Pacific Coast of California and Oregon, USA

To better understand the potential for submerged pre-contact archaeological sites on the Pacific OCS, researchers from San Diego State University and a variety of other academic and government institutions employed terrestrial analogues, paleoshoreline mapping, sediment coring, ground-truthing techniques, and biological assessments to explore potential intact submerged geological landforms offshore California's Northern Channel Islands and central Oregon. This study produced a large dataset and a GIS-based model to predict where intact submerged landforms features may be located on the Pacific OCS.

Report: *in press*

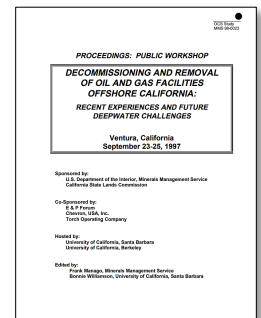


Information Synthesis Studies & Workshops

Completed (1998) — Proceedings: Public Workshop, Decommissioning and Removal of Oil and Gas Facilities Offshore California: Recent Experiences and Future Deepwater Challenges, September 1997

This two-day workshop addressed research, technology, and socio-economic impacts and disposition issues for decommissioning projects offshore California. The proceedings include plenary addresses; sessions on technical, environmental, and disposition studies, and agency lessons learned; position papers from stakeholder groups; and appendices about regulatory framework, environmental review process, platform schematics, and decommissioning decision trees for onshore and offshore facilities.

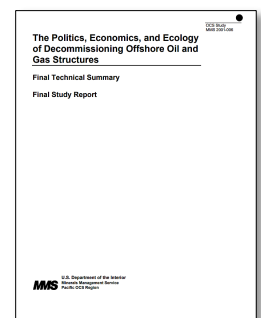
Report (MMS 98-0023): <https://espis.boem.gov/final%20reports/3503.pdf>



Completed (2001) — The Politics, Economics, and Ecology of Decommissioning Offshore Oil and Gas Structures

This study by the University of California, Santa Barbara identified costs and benefits of various options to decommission platforms in the Southern California Bight, described the history of California's artificial reef program, and characterized the political and ecological factors that have contributed to the policy debate over rigs-to-reefs as an alternative to complete removal of platforms. The report includes a case study of rigs-to-reef programs in the Gulf of Mexico.

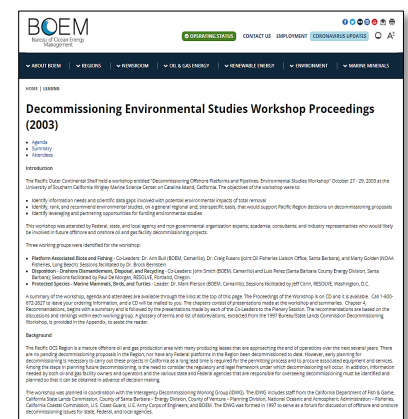
Report (MMS 2001-006): <https://espis.boem.gov/final%20reports/3505.pdf>



Completed (2003) — Decommissioning Environmental Studies Workshop Proceedings (2003)

This workshop addressed information needs and data gaps relating to analyzing potential environmental impacts of total removal of platforms offshore California. It identified environmental studies that would support decisionmaking about decommissioning proposals, and identified leveraging and partnering opportunities for funding the studies. The proceedings include overview presentations about the decommissioning process and environmental and regulatory issues; a case history of decommissioning the 4-H platforms (Hazel, Hilda, Hope, and Heidi); and presentations and summaries about platform-associated biota and fishing, disposition (onshore dismantlement, disposal, and recycling), and protected species (marine mammals, birds, and turtles).

Proceedings: <https://www.boem.gov/Oil-and-Gas-Energy-Program/Leasing/Regional-Leasing/Pacific-Region/Leasing/Decommissioning/Decommissioning-Workshops-Introduction.aspx>



Completed (2019) — Synthesis of Pacific Platform Research

This study by the University of California, Santa Barbara summarized and synthesized three decades of MMS, BOEMRE, and BOEM-funded research about the ecology and biological assemblages of fishes and invertebrates at platforms and natural reefs offshore southern and central California. The synthesis was published in a special issue of the Bulletin of Marine Science, and will further understanding of platform ecology and assemblages, and the influence of the platform assemblages on the Pacific coastal ecosystem.

Report (BOEM 2019-052):

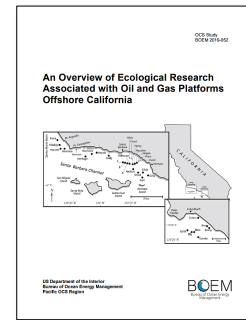
https://espis.boem.gov/final%20reports/BOEM_2019-052.pdf

Bulletin of Marine Science Special Issue (Volume 95, Number 4):

<https://www.ingentaconnect.com/content/umrsmas/bullmar/2019/00000095/00000004>

Annotated Bibliography:

<http://platformresearch.msi.ucsb.edu/>



Completed (2021) — Net Environmental Benefit Analysis of Pacific Platform Decommissioning Scenarios

This study by the University of California, Santa Barbara estimated the community structure and biological productivity of fishes and invertebrates at platforms offshore California under different decommissioning scenarios (full removal, partial removal) and compared them to undisturbed pristine habitat. It modeled and predicted the net environmental consequences to the marine environment for the different scenarios, and determined if partial removal would provide a net environmental benefit compared to full removal.

Study Profile: <https://www.boem.gov/pc-16-x07/>

Journal Article: <https://doi.org/10.1002/eap.2185>

Report: in press

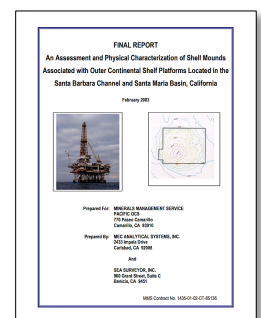


Shell Mound Studies

Completed (2003) — An Assessment and Physical Characterization of Shell Mounds Associated with Outer Continental Shelf Platforms Located in the Santa Barbara Channel and Santa Maria Basin, California

This study by MEC Analytical Systems conducted multibeam hydrographic surveys at 16 platforms offshore southern and central California to identify and delineate shell mounds or debris piles, and discussed factors contributing to shell mound formation. Survey data were used to generate bathymetric maps and cross-sectional profiles of each platform area and to delineate the physical proximity of the mounds to the platforms, mound size and dimensions, and any correlations between water depth, platform orientation, and platform age.

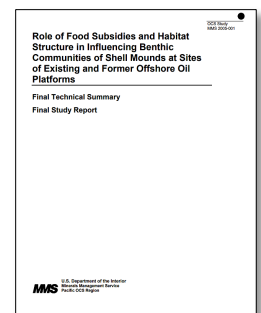
Report: <https://www.boem.gov/2003-Assessment-Shell-Mounds/>



Completed (2005) — Role of Food Subsidies and Habitat Structure in Influencing Benthic Communities of Shell Mounds at Sites of Existing and Former Offshore Oil Platforms

This study by the University of California, Santa Barbara compared the abundance of mobile macroinvertebrates in the Santa Barbara Channel at three types of sites: 1) shell mounds beneath existing offshore platforms (Gina, Houchin, and Hogan), 2) shell mounds without overlying platforms (the former sites of platforms Hazel, Hilda, Hope, and Heidi), and 3) soft-bottom sites. It also examined how the structure of shell mound communities is influenced by the presence of the platform structure and the food subsidies provided by organisms that fall from the platform to the sea floor.

Report (MMS 2005-001): <https://espis.boem.gov/final%20reports/3405.pdf>



Completed (2005) — MMS Feasibility Study Final Report – Sampling of Outer Continental Shelf Shell Mounds Associated with Platforms Located in the Santa Barbara Channel and Santa Maria Basin

This study by Weston Solutions, Inc. and SAIC determined the viability of sampling representative shell mound sites under platforms offshore southern and central California to determine their internal structure and chemical and biological characteristics, including potential contaminants, toxicity, petrogenic hydrocarbons, and trace metals. Feasibility of sampling was based on platform-screening criteria (depth, bottom slope, age, shell mound size, and distance from port) and logistical and technical issues, safety, and scientific utility.

Report: <https://www.boem.gov/2005-Sampling-Shell-Mounds/>



Completed (2007) — Physical and Chemical Characteristics of the Platform Gina Shell Mound

This study by Weston Solutions, Inc. and SAIC provided information on the physical and chemical characteristics of the shell mound under Platform Gina. Sediment cores were collected, sub-sampled by strata, and analyzed for grain size and chemical constituents (e.g., organic carbon, sulfides, metals, volatile and semi-volatile organics, and petroleum hydrocarbons). It also compared chemical concentrations in the mound and in associated drilling muds and cuttings.

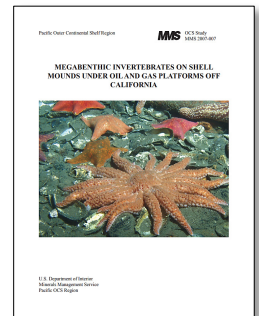
Report: <https://www.boem.gov/2007-Gina-Shell-Mound/>



Completed (2008) — Megabenthic Invertebrates on Shell Mounds Under Oil and Gas Platforms off California

This study by the University of California, Santa Barbara identified and quantified the invertebrate fauna on deepwater shell mounds under 15 platforms offshore southern and Central California (Edith, Ellen, Elly, Eureka, C, Gail, Gilda, Grace, Holly, Harmony, Hondo, Harvest, Hermosa, Hidalgo, and Irene). It compared important elements of the fauna to those found on neighboring soft sediments and natural reefs, and investigated elements of their potential ecological and conservation importance.

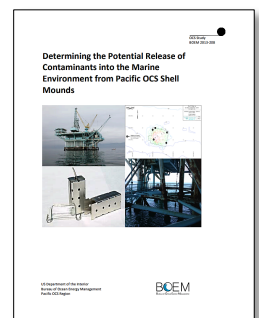
Report (MMS 2007-007): <https://epis.boem.gov/final%20reports/4929.pdf>



Completed (2014) — Determining the Potential Release of Contaminants into the Marine Environment from Pacific OCS Shell Mounds

This study by Applied Marine Sciences, Inc. assessed the potential release of PAHs (polynuclear aromatic hydrocarbons, the toxic component of crude oil) from platform shell mounds into surrounding waters. Two platforms in the Santa Barbara Channel (A and B) and one control site near each platform were studied. Findings provided insights into the source of the detected PAHs and their weathering patterns, spatial patterns in the concentrations and compositions, and their potential harm to marine organisms.

Report (BOEM 2013-208): <https://epis.boem.gov/final%20reports/5382.pdf>



Technology & Cost Studies

Ongoing (2000-2022) — Characteristics and Contributions of Noise Generated by Abrasive Cutting During Conductor-removal Operations

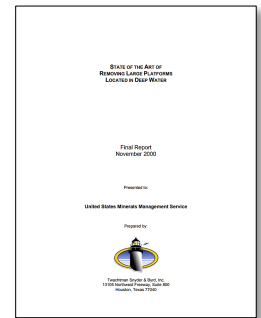
This study by Tetra Tech, Inc., in collaboration with Freeport-McMoRan Oil and Gas LLC (operator of Platforms Hermosa, Harvest, and Hidalgo, offshore Santa Barbara County, California), is collecting empirical data on the sound characteristics of cutting platform conductor pipes and the relative contribution of that sound to the ambient soundscape. The findings will improve BOEM's ability to assess impacts of conductor-removal operations to protected marine mammal, fish, and invertebrate species of interest during decommissioning and to develop appropriate mitigation strategies.

Study Profile: <https://www.boem.gov/PC-20-x05>

Completed (2000) — State of the Art of Removing Large Platforms Located in Deep Water

This study by Twachtman Snyder & Byrd, Inc. reviewed the technology available for removing platforms in water depths exceeding 400 feet, including three platforms offshore southern and central California (Hidalgo, Gail, and Harmony). Three removal methods were evaluated: complete removal, partial removal (reefing in place), and remote reefing (reefing off site). Decommissioning cost estimates were prepared for the three platforms and removal methods, including an evaluation of cost sensitivity (risk) issues and the cost of alternative technologies.

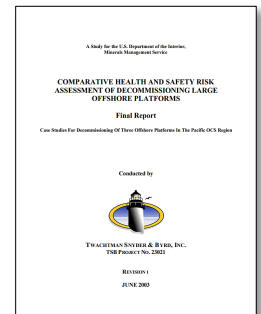
Report: <https://www.bsee.gov/sites/bsee.gov/files/tap-technical-assessment-program//372aa.pdf>



Completed (2003) — Comparative Health and Safety Risk Assessment of Decommissioning Large Offshore Platforms; Final Report, Case Studies for Decommissioning of Three Offshore Platforms in the Pacific OCS Region

This study by Twachtman Snyder & Byrd, Inc. provided a comparative risk assessment of the decommissioning options for removing three platforms offshore southern and central California (Eureka, Hidalgo, and Irene). The assessment considers the impact of specific removal methods such as diver versus non-diver operations, and focuses on health and human safety. Findings are relevant to all similar platform removals.

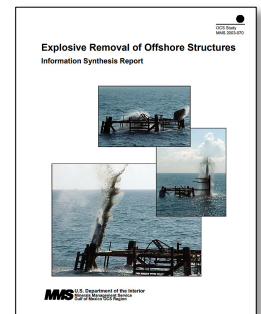
Report: <https://www.bsee.gov/sites/bsee.gov/files/tap-technical-assessment-program//459aa.pdf>



Completed (2004) — Explosive Removal of Offshore Structures: Information Synthesis Report

This study by Continental Shelf Associates, Inc. summarized information on four topics associated with the explosive removal of offshore structures: 1) explosive removal methods; 2) physics of underwater explosions; 3) effects of underwater explosions on three faunal groups: marine fishes, turtles, and mammals; and 4) mitigation and monitoring of the effects. The report includes a summary chapter with recommendations for the use of explosives for platform removal in the Gulf of Mexico OCS that may have application for the Pacific OCS.

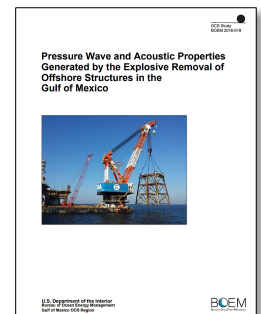
Report (MMS 2003-070): <https://espis.boem.gov/final%20reports/3042.pdf>



Completed (2016) — Pressure Wave and Acoustic Properties Generated by the Explosive Removal of Offshore Structures in the Gulf of Mexico

This study by CSA Ocean Sciences, Inc. refined explosive acoustic models developed by MMS to define impact zones/exclusion areas necessary for issuance of marine mammal incidental take permits. Field measurements of explosives used for decommissioning in the Gulf of Mexico and validation of existing models are useful when considering the potential use of explosives for decommissioning of Pacific platforms.

Report (BOEM 2016-019): <https://espis.boem.gov/final%20reports/5505.pdf>



Completed (2020) — 2020 Decommissioning Cost Update for Pacific Outer Continental Shelf Region Facilities

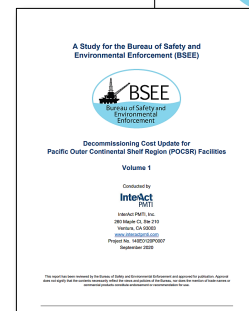
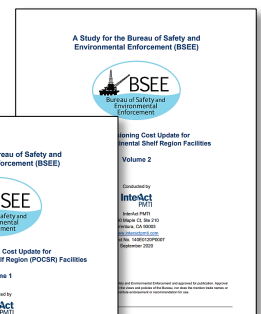
This study by InterAct PMTI evaluated appropriate techniques for decommissioning offshore oil and gas facilities in the Pacific Region, and developed estimates of associated decommissioning costs. The cost information will be used to 1) assess a lessee's financial ability to comply with decommissioning requirements and 2) determine supplemental bond requirements. This 2020 cost report supersedes the previous report, which was issued in 2014 and amended in 2016.

Project Information: <https://www.bsee.gov/research-record/decommissioning-cost-update-for-pacific-outer-continental-shelf-region-facilities>

Report:

Volume 1: <https://www.bsee.gov/sites/bsee.gov/files/vol-1-a-study-for-the-bureau-of-safety-and-environmental-enforcement-bsee-final-9-10-2020.pdf>

Volume 2: <https://www.bsee.gov/sites/bsee.gov/files/vol-2-a-study-for-the-bureau-of-safety-and-environmental-enforcement-bsee-final-9-8-2020.pdf>



For information about BOEM-funded research:

Environmental Studies Program: <https://www.boem.gov/Studies/>

Pacific OCS Environmental Studies: <https://www.boem.gov/Pacific-Studies/>

Environmental Studies Program Information System (ESPIS): <https://marinecadastre.gov/espis/#/>

For information about BSEE's Technology Assessment Program (TAP):

TAP Homepage: <https://www.bsee.gov/what-we-do/research/tap>

TAP Fact Sheet: <https://www.bsee.gov/newsroom/fact-sheets/technology-assessment-program>

For information about Pacific Region Decommissioning:

Decommissioning – Pacific (BOEM): <https://www.boem.gov/Decommissioning/>

Pacific Region Federal OCS Decommissioning (BSEE): <https://www.bsee.gov/stats-facts/ocs-regions/pacific/pacific-region-federal-ocs-decommissioning>

