

May 2018



UNIVERSITY OF CALIFORNIA



# Refugio Beach Oil Spill Natural Resource Damage Assessment Update

## About the Spill

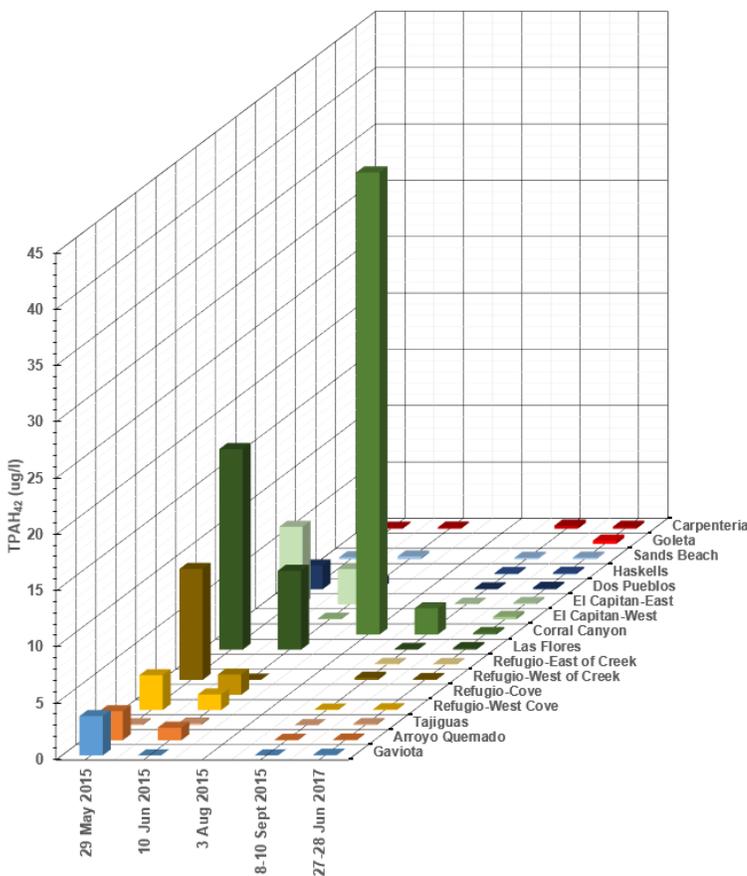
On May 19, 2015, a pipeline owned and operated by Plains All America Pipeline, Inc. ruptured near Refugio State Beach in Santa Barbara County, California, sending oil into the ocean. In response, state and federal natural resource trustee agencies are conducting a Natural Resource Damage Assessment (NRDA). This process is compensatory, not punitive; it is separate and independent from the criminal trial currently underway. An NRDA assesses exposure to spilled oil, documents spill-related injuries to the environment and its public uses, and provides compensation through environmental restoration projects. The spiller, Plains, is responsible to pay the NRDA costs, known as damages, for assessment work and restoration projects.

## Injury Assessment Updates

The assessment is nearing completion. Here, we present some of the results to date.

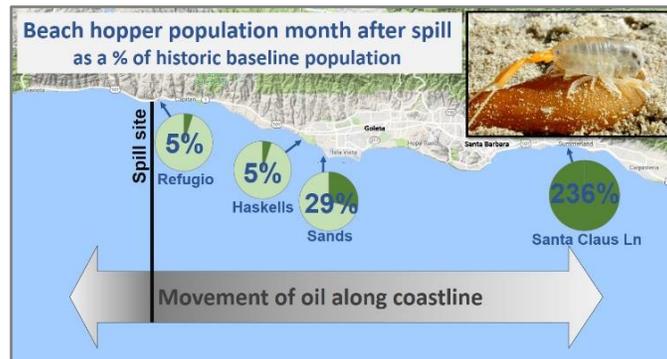
### Coastal Habitats and Fish

Porewater TPAH<sub>42</sub> Concentrations

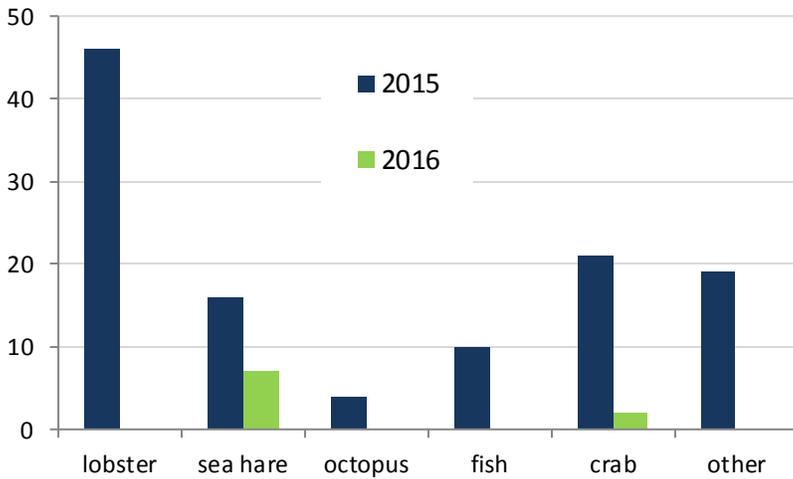


Porewater sampling tests the amount of oil hydrocarbons buried in the sandy beach intertidal zone. Sampling after the spill (May-September 2015) found elevated levels of oil hydrocarbons from Gaviota to Dos Pueblos. Two years later, in 2017, the levels were much lower across all beaches.

Beach hoppers are one of the most common invertebrates in the sandy beach ecosystem. Many birds depend on them as a food source. After the spill, beach hopper populations were far lower than in other years, especially near the spill site.



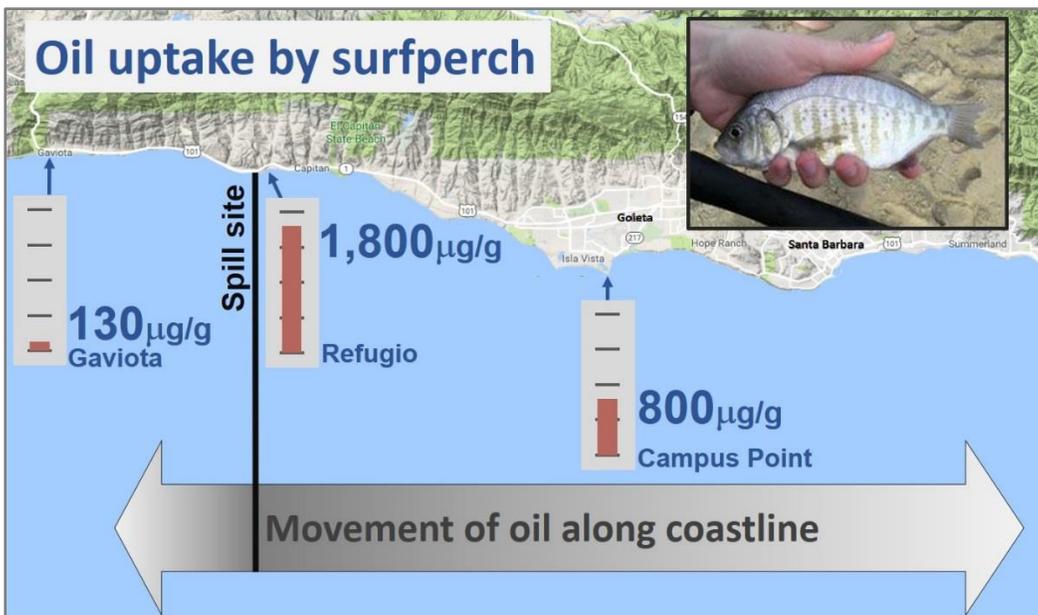
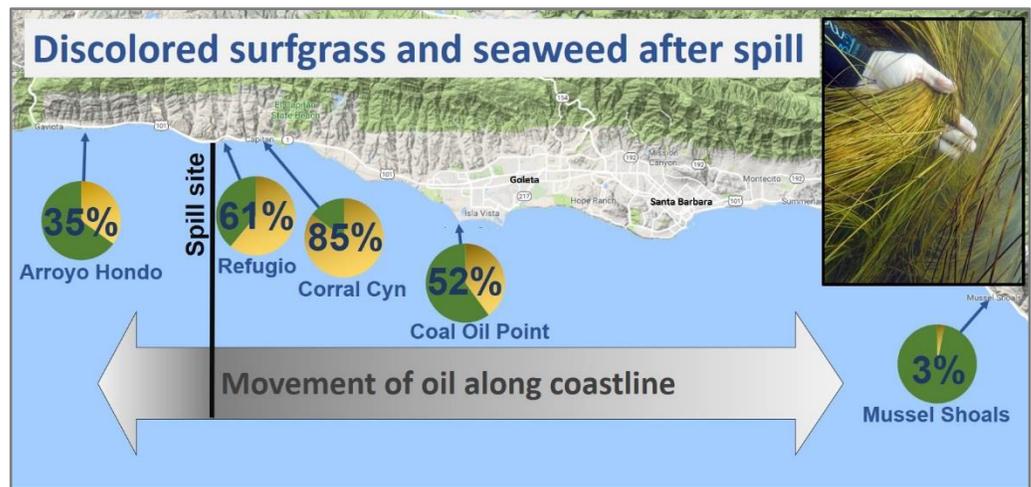
### High Counts of Dead Fish and Invertebrates at Refugio



Numerous dead organisms were found on beaches in the aftermath of the spill. Here, the one-day high count at Refugio State Beach is compared with the high count from surveys conducted a year later.



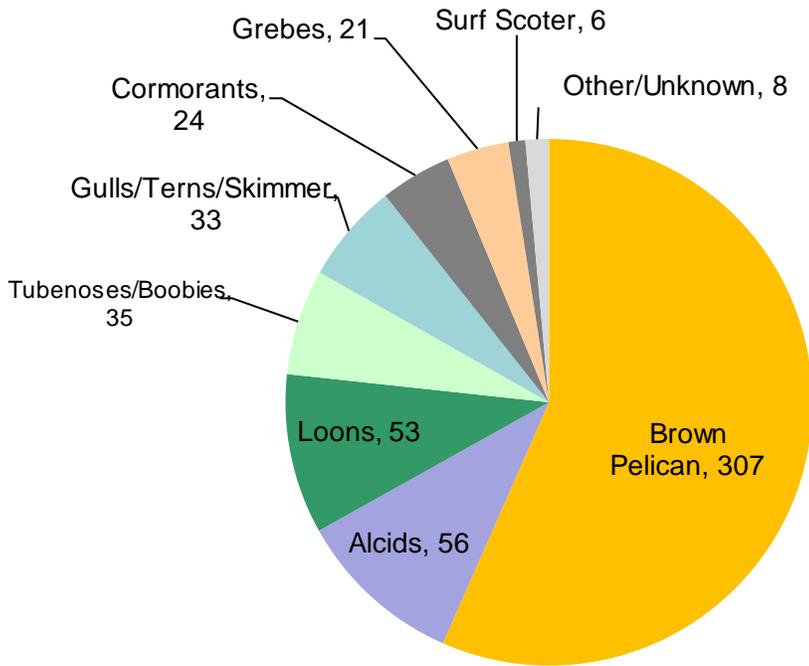
In the summer after the spill, much of the surfgrass and seaweed in shallow waters were bleached and discolored. This was especially the case between Refugio and Coal Oil Point. The following year, less than 10% of the surfgrass and seaweed was discolored, suggesting recovery from the spill.



Surfperch live in shallow nearshore waters and were giving birth to live young at the time of the spill. The diagram shows levels of naphthalene equivalents, oil compounds, found in the bile of barred surfperch five days after the spill. Levels were extremely elevated in perch from the Refugio area, and high levels continued east to Goleta.

**Birds**

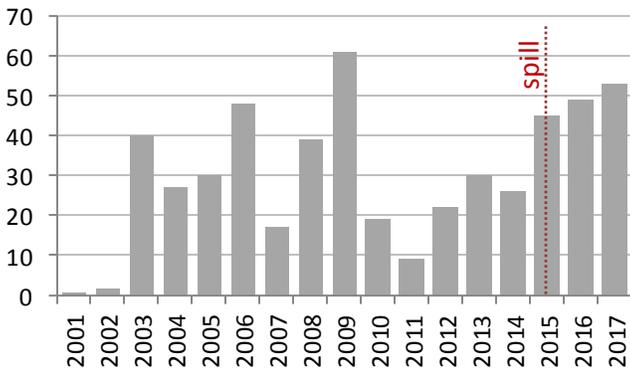
**Estimated Mortality by Species Group (n=542)**



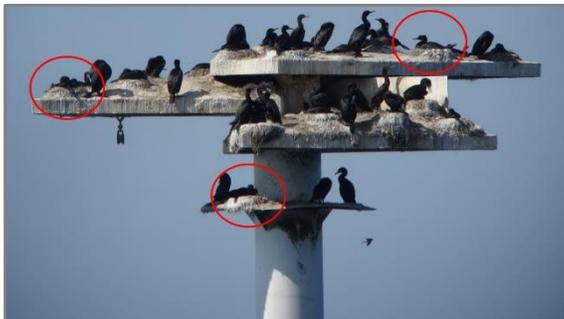
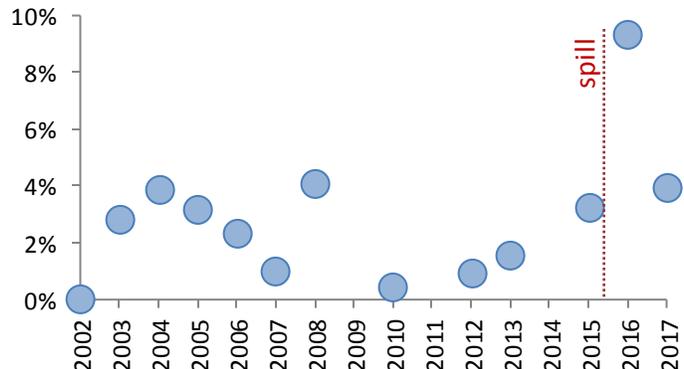
In the weeks after the spill, wildlife responders collected 66 live birds (of which 46 were rehabilitated and released) and 203 dead birds. The Trustees estimated total mortality from the spill at 542 birds. This estimate takes into account birds that may have been missed due to scavenging, inaccessible beaches, and other factors, as well as carcasses collected that were not spill related.

**Snowy Plovers:** While daily monitoring at Coal Oil Point Reserve found that many plovers were oiled, none were found dead and the population stayed level. During the spill, eggs had already been laid and adults were caring for chicks. Fledging success during and after the spill was within normal ranges, but there was an unusual spike in infertile eggs the year after the spill.

**Snowy Plover Chicks Fledged**



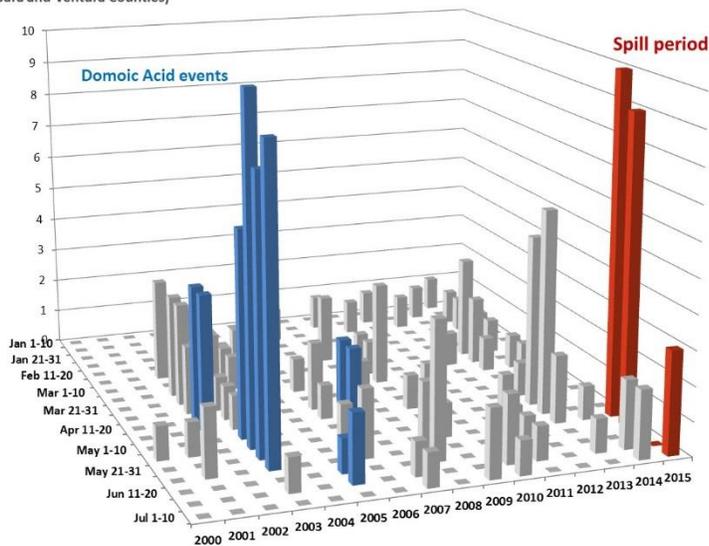
**Snowy Plover Egg Infertility Rate**



**Brandt's Cormorants:** The cormorant colony at "Bird Island" near Haskells Beach was monitored from May 22 thru June 8 while adults were incubating eggs and tending chicks during the spill. On June 8, at least 13 chicks were being tended in 12 nests, suggesting normal productivity. The photo at left shows one of the four platforms on May 28, with nesting birds circled.

## Mammals

Dolphin strandings by month  
(Santa Barbara and Ventura Counties)



Unusually high numbers of California sea lions and long-beaked common dolphins were found dead or dying on beaches in the aftermath of the spill. The graph at left illustrates the spike in dead beached dolphins (in red) compared to known mortality events in the past that were associated with naturally occurring domoic acid (in blue).



## Environmental Restoration Project Ideas

This list of preliminary restoration project concepts includes those that were suggested by the public, local experts, and resource management agencies. They represent a suite of projects under consideration that would compensate for the nature and extent of the natural resource injuries caused by the spill.

- Remove creosote seawall at Ellwood Beach in the City of Goleta (see photo below)
- Restore dune habitat by removing invasive plants from sandy beaches
- Restore red abalone in Marine Protected Areas along the Gaviota coast
- Restore eelgrass in Refugio Cove
- Remove marine debris (e.g. fishing gear) from waters near the mainland and Channel Islands
- Increase capabilities to rehabilitate marine mammals in distress
- Increase capabilities to assist/release whales that are entangled in fishing gear or other debris
- Protect brown pelican nesting habitat at Anacapa Island by removing invasive cape ivy
- Reduce fishing conflicts with seabirds
- Provide or enhance opportunities for coastal and marine recreation

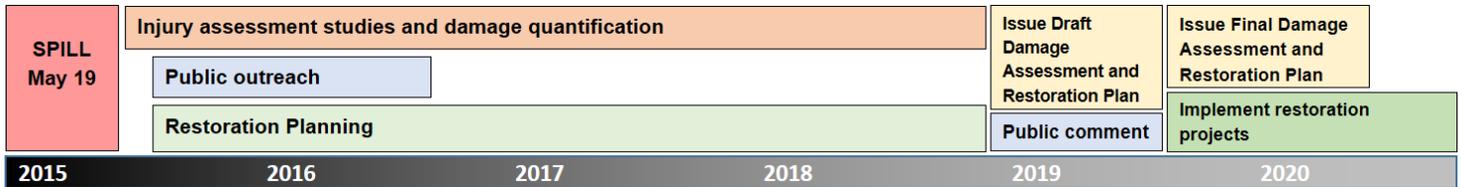


## Next Steps

In addition to the results presented above, the Trustees are analyzing data from a number of other species and habitats, as well as impacts to human recreational uses.

Once the injury assessment is complete, the Trustees will prepare a Draft Damage Assessment and Restoration Plan for public comment later in the year. This document will include proposed restoration projects intended to compensate the public for the lost natural resources. After considering the public comments, the Trustees will make revisions and release a Final Damage Assessment and Restoration Plan, which will guide future restoration actions.

At the same time, the Trustees are seeking funds from Plains to implement the restoration projects.



## The Trustees

The following natural resource trustee agencies are working together in cooperation with Plains Pipeline to examine the impacts from the Refugio Beach oil spill:

- California Department of Fish and Wildlife
- California State Lands Commission
- California Department of Parks and Recreation
- University of California
- US Fish and Wildlife Service
- National Park Service
- Bureau of Land Management
- National Oceanic and Atmospheric Administration

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These agencies are identified as Trustees under state and federal laws. They have formed multi-agency teams that include local experts, to examine the impacts of the spill. Also serving in an advisory capacity and providing information are Santa Barbara County, the cities of Goleta and Santa Barbara, other local cities and counties, the US Navy, and several bands of the Chumash.

