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Appendix D6

Create/Enhance/Protect California Brown Pelican Roost Habitat

D6.1 GOALS AND NEXUS TO INJURY

The goal of this action is to restore non-breeding California brown pelican habitat by enhancing and protecting coastal roosts along the Southern California mainland. Eggshell thinning and elevated levels of DDT have been documented in California brown pelican eggs in the Southern California Bight (SCB) (Kiff 1994, Fry 1994). Section 5.1.1 provides a detailed description of seabird nexus to the injuries of the Montrose case.

D6.2 BACKGROUND

Communal roost sites are essential habitat for California brown pelicans (Gress and Anderson 1983). The primary roost sites for brown pelicans in the western United States are offshore rocks and islands on the outer coast and sand islands within large estuaries (Briggs et al. 1987, Jaques 1994). Intense shoreline development, wetland filling, and other habitat alteration has eliminated much of the natural onshore roost habitat. Loss of historical roost habitat from human encroachment has been partially offset by the addition of artificial structures, such as jetties, breakwaters, and floating structures. Pelicans now rely heavily on these types of structures for roost sites in California (Jaques et al. 1996). Few roosts along the mainland fall under the jurisdiction of natural resource agencies, and several major roost sites on privately owned structures have been lost in recent years.

The basic requirements for California pelican roosts include (1) terrestrial substrates where pelicans can keep their bodies dry while resting and maintaining their plumage, (2) a buffer from mammalian predators and human disturbances, and (3) presence of prey resources within energetically efficient distances (Jaques et al. 1996). Human disturbance at many existing roost sites in Southern California is high relative to other portions of their range. The most frequent cause of this disturbance is recreational activities and the most heavily disturbed habitats used by pelicans are estuaries (Jaques and Anderson 1987)

D6.3 PROJECT DESCRIPTIONS AND METHODS

The goal of this action is to improve roost sites for California brown pelicans along the Southern California mainland. Several methods are being considered to improve roosting locations, including creation, enhancement, and protection. Site selection and specific methods would be determined through further project development and consultation with appropriate stakeholders. All projects would have a complementary interpretive element such as educational panels or displays.

Roost site creation projects would fill in gaps in the availability of large-capacity, high-quality roosts along the Southern California coastline. Potential creation projects that would be explored include placing a large barge or roosting structure in outer Santa Barbara Harbor, Aqua Hedionda (San Diego County), and Batiquitos Lagoon (San Diego County). In 2005, the American Trader Trustee Council installed a floating platform in the San Diego Bay National Wildlife Refuge to provide a secure roosting location for California brown pelicans. A monitoring program has been developed to evaluate the success of the project. This project will provide valuable information for the creation of additional roost sites in Southern California.

Roost site enhancement projects would be designed to increase the capacity and quality of existing roost sites. Potential enhancement projects include adding rock riprap to the tops of selected jetties, and breakwaters where pelican use is limited by high tides and large waves. Potential sites include the Zuniga Point jetty, the Channel Islands Harbor breakwater, and the Ventura Harbor breakwater.

California brown pelican roost site protection would be aimed at reducing human disturbance at selected coastal wetlands, breakwaters, jetties and offshore rocks through educational outreach panels and signs. Installation of fence barriers to prevent disturbance of favored pelican roost habitat at the tips of selected jetties would be considered if the local harbor districts would support this measure. Potential sites include the Santa Clara River mouth, Malibu Lagoon, Ventura Harbor, Channel Islands Harbor, and the outer tips of King Harbor, Dana Point, and Oceanside Harbor.

Specific roost site enhancement projects would be developed and evaluated in future environmental documentation prepared pursuant to the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

D6.4 ENVIRONMENTAL BENEFITS AND IMPACTS

D6.4.1 Biological

Benefits

Improvements in the existing network of communal roosts along the coast would have a positive influence on the energy budgets of California brown pelicans by reducing the energy costs associated with (1) commuting between prey locations and roosts, (2) flushing and relocating due to human disturbance, and (3) using suboptimal microclimates within roosts. The costs of migration would also be reduced by the increased availability, quality, and capacity of stopover sites. Cumulative energy reductions should result in improved body condition of individual birds. Expected population-level effects from improving the condition of individual birds are increased juvenile and adult survival, and increased reproductive success of pelicans in California. Juvenile survival and adult reproductive success are the primary life history parameters affecting the SCB California brown pelican metapopulation (Gress and Anderson 1983).

Other bird species that occur in association with roosting pelicans are likely to benefit from the proposed roost projects as well. Bird groups that would benefit from the increased availability of island habitat and reduced human disturbance in coastal environments include gulls, terns, cormorants, shorebirds, herons, egrets, and ducks. The suite of species receiving benefits would vary with the type of roost treatment and project site. The restoration projects would inform and enrich the public through associated interpretive displays and would help foster an awareness and stewardship ethic that should result in reduced disturbance to roosting California brown pelicans and other coastal waterbirds at other locations.

Impacts

The environmental consequences of increased California brown pelican use of lagoons and other roosting areas may include impacts on water quality if guano accumulation exceeds the circulation ability of the affected lagoons. However, in some locations brown pelican guano in the vicinity of roosts could provide a desirable source of nutrient enrichment and may enhance local food webs.

Negative aspects of California brown pelican use of harbors for roosting include the increased risk of contact with environmental contaminants such as oil, the increased likelihood of injury due to scavenging (e.g., entanglement in fishing line, puncture from fishing hooks, etc.), and the development of nuisance issues. However, this action is not expected to result in major increases in pelican use of harbors. Rather, the goal would be to improve the quality of resting time within harbors.

D6.4.2 Physical

Benefits

This action would not result in benefits to the physical environment.

Impacts

This action would not result in impacts to the physical environment.

D6.4.3 Human Use

Benefits

Public enjoyment of California brown pelicans would be increased by projects that allow the public to view communal roosting groups without causing disturbance.

Impacts

Restoration projects would be designed to minimize impacts to recreational activities such as fishing, boating, and kayaking. Because California brown pelicans are very susceptible to human disturbance, projects would be sited in areas that are compatible with human uses. Potential impacts to navigation would be evaluated for each site-specific project.

Pelican roost site creation projects would be associated with variable degrees of liability, and some projects would require ongoing management oversight. Careful site selection, project design, selection of raw materials, and adequately funded maintenance programs would offset potential liability costs. Signs, posts, or fences may need to be replaced during the projected life of the project due to fading, corrosion, or vandalism. Vegetation on any earthen islands that are created may need to be periodically controlled or removed.

D6.5 LIKELIHOOD OF SUCCESS/FEASIBILITY

California brown pelicans respond readily to novel roost sites as long as key habitat elements are provided. These key elements have been described in this document and in Gress and Anderson (1983) and Jaques and Anderson (1987). All projects that involve physical manipulation of habitat are likely to succeed. The successes of projects that rely on alteration of human behavior include a wider range of uncertainties. Projects that provide the most secure island habitat in areas that harbor reliable food resources would be expected to receive the highest level of use and would function as communal night roosts as well as daytime use areas. Projects conducted under this plan would be designed and implemented using the best available expertise and information on brown pelican habitat selection, microclimate preference, and behavioral ecology. Monitoring results from similar projects, such as the American Trader Trustee Council floating dock project, would be used to improve the success of future projects.

Education and awareness programs, including displays, signs, and brochures, nearly always attract public attention. Informational and warning signs to protect seabirds have a high probability of reducing human behaviors that are detrimental to the resource.

D6.6 PERFORMANCE CRITERIA AND MONITORING

Performance criteria would be developed for each specific project. Success would be based on increases in roost attendance and increases in population abundance.

To monitor the success of restoration efforts, a combination of aerial surveys and ground-based observations at roosts would be conducted for the duration of the project, as appropriate. Ground-based observations at selected roost sites would be designed to monitor the response of pelicans to individual roost treatments. The amount of time spent observing each site would vary according to the type of roost, the type of project, and the questions that need to be addressed. A monitoring plan would be designed for each particular project prior to implementation.

D6.7 EVALUATION

The Natural Resource Trustees for the Montrose case (Trustees) have evaluated this action against all screening and evaluation criteria developed to select restoration actions and have concluded that this action is consistent with these selection factors. The Trustees determined that this type of action would benefit California brown pelicans injured as a result of DDT contamination. Future environmental documentation would further develop and evaluate potential roost projects.

D6.8 BUDGET

The costs of potential projects vary considerably depending on the method used to improve pelican roosting habitat and the site selected. For example, the costs of the installation and monitoring of the American Trader floating dock in San Diego Bay totaled $47,000. An example of a larger construction project would be raising the height of Zuniga Point jetty in San Diego Bay by 1.5 meters (5 feet) to provide a dry roosting location for pelicans during high tides. The estimated cost for this larger project is $2,000,000.