

Final Supplement to Cosco Busan Oil Spill Final Natural Resource Damage Assessment and Restoration Plan/Environmental Assessment, August 2019

Revised Section 4.3.3.2

Restoration of Herring and Subtidal Habitats in San Francisco Bay

The United States Fish and Wildlife Service (USFWS), the National Park Service (NPS), the Bureau of Land Management (BLM), the National Oceanic and Atmospheric Administration (NOAA), the California Department of Fish and Wildlife (CDFW) formerly the California Department of Fish and Game, and the California State Lands Commission (CSLC) are the Trustees for the Cosco Busan oil spill and have received comments and new information that are pertinent to potential options for restoring herring and intertidal and subtidal habitats injured by the spill. Consequently, the Trustees prepared, and invited public review and comment on a Supplement to the 2012 Cosco Busan Final Natural Resource Damage Assessment and Restoration Plan/Environmental Assessment (DARP/EA). This document proposes the pier piling repair and replacement project as a preferred alternative for implementation.

The pier piling replacement project was discussed as a non-preferred alternative for the restoration of fish and other aquatic organisms in Section 4.3.3 of the Final DARP. It has come to the Trustees' attention that there are new, cost-effective and innovative ways to enhance subtidal habitats by repurposing existing infrastructure (abandoned piers and pilings not eligible for removal) using a commercially available piling-repair jacket that encapsulates creosote-treated piles, providing a non-toxic surface for herring spawn and shellfish. The Trustees now propose the pier piling repair and replacement project as another preferred alternative for the restoration of herring and intertidal and subtidal habitats. This project will not take the place of on-going eelgrass restoration, which is currently underway. It will enhance the eelgrass work and expand habitat for spawning herring and other subtidal organisms. This is not a new request for new funding but will use funds that are remaining under the settlement.

The Trustees incorporated by reference the Final DARP/EA, which is available at:

<https://www.wildlife.ca.gov/OSPR/NRDA/cosco-busan>.

The discussion below is intended to supplement the "Restoration Alternatives" and "Other Restoration Projects Considered" discussions in Section 4.3.3.2 of the Final DARP/EA. This discussion also supplements the "No Action Alternative" and "Cumulative Impacts" sections.

The pier piling replacement and enhancement project went out for a 30-day public comment period on April 1, 2019. The Draft Supplement was added to the California Department of Fish and Wildlife's website for the Cosco Busan spill <https://www.wildlife.ca.gov/OSPR/NRDA/cosco-busan>, and on the San Francisco Bay Joint Venture website <http://www.sfbayjv.org/>. All comments were due May 1, 2019. The trustees did not receive any comments.

Preferred Alternative

Pier and piling repair and replacement for subtidal habitat enhancement for herring spawn

Proposed Preferred Alternative	BENEFITS
Pier piling repair and replacement	Herring, shellfish, scoters

Repurposing Derelict Piers and Pilings

Pacific herring (*Clupea pallasii*) spawning events in San Francisco Bay (SFB) begin in November and continue through March. Herring move inshore to shallow, protected bays, and spawn on available substrates including submerged aquatic vegetation (eelgrass), kelp, rocky intertidal, and man-made structures, such as piers, pilings, and rip-rap.

Creosote-treated piers and pilings are common along the SFB shoreline (Fig. 1) and while efforts are underway to remove these pilings, there are some areas where pilings are *not* eligible for removal because they occur in a sensitive habitat, are important to wildlife or have historical value (Werme et al. 2010). In areas where pilings will remain, there are opportunities for restoration by repurposing these existing structures using a commercially available, inexpensive, and easy to install piling encapsulation technique (Fig. 2). The goal of the project is to create novel substrate to act as a non-toxic surface for fish spawning and invertebrate settlement in subtidal habitats.

The piling-repair system or jacket (Fig. 2b) and rebar cage (Fig. 2c) are designed to stabilize deteriorated piles, preventing them from breaking and becoming marine debris. The external surface and structural cage on the outside can further provide a non-toxic settling surface for vital fish (Fig. 2d) and invertebrate populations (Fig. 2e). Existing infrastructure with commercially available materials may be a cost-effective alternative to enhancing subtidal habitat and will be enhanced by creating a self-sustaining, and low maintenance reef with multiple habitat and wildlife benefits (Fig. 3).

Affected Environment

The pilot effort of the project is located at the El Campo Marina, 3700 Paradise Drive, Tiburon, CA. The project may be expanded to additional sites in San Francisco Bay. This area is described in section 2.0 of the Final DARP/EA.

Environmental Consequences (Beneficial and Adverse):

Overall, this project is anticipated to have only minimal adverse environmental consequences and multiple beneficial impacts. In reaching this conclusion, the Trustees evaluated several types of potential impacts, as described below.

1. **Biological Impacts** – This project will have beneficial biological impacts by providing non-toxic herring spawning substrate and structure to improve recruitment of shellfish and other invertebrates. Diving ducks and other avian species may benefit by feeding on the invertebrates growing on the encapsulated pilings. The project also has the potential for some adverse biological impacts associated with the installation process, but these impacts are expected to be minor and short-term. Any biological communities that have already established themselves on the piles would be eliminated. However, this would be a one-time occurrence without long-term effects. Future generations of biota would colonize the encapsulated pile, thus reaping the benefits of the project.

2. **Physical Impacts** - This project may create benefits to the physical environment, such as water, air, sediments, etc., by reducing the release of contaminants from the un-encapsulated piles. Further, the piling repair jackets are designed to provide support for a deteriorated pile and will prevent breakage causing marine debris. These benefits are likely to be minor, but long-term. To the extent there are any adverse impacts to the physical environment, they are expected to be negligible.
3. **Human Impacts** - The Trustees do not anticipate that there will be any impacts from this project on socio-economics, aesthetics, health and safety, historical properties, etc.
4. **Cumulative Impacts** - The Trustees evaluated the pier piling repair and replacement project in the Supplement in conjunction with other known past, proposed or foreseeable closely related projects that could potentially add to or interact with the these projects within the affected area to determine whether significant cumulative impacts may occur. All of the past and proposed subtidal habitat enhancement efforts for this region are part of a long-term strategy to recreate thriving subtidal habitats in the greater San Francisco Bay area. The project described in the Supplement, considered along with other restoration projects, will result in cumulatively beneficial impacts to subtidal plants and wildlife, including the last commercially viable herring fishery. The project will provide additional habitat to the support the recovery of sensitive shellfish communities, resulting in greater habitat complexity, diversity, and productivity.

Probability of Success:

The probability of success for this project is high. Herring readily use multiple subtidal surfaces, including pilings, as spawning substrates. Invertebrates are known to settle quickly on novel hard substrate within weeks of deployment.

Performance Criteria and Monitoring:

The project will monitor the treatment piles for herring spawn and invertebrate settlement. In addition, wildlife cameras may be installed to determine the abundance, diversity, and behavior of diving ducks near the piles.

Evaluation

The Trustees have evaluated this project using the OPA NRDA threshold and additional screening criteria developed to select restoration projects as part of the DARP/EA, and concluded that this project is consistent with and meets the objectives of these selection factors. They believe that this type and scale of project will provide tangible benefits to Pacific Herring injured because of the spill and have selected this project as a preferred alternative.

No Action Alternative

Under NEPA, the Trustees also considered a “no action” alternative. Under this alternative, the Trustees would take no direct action to restore injured natural resources or to compensate for lost services. Instead, the Trustees would rely on natural processes for recovery of the injured natural resources. However, while natural recovery may occur over time for many of the injured resources, the interim losses suffered by those resources would not be compensated. Furthermore, this technically feasible project alternative exists to compensate for these losses. Thus, the Trustees reject the “no action” alternative and instead have selected the pier piling repair and replacement project, described above, as a preferred alternative.

NEPA mandates that federal agencies evaluate the environmental impacts of no action. By definition, the no action alternative lacks physical interaction with the environment. Accordingly, the no action alternative would cause no significant direct, indirect, or cumulative impacts to any of the elements of the environment listed above. However, if the Trustees undertook no action, the environment would not benefit from the ecological uplift created by active restoration.

Distribution of Herring spawning areas and artificial structures in San Francisco Bay

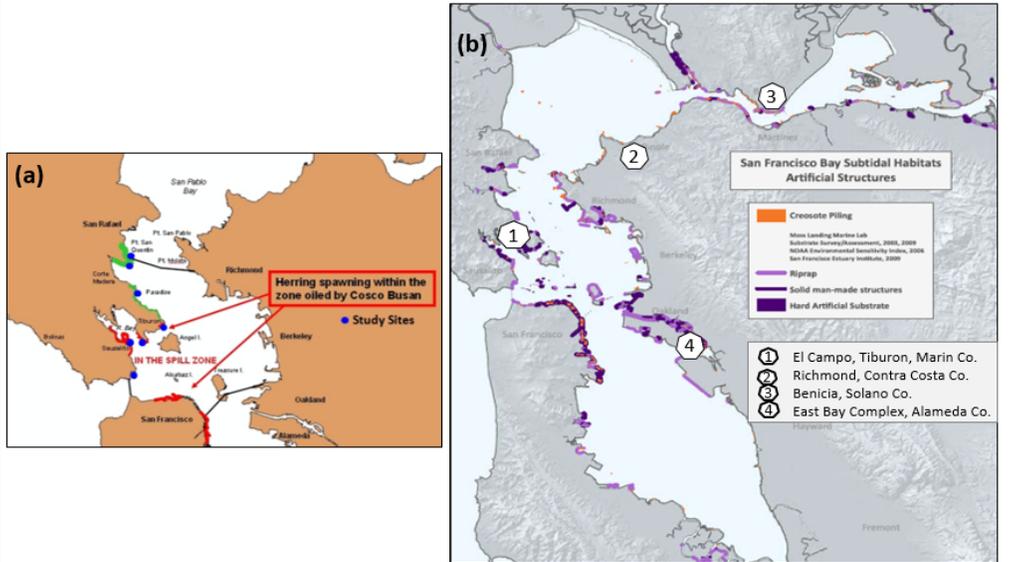


Figure 1: Distribution of herring spawning areas within the Cosco Busan Spill Zone, sampling sites and areas of proposed restoration (a). Distribution of artificial structures in the San Francisco Bay (b) with four proposed sites to enhance subtidal habitat by encapsulating derelict creosote-treated piles. Pilot site at (1) El Campo Marina, Tiburon, Marin County and three additional sites at (2) Richmond/Pinole Complex, Contra Costa County; (3) Benicia, Solano County; and (4) East Bay Complex (Rodeo Point), Alameda County (adapted from Subtidal Habitat Goals report).

Subtidal habitat enhancement using a commercially available piling repair jacket

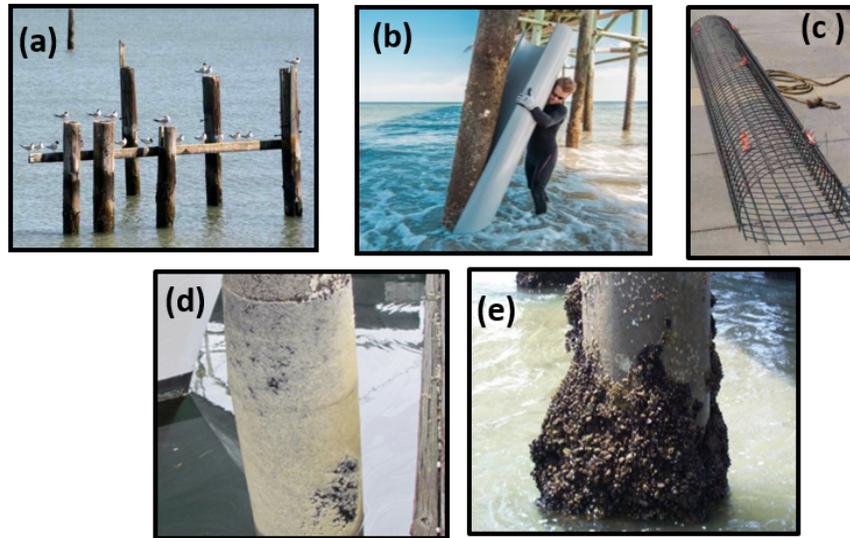


Figure 2: Existing infrastructure like derelict piers and pilings (a) are wrapped with a commercially-available, low cost, and easy to install piling repair systems (b) to seal creosote-treated wood from leaching into the water. Pilings will be surrounded by structural support rebar or wire mesh (c) to provide a durable, non-toxic attachment surface for Pacific herring spawn (d) and shellfish (e).

