

**Project:** Modeling Population Trends in Kittlitz's Murrelet

**Client:** U.S. Fish and Wildlife Service

**Project Leads:** Bryan Manly/Chris Nations

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Surveys of Kittlitz's murrelet in Prince William Sound, Alaska have been carried out since 1972. However, the interpretation of the results of these surveys has been complicated by the fact that in most years there has been a large group of "unidentified" birds that are either Kittlitz's murrelet or the more common marbled murrelet. This is a serious problem needing attention because the Fish and Wildlife Service is proposing Kittlitz's murrelet for listing as an endangered species mainly on the basis of the apparent downward trend in numbers, which is to some extent obscured by a varying proportion of unidentified birds from year to year. To overcome this problem, WEST developed a model to describe the counts of Kittlitz's murrelets, marbled murrelets, and unidentified birds each year, in which one of the parameters measured the yearly trend in Kittlitz's murrelet numbers. This model was fitted to the data using weighted non-linear regression. With various sets of data the estimated trend parameter (the population size in one year as a fraction of the size in the previous year) varied from 0.68 to 0.82, indicating a major decline in numbers since 1972. Also, on a smaller data set from Glacier Bay, Alaska, the trend parameter was 0.83, which again indicated a major decline in numbers since 1991. These analyses therefore support the case for listing Kittlitz's murrelet as an endangered species.

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