

1145-VF-413

Shandelle M. Henson, Robert A. Desharnais and Eric T. Funasaki*

(eric.funasaki@sulross.edu), Department of Computer Science & Mathematics, Sul Ross State University, PO Box C-18, Alpine, TX 79832, and **Joseph G. Galusha, James W. Watson and James L. Hayward.** *Predator-prey dynamics of bald eagles and glaucous-winged gulls at Protection Island, Washington.*

Bald eagle populations in North America rebounded in the latter part of the 20th century, the result of tightened protection, reduction in the use of lead shot by hunters, and the banning of pesticides such as DDT. An unintended consequence of this recovery may be a negative impact on seabirds. During the 1980s, few eagles disturbed a glaucous-winged gull colony on Protection Island, WA. Breeding gull numbers in the colony rose nearly 50% during the 1980s and early 1990s. In the 1990s, however, an increase in eagle activity ensued, after which began a decline in gull numbers. To examine whether trends in the gull colony could be explained by eagle activity, a predator-prey model was fit to gull nest count data and Washington State eagle territory data collected between 1980 and 2016. The model fit the data with $R^2 = 0.82$, supporting the hypothesis that the rise and decline in gull numbers are due largely to the decline and recovery of the eagle population. Within the 95% confidence intervals for parameters related to coexistence, 11.0% of parameter vectors predict gull colony extinction. This suggests that the effects of eagle activity on the gull colony are explained by a predator-prey relationship that includes the possibilities of coexistence as well as gull colony extinction. (Received September 05, 2018)