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Stephanie A. Shwiff
USDA-APHIS, NWRC, Ft. Collins, CO

Ray T. Sterner
USDA-APHIS, NWRC, Ft. Collins, CO

John W. Turman
USDA-APHIS, El Cajon, CA

Brian D. Foster
Zoological Society of San Diego

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BENEFIT-COST ANALYSIS OF REPRODUCTION-MONITORING AND PREDATOR-REMOVAL VARIABLES ASSOCIATED WITH PROTECTION OF THE ENDANGERED CALIFORNIA LEAST TERN

STEPHANIE A. SHWIFF, USDA, APHIS, Wildlife Services, National Wildlife Research Center, 4101 LaPorte Avenue, Fort Collins, CO 80521, USA
RAY T. STERNER, USDA, APHIS, Wildlife Services, National Wildlife Research Center, 4101 LaPorte Avenue, Fort Collins, CO 80521, USA
JOHN W. TURMAN, USDA, APHIS, Wildlife Services, 9380 Bond Avenue, Suite A, El Cajon, CA 92021, USA
BRIAN D. FOSTER, Zoological Society of San Diego, San Diego, CA, USA

Abstract: The California least tern (*Sterna antillarium brownii*) is an endangered, small (<25 cm), ground-nesting shorebird that winters along the Pacific Coast of Central America and nests in colonies on coastal dunes and beaches from southern Baja to San Francisco, California. It was one of the originally listed species contained in the Endangered Species Act in 1970. Major nest sites remain at Marine Corps Base Camp Pendleton. During the past 15 years, adult tern counts have increased from about 300 to over 600 breeding pairs at the site. This poster provides results of an empirical analysis of annual fixed-cost agreements (1995-2001) for reproduction-monitoring and predator-removal activities to protect the California least tern at Camp Pendleton. Several sources of *ex post* data were obtained, edited, and merged to form smaller spreadsheets of analyzable biological, cost, and meteorological data. Regression analyses involving 13 independent variables were used to address the benefits-costs of tern production using 4 dependent variables (i.e., nests, eggs, fledglings, and adults). Certain variables were "lagged" to incorporate the influence of past values of some of the independent variables on the contemporaneous values of the dependent variables. Discounted mean annual reproduction monitoring and predator removal budgets for the 6- year study period were $75,517 and $73,691, respectively. Mean personnel time differed, with means of 3.12 h/day and 6.96 h/day associated with monitoring and predator reduction activities. Both monitoring and predator removal times were predictive of eggs, fledglings, and adult terns, but only monitoring time predicted nests. Interestingly, no meteorological variable yielded significant prediction of any dependent variable. Results confirmed that predator management is yielding benefits in key tern reproduction variables, and that monitoring provides a crucial documentation function of the predator management impacts. Counter to conventional wisdom, climatic effects seemed to have little impact on tern production at any stage; a result that may reflect the inconsistent occurrence of negative impacts and the inappropriateness of regression analysis to predict these irregular events.

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