

**Alaska Department of Fish and Game  
State Wildlife Grant**

**GRANT AND SEGMENT NR: T-1-16**

**PROJECT NUMBER: 6**

**PROJECT TITLE:** Passerine Data Analysis and Monitoring at the Creamer's Field Migration Station

**PARTNER:** Alaska Bird Observatory (ABO)

**PRINCIPAL INVESTIGATOR:** Sue Guers (ABO)

**COOPERATORS:** Jackson Whitman (ADF&G)

**PROJECT DURATION:** September 30, 2006 – June 30, 2008

**REPORT PERIOD:** October 1, 2006 – September 30, 2007

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**Project Objectives**

OBJECTIVE 1: Move CFMS data from Excel to an Access database and re-proof all banding and recapture records by 30 November 2006.

OBJECTIVE 2: Using data from four migration stations in Alaska, publish a manuscript that examines migration of Wilson's Warblers in Alaska by 30 December 2006.

OBJECTIVE 3: Prepare a report on our collaborative Avian Influenza surveillance efforts with the University of Alaska Fairbanks by 30 December 2006.

OBJECTIVE 4: Continue operating the farthest north migration station in North America to continue monitoring effects of climate change on migration timing and relative abundance of songbirds migrating through Creamer's Refuge.

OBJECTIVE 5: Conduct a comprehensive analysis of 15 years of CFMS data.

- a) Compare abundance estimates and migration timing between the CFMS and Tok migration station *by 30 December 2006*.
- b) Evaluate our ability to detect songbird population trends in interior Alaska using pooled migration data from the CFMS and Tok banding station *by December 2006*.
- c) Examine variation in the proportion of adults versus juveniles captured, by species, during fall migration at CFMS *by 30 December 2006*.
- d) Calculate mean spring and fall passage dates for all species with sufficient sample sizes; evaluate differences in autumn migration timing between adults and juveniles *by 28 February 2007*.

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- e) Examine inter-annual and long-term trends in abundance and capture rates for species caught at Creamer's Field *by 20 April 2007*.
- f) Compile weather data for the 15-year sampling period and prepare for analysis *by 15 June 2007*.
- g) Submit annual progress report to ADF&G Partner Program *by 30 August 2007*.
- h) Pool CFMS and Tok migration data with that from Camp Denali to determine if this strengthens our ability to detect population trends using migration data *by 30 December 2007*.
- i) Determine the influence of weather on capture rates *by 15 January 2008*.
- j) Compare CFMS trend data to Breeding Bird Survey results for Alaska *by 28 February 2008*.
- k) Present results at the Alaska Bird Conference, *March 2008*.
- l) Evaluate whether trends in spring arrival dates relate to changes in average temperature or other factors *by 15 April 2008*.
- m) Based on results of analyses, set 2008-2010 research goals for CFMS *by 15 April 2008*. These will likely focus on continued monitoring to document effects of climate change on migration timing, stopover ecology, and range expansion.
- n) Prepare manuscripts for publication and submit to journals as appropriate throughout duration of project.
- o) Submit final report to ADF&G Partner Program *by 30 August 2008*.

**Summary of Accomplishments:**

**JOB/ACTIVITY 1:** Move CFMS data from Excel to an Access database and re-proof all banding and recapture records by 30 November 2006.

All CFMS banding data are now located within an Access database, including banding records from fall 2007. However, we are still in the process of re-proofing all banding records. There was just not enough time to proof ~80,000 banding records by 30 November 2006 in addition to other job duties at ABO. In addition, we changed our coding system in Fall 2006, so we are in the process of converting data prior to 2006 into the new system. We anticipate this activity will be finished by the end of 2007.

**JOB/ACTIVITY 2:** Using data from four migration stations in Alaska, publish a manuscript that examines migration of Wilson's Warblers in Alaska by 30 December 2006.

A manuscript entitled "Differential timing of Wilson's Warbler migration in Alaska" was published in the December 2006 issue of the Wilson Journal of Ornithology. 118:547-551. The authors were: Benson, A-M., B.A. Andres, W.N. Johnson, S. Savage, and S.M. Sharbaugh.

**JOB/ACTIVITY 3:** Prepare a report on our collaborative Avian Influenza surveillance efforts with the University of Alaska Fairbanks by 30 December 2006.

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This collaboration began in the Fall of 2005 and continues to the present. To date, UAF has swabbed ~7,500 birds of 40 species. At this time, no birds were found to have the H5N1 strain of Avian Influenza.

**JOB/ACTIVITY 4:** Continue operating the farthest north migration station in North America to continue monitoring effects of climate change on migration timing and relative abundance of songbirds migrating through Creamer's Refuge.

We completed spring and fall migration monitoring seasons at CFMS in 2007. The following summarizes each season:

**Spring Migration 2007:**

- Twenty-six standard mist nets were operated for 6 hours, weather permitting, on alternate days from 23 to 30 April and daily from 1 May – 7 June 2007. Nets were operated for a total of 4,991 hours.
- We captured 978 new and previously banded birds of 32 species—one of the most productive spring banding seasons in CFMS history. The five most abundant newly-captured species include: Common Redpoll (133), Yellow-rumped Warbler (78), Dark-eyed Junco (69), American Robin (54) and Northern Waterthrush (53). These five species represent 62% of all new captures.
- We captured 49 individuals banded in previous years (returns) that represented ~12% of our total captures. Noteworthy migrant returns include a Yellow-rumped Warbler first banded as a juvenile in 2003 and a Dark-eyed Junco banded as an adult in 2003. Noteworthy migrant returns are a Black-capped Chickadee first banded as a juvenile in 2002 and a Gray Jay banded as an adult in 2003.
- For eleven species, capture rates (per 1000 net hours) were the highest ever recorded in CFMS' 16-year history. These species include: Lesser Yellowlegs, Solitary Sandpiper, Wilson's Snipe, Downy Woodpecker, Boreal Chickadee, Black-capped Chickadee, Hammond's Flycatcher, Swainson's Thrush, Bohemian Waxwing, Northern Waterthrush and Dark-eyed Junco. Capture rates for several species were higher in 2006 than for 2005, including Orange-crowned and Yellow Warbler, and American Tree, Lincoln's and White-crowned Sparrow. Several species, including Ruby-crowned Kinglet, Yellow-rumped Warbler and Fox Sparrow showed similar capture rates as last spring. Capture rates of Common Redpolls were the highest they've been in almost 10 years. Unfortunately, 2007 also marked declines in capture rates of several species including: Blackpoll and Wilson's Warbler, and Savannah Sparrow.
- Interesting captures include: 14 Solitary Sandpipers, 7 Lesser Yellowlegs, 5 Bohemian Waxwings, a Wilson's Snipe, a Green-winged Teal, and a SY male Sharp-shinned Hawk.
- The mortality rate at CFMS for the spring was 0.1%, much lower than the accepted rate of 1-2%.

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- Trained 2 new banders and 1 intern for CFMS this spring—these staff will continue through the fall season. Held a volunteer orientation session before the spring banding season that was attended by ~30 new and returning volunteers.
- Forty-two volunteers provided 918 hours of assistance—more than double the effort of spring 2006.
- Bird-banding presentations were given to 657 people in 15 groups in cooperation with the Alaska Department of Fish and Game Creamer's Nature Program. Informal banding demonstrations were given to an additional 130 independent visitors.

**Fall Migration 2007:**

- Thirty-six standard mist nets were operated daily, weather permitting, from 23 July—30 September 2007 for 10,949 hours (one 12m net open for one hour) on 56 days of banding.
- We captured a total of 3,861 birds. Of these, 3,178 birds were banded as first-time captures; the remaining birds were recaptures (518), returning birds from previous years (89) or birds that remained unbanded (76). The most abundant species banded (first-time captures) were Yellow-rumped Warbler (780), Dark-eyed Junco (492), Orange-crowned Warbler (390), Lincoln's Sparrow (278) and American Tree Sparrow (253). Together, these five species comprised 69% of all birds banded.
- We captured a total of 38 species and banded a total of 35 species (we do not band ducks and grouse).
- CFMS captured its first Chipping Sparrow this fall, a Hatch Year (young) bird—providing evidence that this species is likely breeding locally. Mist-netting at CFMS, in addition to incidental observations from local birders, is helping to document the possible range expansion of this songbird species to interior Alaska. Other notable captures were: Green-winged Teal (3), AHY Merlin (1), HY Wilson's Snipe (3), SY American Three-toed Woodpecker (1) AHY Northern Shrike (1), HY Arctic Warbler (2—the first since 1999), and Golden-crowned Sparrow (3).
- Both Alder and Hammond's Flycatchers continue to show a population index decline. In fact, 2007 marks the lowest population index for Alder Flycatcher. I'm not sure if this species is declining or if we're just missing the migration window—these birds may be leaving before daily fall mist-netting occurs. In contrast, Black-capped Chickadees have an increased index—possibly more young of the year are surviving the winter. In contrast, all thrush species (with the exception of Varied Thrush) are showing increased population indices over fall 2006. American Robins experienced the highest population index ever. This species may not be migrating as far south, allowing for a longer breeding season and the potential to raise two clutches. Several warbler species, such as Blackpoll and Wilson's Warbler and Northern Waterthrush, are also showing an increase. Many of the sparrow species, with the exception of Fox Sparrow and Dark-eyed Junco, also experienced an increased population index.
- The mortality rate at CFMS was 0.4%, well below the accepted average of 1-2%.

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- This fall, the CFMS staff consisted of three skilled passerine banders and one intern. I hired a third bander for the months of August and September in anticipation of large fallouts similar to what was experienced in fall 2006. Having this many experienced people on staff made up for the lack of volunteers, especially during the months of July and August. I felt the station could be safely run with four trained people.
- Forty volunteers, including 4 youth, contributed 1040 hours of assistance.
- Bird-banding demonstrations were given to 1,028 people in 40 groups in cooperation with the Alaska Department of Fish and Game Creamer's Nature Program. At least 380 independent visitors to CFMS were presented with informal banding demonstrations.
- A weather station (Davis Vantage Pro 2) was purchased for CFMS to collect standardized weather at the banding station beginning spring 2008.

JOB/ACTIVITY 5: Conduct a comprehensive analysis of 15 years of CFMS data to:

The following activities are affiliated with a) to e).

Starting in February 2007, we analyzed mean passage dates of both adults and juveniles of 14 species that migrated through CFMS and a migration station in Tok, Alaska from 1993-2006. Annual abundance indices were calculated using daily capture rates (birds captured/1000 net hours) for 11 species from 1996-2004. Because weather is known to affect migration of birds, we incorporated daily weather variables into models to correct for high or low captures that could have been caused by daily weather events. Annual abundance indices were then defined as mean annual capture rates adjusted for covariates. We conducted power calculations to determine the probability of detecting a 50 % linear decline during 25 years and a 50 % decline in 50 years for the same 11 species. This manuscript is nearing completion and will be submitted to the Journal of Wildlife Management.

- f) Compile weather data: Weather data has been compiled for fall banding seasons at CFMS. We will compile weather data for the spring seasons as well, using standardized weather data from the Fairbanks International Airport and collected by the University of Alaska, Fairbanks Geophysical Institute (provided by Eric Stevens).
- g) Submit annual progress report: An annual progress report was submitted 7 August 2007.
- h) CFMS, Tok and Camp Denali data: Since the Camp Denali station is no longer in operation, we are still undecided if these analyses are useful.
- i) Weather/capture rates: This job/activity will be fulfilled as time allows.
- j) This job/activity will be fulfilled as time allows.
- k) Alaska Bird Conference: This job/activity will be fulfilled as time allows.
- l) Weather trends: This job/activity will be fulfilled as time allows.
- m) Climate change effects: This job/activity will be fulfilled as time allows.
- n) Prepare manuscripts: This job/activity will be fulfilled as time allows.

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- o) Submit final report: This job/activity will be fulfilled.

**Significant Deviations:** None

**Additional Information:** None