ATTACHMENT 1

ABSTRACT

State the objectives and specific aims, making reference to the significance of the project, and describe the methodology used to achieve these goals. Avoid summaries of past accomplishments. The abstract is meant to serve as a succinct and accurate description of the work when separated from other portions of the proposal.

Do not exceed the space allowed and do not use more than 12 characters per inch. Do not use abbreviations in the title.

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AMOUNT REQUESTED: $ 29,020

PROJECT TITLE: Spatial Ecology of a Marked Population of the Western Snowy Plover (Charadrius alexandrinus nivosus)

ABSTRACT (Please limit abstract to this page only.)
Across the annual cycle, a species' spatial distribution results from individual movements within and among habitats. A variety of environmental and social factors can influence movements that characterize such space use. During the non-breeding season, food distributions shape spatial patterns whereas reproductive constraints impose limitation on where individuals move during the breeding season. Regardless of time of year, however, understanding patterns of space use and movement can have important consequences for the prevention, response and rehabilitation of oiled wildlife contaminated by a spill. We propose to study the distribution and movements of individually marked Western Snowy Plovers (Charadrius alexandrinus nivosus), a species of shorebird listed as threatened under the federal Endangered Species Act, and one vulnerable to oiling along the coastal beaches where it breeds and overwinters. We will study plovers in Mendocino, Humboldt and Del Norte counties of northern California during the winter (Jan) and throughout the breeding season (Mar-Sep). During regular surveys of suitable habitat, and intensive surveys of sites known to be used by plovers, we will record the identity and location of individual plovers and analyze spatial patterns at three spatial scales: 1) regional, across the tri-county study area, 2) locally within known breeding sites, and 3) on a fine-scale within individual home ranges. At each scale of analysis, we will enter bird locations as point coverage into a geographic information system and we will use the Animal Movements extension to ArcView to quantify the extent to which individuals are distributed non-randomly. At the regional scale, we will produce maps of the current and historical distribution of plovers in coastal northern California. At the local scale, we will examine the sequence with which individuals initiate nests relative to other currently active nests to gauge the influence of social attraction in plover nesting distributions. We will use the locations of individuals observed during regular surveys to determine home ranges of individuals across varying stages (e.g., courting, laying, incubating, brooding, post-breeding) of the reproductive cycle. Lastly, we will use daily surveys of broods to quantify age-dependent variation in chick survival and analyze this relative to the movements of chicks. Specifically, chicks are most vulnerable during the first 10-14 days of life, during which time they are less capable of evading predators and thermoregulating. We will quantify the distance moved by chicks during consecutive daily observations and map the home range of chicks over the 28 days prior to fledging. This project will provide valuable information to personnel responding to oil spills in coastal habitats. In the event of a spill prevention and response to oiling of wildlife will be enhanced because we will be able to establish specific locations where birds occur in relation to trajectories of spill movement given current and wind conditions. This will improve clean-up of specific stretches of beach used by plovers and offer the possibility of hazing birds to diminish risk of oiling and increase response times, which improves rehabilitation success. For rehabilitated birds, this project will provide detailed information on where to release treated individuals, which facilitates monitoring the success of treatment. Lastly, this project will continue long term efforts to monitor the population for the Snowy Plover in coastal northern California, one of six recovery units identified by the United States Fish & Wildlife Service in the species' recovery plan.