

SURVIVAL ANALYSIS OF MALHEUR NATIONAL WILDLIFE REFUGE TRUMPETER SWANS

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ABSTRACT

We used Program MARK and model selection techniques to evaluate survival rates and factors affecting survival of the small flock of resident Trumpeter Swans (*Cygnus buccinator*) at Malheur National Wildlife Refuge in eastern Oregon. A total of 61 cygnets and 9 adults were marked with neck bands from 1980-87. Winter severity and loss of wintering habitat, caused by a major flood event which allowed carp (*Cyprinus carpio*) to destroy swan food supplies, were evaluated. Our estimates of annual survival rates were 44 percent for juveniles and 47 percent for adults. We found no support for winter severity effects on survival, while carp invasion effects were among the best models. Our data suggests that winter starvation was the major problem during this period. Such low survival rates are cause for concern and active management is needed to ensure the future viability of this local flock. Since winter feeding is not allowed by policy of the U.S. Fish and Wildlife Service, we suggest that management focus on developing a winter migration tradition in these birds and encouraging them to winter in more favorable areas.
