



Assessing the value of DoD lands in Alaska to declining Rusty Blackbirds

Project # 08-337

Background:

The Rusty Blackbird (*Euphagus carolinus*) has suffered one of the steepest declines of any bird species in North America with populations reduced by 90–98% since 1966. Because of its decline, this species was recently classified as vulnerable to extinction on the World Conservation Union's Red List. However, the Rusty Blackbird remains poorly studied with the cause of its decline unknown. The International Rusty Blackbird Technical Group—which includes representatives from federal (including DoD), university, and non-governmental agencies in the U.S. and Canada—was formed in 2005 to increase awareness of the species' plight and develop and implement a research and conservation strategy to recover populations. The group has emphasized the need to identify limiting factors and key resource requirements throughout the species' annual cycle to help direct conservation to reverse the population declines. Military lands in Alaska are particularly important for breeding populations of Rusty Blackbirds because the species has disappeared from many parts of its breeding range where it was once abundant, but still breeds commonly in wetland habitats on military lands in the state.

Objective:

In this study, we evaluated the value of military installations in Alaska to breeding Rusty Blackbirds in terms of providing breeding habitats associated with high nesting abundance, reproductive success, and adult survival, and low incidence of diseases and contaminants.

Summary of Approach:

We conducted our study in 2007 and 2008 on Fort Richardson and Elmendorf Air Force Base in Anchorage, and the Tanana Flats Training Area on Fort Wainwright near Fairbanks, Alaska. Our study was designed to assess the status of this species within a range-wide perspective and was therefore closely coordinated with other studies throughout the species' global range which includes Alaska, Canada, and the continental U.S.

We conducted surveys of nesting Rusty Blackbirds at 33 wetlands on military bases in Anchorage and 45 areas on the Tanana Flats Training Area in 2007 and 2008. We also intensively searched for and monitored

nesting and measured the habitat attributes of the areas used for nesting. We captured nesting adults in mist net to collect blood samples for contaminants and diseases analyses and to band them to estimate adult survival rates. We also analyzed data from nests across Alaska and Canada found from 1887–2008 to identify important habitat for nesting across the boreal zone and to test for deficits in reproductive success across Alaska.

Benefit:

Information on important habitats, reproductive success, adult survival, and limiting factors will help international efforts to understand the mechanisms driving the species' population decline, identify important areas and habitats for conservation, and ultimately to implement measures to reverse the dramatic population decline before the species is listed as threatened or endangered and costly recovery efforts are required. By avoiding such listings, training areas coinciding with Rusty Blackbird use would have minimal impact to readiness training and other installation uses.

Accomplishments:

Our surveys and nest monitoring of Rusty Blackbirds clearly showed the importance of military lands in Alaska in terms of providing unfragmented habitats where the species breeds at high relative densities and benefits from high rates of reproductive success. This is unlike the eastern breeding range where Rusty Blackbirds have become quite rare possibly due to low reproductive success in areas recently harvested for timber and high exposures to methylmercury which are likely reducing adult and juvenile survival. Thus, undisturbed wetlands on military lands Alaska may be quite important as centers of production for this declining species.

Our detailed studies of habitat use on military lands in combination with our analysis of nests throughout Alaska and Canada has shown that a preponderant use of small spruce as nest sites across the breeding range is due to selectivity which results in high reproductive success. Ponds, lakes, and wetlands with emergent vegetation were also important predictors of blackbird abundance as were dense willows or dense black spruce near water bodies. The survey methods that we developed were particularly effective and detected 97% of the nesting pairs breeding on the sites we examined. These techniques are already being applied elsewhere in the species' breeding range. Our contributions to a range-



wide study examining rates of infection by blood parasites has found that Rusty Blackbirds suffer from unexpectedly high rates of infection on the wintering grounds which indicates that the species' immune system may be lowered due to stressors encountered during the non-breeding season.

Although Rusty Blackbirds populations on military lands in Alaska appear to be healthy compared to populations elsewhere, military lands are not without their causes for concerns. Lakes and ponds across boreal Alaska have been shrinking in size as a result of climate warming; if this pattern continues it will result in losses of breeding habitats for the species. The average levels of blood mercury in adult Rusty Blackbirds were 3-times lower in Alaska than in New England and the Maritime Provinces. However, some birds nesting on the Eagle River Flats and the Tanana Flats had levels that approached those in the eastern range. Similarly, levels of mercury and strontium in eggs collected on military lands approached levels of concern, although other metals and persistent organic contaminants did not. Coal-fired energy production in China is increasing at alarming rates and the prevailing winds carry such pollution from Asian to North America where it makes first landfall in Alaska. Thus mercury levels in Rusty Blackbirds should be monitored periodically in Alaska as increases above current levels will likely accelerate declines.

Finally, our preliminary results indicated that adult survival was variable from 2007–2009 with survival low in 2008 and at levels equivalent to survival rates of other species of declining blackbirds in the continental U.S. Thus, more information is needed to determine whether Rusty Blackbirds on military lands in Alaska are suffering from chronically low or variable rates of adult survival, both of which have been linked to species declines elsewhere.

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Figure 1. A female Rusty Blackbird in breeding plumage. Photograph by Ted Swem ©.



Figure 2. Locations of 414 Rusty Blackbird nests in Alaska and Canada (1887–2008) analyzed in this study to identify important breeding habitats. A subset of 162 of these nests was used to assess rates of nesting success in Alaska.

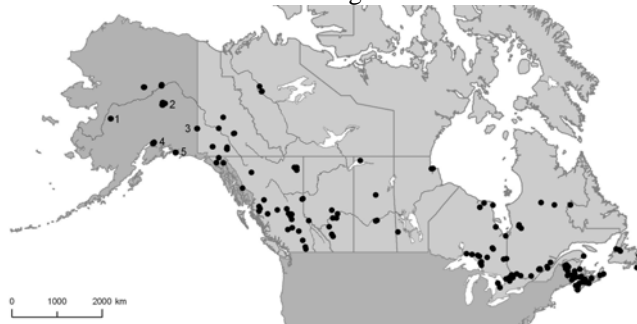


Figure 3. Locations of 45 sampling units (500 x 500 m) surveyed for breeding Rusty Blackbirds on the Tanana Flats Training Area, Alaska. Brown denotes where surveys detected territorial Rusty Blackbirds in 2008. Circles denote the location of nests found in 2007 (yellow) and 2008 (red).

