

responsible parties in January 1989. The complaints alleged claims for natural resource damages, costs, and penalties pursuant to the Clean Water Act, 33 U.S.C. 1251 *et seq.*, Title III of the National Marine Sanctuaries Act, 16 U.S.C. 1431 *et seq.* (formerly the National Marine Protection, Research and Sanctuaries Act, "MPRSA"), the California Harbors & Navigation Code 293 and 294, and other State Law.

In August 1994 the parties settled this matter in a Consent Decree entered by the Federal District Court for the Northern District of California for a total of \$6,400,000. As part of the natural resources damage settlement, \$4,916,430 has been allocated for the restoration of common murres in central California. The common murre restoration project is the subject of this Final Plan. An additional \$500,000 has been allocated for the acquisition of habitat for the marbled murrelet (*Brachyramphus marmoratus*), a species that is listed under the Federal and State Endangered Species Acts and was impacted by the spill. The murrelet project is being carried out under State lead and is included, but not described in detail, in this Final Plan. The remainder of the \$6,400,000 collected in the settlement was for penalties and costs incurred as a result of the spill.

A Trustee Council, comprised of representatives of each Trustee (California Department of Fish and Game, National Oceanic and Atmospheric Administration, and U.S. Fish and Wildlife Service) was established to review and select restoration actions for natural resources injured by the spill. This Council will meet regularly during the duration of the project to review progress and make necessary changes. The Trustee Council has approved this Final Plan for restoration of common murres.

The goal of the common murre restoration project is to recolonize common murres at historic breeding colonies in the areas where colonies were extirpated or severely depleted by the APEX HOUSTON oil spill. Social attractants (decoys and recorded vocalizations of common murres) will be used to attract common murres to nest at historic nearshore colonies in the vicinity of San Francisco and Monterey. Common murres will be monitored at these sites and at reference sites in the vicinity of Point Reyes and the Farallon Islands in order to evaluate and refine the recolonization project. Parameters to be monitored include colony size, reproductive success, behavior, and phenology of common murres. In addition, anthropogenic factors (e.g., boat disturbance, aircraft overflights,

oiling) and natural factors (e.g., predation, diet) that may affect the success of recolonization efforts will be monitored. This project may take a minimum of 10 years to achieve success because common murres have inherently low reproductive rates and do not breed until they are several years old.

II. Introduction

Nearshore breeding colonies of common murres (*Uria aalge*) throughout central coastal California (Point Arena to Big Sur) decreased by 60.1 percent between 1980 and 1986 (Takekawa et al. 1990). This population decline was attributed to high mortality from gill-net fishing, oil spills (including the Apex Houston spill), and a severe El Niño-Southern Oscillation event in 1982-1983 (Takekawa et al. 1990, Swartzman and Carter 1991, Carter et al. 1992). The APEX HOUSTON oil spill, which occurred principally between San Francisco and the Monterey Peninsula, killed nearly 9,000 seabirds in February 1986 (Siskin et al. 1993). This mortality included approximately 1,293 rhinoceros auklets (*Cerorhinca monocerata*), 180 small alcids, 12 marbled murrelets (*Brachyramphus marmoratus*), and 1,206 other birds (including loons, grebes, scoters, cormorants, shorebirds, and gulls) (Siskin et al. 1993). In addition, approximately 6,000 common murres were killed (Siskin et al. 1993). The common murre colony at Devil's Slide Rock was found to be abandoned, subcolonies at Castle Rocks disappeared, and other central coastal breeding sites (e.g., Hurricane Point Rocks, Point Reyes) were greatly reduced after the spill (Takekawa et al. 1990, Swartzman and Carter 1991, Carter et al. 1992) (Figure 1).

In the early 1900's, common murres bred at Prince Island in southern California (Carter et al. 1992). However, the central California population currently represents the southernmost range for breeding common murres in the Pacific. Future oil spills and other catastrophic events (e.g., disease, predation, climate change) could result in the extirpation of this population as well as a reduction in the species' geographic range. The restoration of former common murre colonies would aid in securing the central coastal California common murre population and would spread the risk of future disasters among colony sites over a wider range of the California coast.

The goal of this project is to restore common murres at historic breeding colonies in areas where colonies were extirpated or severely depleted by the

APEX HOUSTON oil spill. The project will be conducted over approximately 10 years. A total of \$4,916,430 was obtained for this project via the court settlement.

III. Purpose

The restoration funds were recovered under the Federal Clean Water Act and National Marine Sanctuaries Act, the California Harbors and Navigation Code §§ 293 and 294, and other State Law. A Trustee Council, comprised of representatives of each Trustee, was established to review and select restoration actions. As part of the settlement in the APEX HOUSTON litigation, \$4,916,430 has been allocated for the restoration of common murre colonies that suffered damage from the APEX HOUSTON oil spill. This project should aid in restoring the central California common murre population at historic breeding colonies in areas where colonies were extirpated or severely depleted by the APEX HOUSTON oil spill. Restoring this population to a larger part of its historic range will aid in spreading the risk of future catastrophic events (e.g. oil spills, disease, storms) between more colony sites and over a broader section of the California coast.

IV. Restoration Alternatives Considered and Selected

(A) Alternatives Considered

The Federal Clean Water Act and other Federal law states that natural resources damages "shall be used to restore, rehabilitate, or acquire the equivalent of" natural resources damaged or destroyed as a result of a discharge of oil (Clean Water Act § 311(f)(5), 33 U.S.C. § 1321(f)(5)). In addition, the Service's Natural Resource Damage Assessment program in Region 1 has found the following criteria helpful in setting priorities when evaluating options for restoration of natural resources damaged due to releases of oil or hazardous substances (Wickham et al. 1993):

- (1) On-site and in-kind, in which restored resources occur at the injured site and are physically and biologically the same as those lost;
- (2) Off-site and in-kind, in which restored resources occur at a site other than that injured, but similar physical and biological resources are restored;
- (3) On-site and out-of-kind, in which restored resources at the impact site are physically and biologically different from those lost;
- (4) Off-site and out-of-kind, in which restored resources are at a site other than the impact site and are physically