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Division of Wildlife Conservation
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Monitoring Neotropical and Migratory Birds in Alaska

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John M. Wright

Final Research Performance Report
Endangered Species Conservation Fund
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RESEARCH FINAL REPORT

STATE: Alaska **GRANT NO.:** SE-3-5

COOPERATOR: Alaska Bird Observatory

STUDY TITLE: Abundance, Timing, and Demography of Neotropcial Migratory Birds During Migration

AUTHOR: John M Wright

PERIOD: 24 April 1997-23 April 1998

SUMMARY

In 1997 monitoring of migratory landbirds continued for the sixth year at the Creamer's Refuge migration station in a cooperative project with the Alaska Bird Observatory. Mist nets were used to capture birds on 42 days between 25 April and 14 June and 66 days between 15 July and 30 September. A new standard array of nets was established in 1997 using a subset of previous years' nets to reduce variations in net effort. Comparisons of capture rates in the original and reduced set with data from fall 1994-1996 found no significant differences. Spring 1997 capture rates (4.3 birds/100 net hours; 354 birds captured) were low, comparable to 1993, the previous low year. Fall 1997 capture rates (33.4 birds/100 net hr; 4890 birds captured) were the second highest recorded since netting began in 1992. Most birds captured (83%-93% of individuals and 71%-81% of species) in both spring and fall were neotropical migrants. In spring the most commonly captured species were the yellow-rumped (myrtle) warbler, American robin, dark-eyed (slate-colored) junco, Swainson's thrush, northern waterthrush and orange-crowned warbler. In fall, the yellow-rumped (myrtle) warbler, American tree sparrow, orange-crowned warbler, dark-eyed (slate-colored) junco, Lincoln's sparrow, ruby-crowned kinglet, yellow warbler, Swainson's thrush and Wilson's warbler were most common. The proportion of juveniles (hatch-year birds) in the fall captures was 0.89, slightly higher than average.

Key words: Alaska, migration monitoring, mist netting, neotropical migratory birds.

CONTENTS

BACKGROUND

Declines in populations of migrant landbirds have been well documented in North America. Long distance migrants, including flycatchers, thrushes, and wood warblers that breed in North America and winter in neotropical Central and South America, are among the species of concern (Askins et al. 1990; Sauer and Droege 1992). Alaska is an important part of the breeding range of several species of boreal forest landbirds known to be declining in other portions of their North American breeding range.

A concerted international conservation effort, *Partners In Flight* Neotropical Migratory Bird Conservation Program, was developed in the early 1990s to address this problem. In Alaska, the *Boreal Partners in Flight* working group provides coordination and direction for local projects so that a comprehensive statewide monitoring and research program can be formed from the individual efforts of the many partners.

The Creamer's Refuge migration station is operated by the Alaska Bird Observatory in cooperation with ADF&G and a host of other contributors. The migration station is part of the statewide monitoring network, providing information on abundance and productivity on a broad scale to complement Breeding Bird Survey, off-road point counts, and MAPS

(Monitoring Avian Productivity and Survival) studies. Approximately 150 migration monitoring sites are located throughout North America. Creamer's is the northernmost migration monitoring station and the longest-running station in Alaska.

OBJECTIVE

- Gather information on the abundance and productivity of migratory songbirds as part of a long-term monitoring project in the boreal forest of central Alaska.

STUDY AREA

The migration station is located on Creamer's Field Migratory Waterfowl Refuge in Fairbanks and encompasses about 15 ha of boreal forest, shrub, and wetland habitats.

METHODS

An array of mist nets was used to capture birds. Nets were opened about 7 hours each day, from sunrise to early afternoon, weather permitting. The spring 1997 netting season extended from 25 April to 14 June, and fall season 15 July to 30 September. In the first 5 years of this project, 4 to 51 nets were operated daily at the station. In 1997 a standard array of mist nets was established using a subset of previous years' nets so that all nets could be operated consistently, regardless of bird abundance or number of staff available. This reduced set of nets will be the standard array operated in future years. To examine the effect this change in nets might have on capture rates, we used data collected in fall 1994 to 1996 to compare total captures in all nets used those years to the number caught in the reduced set of nets in use those same years. Birds were banded with standard aluminum leg bands, and we collected data on age, sex, wing chord, tail length, fat index, breeding condition, and molt.

We also provided public education programs at the banding station. A 30~~4~~5 minute banding demonstration with information about bird migration, biology, and conservation was provided to 2~~3~~ classes of local school children each school day in May and September. Structured programs were also provided to groups from summer science camps and tours. We supplied scheduled visitors with activity guides and individual booklets before their visit to the banding station. Impromptu presentations were provided to unscheduled drop-in visitors.

RESULTS

SPRING 1997

Twenty-six nets were operated on 42 days in spring 1997 for a total of 7~~5~~48 net hours, down 36% from the average netting effort of the previous 4 years (Table 1). Three hundred fifty-four individual birds were captured, representing 27 species (Table 2). This was the lowest absolute number of birds captured in the 6 years of spring netting, but the capture rate of 4.3 birds per 100 net hours was equivalent to 1993 and only slightly lower than 1995 and 1996 (Table 3). As in previous springs, most species and individuals captured were neotropical migrants; 81% of the species were Type A (44%; species wintering primarily south of the US/Mexico border)

or Type B (37%; species with some populations wintering south of the US/Mexico border). Individuals captured comprised 93% Type A (38%) or Type B (55%).

Among the 16 most commonly captured species, the American robin was captured in spring 1997 at the highest rates ever recorded for the species in the 6 years of netting, and the gray-cheeked thrush was captured at the lowest rates (Table 3). When 1997 capture rates for these 16 species are compared with the average rate of capture for the first 5 years (1992-1996), 9 species were captured less frequently than the previous 5-year average and just 4 were captured at rates greater than the average. Three species were captured at rates in spring 1997 nearly equal to their 5-year average.

FALL 1997

In fall 1997 nets were operated for 66 days for a total of 14,617 net hours. The reduction in nets to 30 from a maximum of 51 in prior years was not accompanied by a decline in net hours because in previous years it was common to open only a portion of the total number of nets on a given day and nets were usually operated for approximately 10 fewer days than in 1997 (Table 1). A total of 4890 individual birds were captured in fall 1997, including 35 species. The overall capture rate of 33.4 birds/100 net hours was the second highest recorded in the 6 years of fall netting, exceeding the average rate (27.7) for the first 5 years. Most (71%) species captured were Type A (40%) or Type B (31%) neotropical migrants, as were most (83%) individuals (Type A, 38%; Type B, 45%).

Among the 19 commonly captured species, 4 (alder flycatcher, Swainson's thrush, American robin, and fox sparrow) were captured at the highest rates recorded in the 6 years of fall netting, and no species set a new minimum record (Table 4). Thirteen species were caught at higher rates than their 1992–1996 average, 3 were captured at lower rates than average, and 3 were captured at average rates.

In fall 1997, 89% of birds captured were young of the year (HY, hatch year) (Table 5). This falls within the range (84-90%) observed in 4 of 5 previous years, excluding the exceptionally low (75%) year of 1993. The proportion of young in 3 of the most commonly captured species, Wilson's warbler, American tree sparrow, and white-crowned (Gambell's) sparrow was higher in 1997 than in any prior year, while a new low was recorded for only 1 species, the Fox sparrow.

The effect of reducing the overall number of nets was examined using data from fall 1994 to 1996 by comparing the capture rates using all nets with capture rates in the reduced set of 30 nets now used as the standard array (Table 6). The absolute difference in capture rates between the full and reduced arrays for the 19 most common species averaged 8% to 9% for the 3 years. There was no significant difference between capture rates using the full and reduced set of nets (paired-sample *t*-tests; 1994, $t = -1.49$, df = 18, $P > 0.15$; 1995, $t = -1.85$, df = 18, $P > 0.05$; 1996, $t = -0.91$, df = 18. $P > 0.35$). Only 3 of 19 species had average absolute

the only species captured at rates averaging >10% higher in the reduced set, and only the Savannah sparrow was captured an average of >10% less in the reduced set of nets. Overall, 7

species were captured at higher rates ($\bar{x}$ difference = +10%) in the reduced set of nets all 3 years, while 3 species were consistently caught at lower rates ($\bar{x}$ difference = -8%) and capture rates for 9 species were not consistently higher or lower ($\bar{x}$ absolute difference = 7%).

EDUCATION

The number of participants in banding demonstrations more than doubled from 1996 to 1997. In 1997, 95 groups with 2237 individuals (primarily school classes) attended educational programs at Creamer's Refuge (Table 7). More than 1900 activity booklets were distributed to these groups prior to their arrival at the station. Another 400 unscheduled individuals received informal presentations at the banding station.

CONCLUSIONS AND RECOMMENDATIONS

This year was the seventh year of the long-term monitoring effort at Creamer's Refuge. This cooperative project conducted by the Alaska Bird Observatory has proven capable of sustaining the consistent effort necessary to maintain a project requiring 15–20 years or more of data collection. Recent analyses and reviews have confirmed the usefulness of standardized netting stations for study of the abundance and productivity of migratory bird populations (Dunn and Hussell 1995; Johnson and Geupel 1996; Dunn et al. 1997). In addition to its value in monitoring species of concern, this project is also gathering important information on the timing of migration, reproduction, molt, juvenile dispersal, changes in body condition, and other life history events and has become a significant educational opportunity for Fairbanks school children and others.

ACKNOWLEDGMENTS

This project was supported by Endangered Species funding through Federal Aid in Wildlife Restoration. Funding was also provided by the Alaska Bird Observatory and its members, US Fish and Wildlife Service (Cost Share Challenge Grant), ARCO Alaska, Exxon Company USA, Bureau of Land Management, Alaska Conservation Foundation, MAPCO Alaska Petroleum, Alyeska Pipeline Service Company, ABR, Inc., and Fairbanks Curling Lions Club.

The dedicated board of directors and staff of the Alaska Bird Observatory are responsible for the success of this long-term project. I would especially like to thank Lori Quakenbush, Board President; Anna-Marie Barber, Chief Biologist; Nancy DeWitt, Executive Director; Steve Springer, Banding Biologist; and Sara McDaniel, Education Coordinator for the key roles they played in this effort. Thanks also to the interns and volunteers who regularly got up before dawn to run the nets. Mark Ross, ADF&G, assisted with materials for the banding demonstrations and developed complementary educational programs for visiting school children.

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Table 1 Mist netting effort at Creamer's Refuge migration station, 1992-1997

Season	Description	Year					
		1992	1993	1994	1995	1996	1997
Spring	Number of days nets open	42	43	41	45	44	42
	Net hours	6903	10,552	11,252	12,731	12,411	7548
	Number of nets per day (range)	16-29	16-33	27-47	36-47	33-45	26
Fall	Number of days nets open	46	53	52	58	57	66
	Net hours	5,890	13,711	13,934	14,156	14,985	14,617
	Number of nets per day (range)	4-35	11-47	21-51	16-49	18-49	30

Table 2 Numbers of birds captured at Creamer's Refuge migration station, 1997

Species	Winter[a]	Spring 1997	Fall 1997
Sharp-shinned Hawk (*Accipter striatus*)	B	1	4
American Kestrel (*Falco sparverius*)	N		1
Lesser Yellowlegs (*Tringa flavipes*)	A	1	
Solitary Sandpiper (*Tringa solitaria*)	A	4	
Downy Woodpecker (*Picoides pubescens*)	R	1	1
Hairy Woodpecker (*Picoides villosus*)	R		1
Northern Flicker (*Colaptes auratus*)	B	3	2
Western Wood-Pewee (*Contopus sordidulus*)	A		3
Yellow-bellied Flycatcher (*Empidonax flaviventris*)	A		2
Alder Flycatcher (*Empidonax alnorum*)	A	3	126
Hammond's Flycatcher (*Empidonax hammondi*)	A	16	74
Gray Jay (*Perisoreus canadensis*)	R	1	
Tree Swallow (*Tachycineta bicolor*)	B		1
Cliff Swallow (*Hirundo pyrrhonota*)	A		1
Black-capped Chickadee (*Poecile atricapillus*)	R	5	35
Boreal Chickadee (*Poecile hudsonicus*)	R		6
Ruby-crowned Kinglet (*Regulus calendula*)	B	3	197
Arctic Warbler (*Phylloscopus sibilatrix*)	P		5
Gray-cheeked Thrush (*Catharus minimus*)	A	5	41
Swainson's Thrush (*Catharus ustulatus*)	A	28	188
Hermit Thrush (*Catharus guttatus*)	B	1	18
American Robin (*Turdus migratorius*)	B	43	39
Varied Thrush (*Ixoreus naevius*)	N		6
Orange-crowned Warbler (*Vermivora celata*)	A	20	646
Yellow Warbler (*Dendroica petechia*)	A	10	189
Yellow-rumped Warbler (*Dendroica coronata*)	B	74	1234
Townsend's Warbler (*Dendroica townsendi*)	A		10
Blackpoll Warbler (*Dendroica striata*)	A	3	102
Northern Waterthrush (*Seiurus noveboracensis*)	A	25	49
Wilson's Warbler (*Wilsonia pussilla*)	A	13	186
American Tree Sparrow (*Spizella arborea*)	N	1	763
Savannah Sparrow (*Passerculus sandwichensis*)	B	17	106
Fox Sparrow (*Passerella iliaca*)	B	2	66
Lincoln's Sparrow (*Melospiza lincolnii*)	A	8	246

Species	Winter[a]	Spring 1997	Fall 1997
White-crowned Sparrow (*Zonotrichia leucophrys*)	B	13	70
Dark-eyed Junco (*Junco hyemalis*)	B	37	466
Rusty Blackbird (*Euphagus carolinus*)	N		1
Common Redpoll (*Carduelis flammea*)	N	15	5
Totals		354	4890
Dates nets open		25 Apr–14 Jun	15 Jul–30 Sep
Number of days nets operated		42	66
Number of net hours		7548	14,617

[a] Winter range/migration: A = primarily south of US/Mexico border; B = some populations south of US/Mexico border; P = Pacific/Eurasia/Africa; N = North America; R = Resident.

Table 3 Capture rates (birds/100 net hr) of common species and total for all species, Creamer's Refuge migration station, spring 1997

Species	1992	1993	1994	1995	1996	1997
Hammondś Flycatcher	0.17	0.12	0.14	0.17	0.06	0.12
Ruby-crowned Kinglet	0.29	0.01	0.04	0.05	0.06	0.04
Gray-cheeked Thrush	0.23	0.13	0.19	0.09	0.18	0.07
Swainsonś Thrush	0.41	0.45	0.49	0.38	0.63	0.33
American Robin	0.45	0.34	0.28	0.35	0.29	0.50
Orange-crowned Warbler	0.58	0.47	0.40	0.36	0.24	0.25
Yellow Warbler	0.67	0.26	0.36	0.06	0.17	0.13
Yellow-rumped Warbler	1.58	0.93	0.48	0.70	0.65	0.94
Northern Waterthrush	0.33	0.13	0.58	0.19	0.44	0.32
Wilsonś Warbler	0.48	0.51	0.51	0.46	0.14	0.17
American Tree Sparrow	0.51	0.01	0.08	0.07	0.19	0.01
Savannah Sparrow	0.83	0.14	0.29	0.25	0.42	0.20
Lincolnś Sparrow	0.09	0.05	0.11	0.16	0.10	0.11
White-crowned Sparrow	0.20	0.08	0.16	0.08	0.07	0.17
Dark-eyed Junco	0.42	0.09	0.21	0.29	0.73	0.45
Common Redpoll	1.17	0.18	1.99	0.68	0.08	0.20
Total (all species)	10.46	4.27	6.91	4.63	4.87	4.29

Table 4 Capture rates (birds/100 net hr) of common species and total for all species, Creamer's Refuge migration station, fall 1997

Species	1992	1993	1994	1995	1996	1997
Alder Flycatcher	0.58	0.55	0.44	0.47	0.48	0.86
Hammondś Flycatcher	0.14	0.10	0.29	0.35	0.59	0.50
Black-capped Chickadee	0.58	0.18	0.21	0.48	0.31	0.23
Ruby-crowned Kinglet	0.88	0.65	0.91	0.87	1.56	1.36
Gray-cheeked Thrush	0.63	0.18	0.20	0.35	0.11	0.28
Swainsonś Thrush	1.06	0.67	0.73	1.24	0.59	1.29
American Robin	2.73	0.15	0.27	0.24	0.24	0.27
Orange-crowned Warbler	7.35	1.71	4.23	6.12	3.06	4.41
Yellow Warbler	2.17	0.43	0.64	1.38	0.76	1.29
Yellow-rumped Warbler	13.40	0.41	7.18	4.15	7.77	8.44
Blackpoll Warbler	1.38	0.15	0.35	0.36	0.33	0.70
Northern Waterthrush	0.69	0.22	0.12	0.20	0.22	0.36
Wilsonś Warbler	2.15	0.79	0.83	1.19	0.50	1.27
American Tree Sparrow	1.81	2.88	2.46	4.66	1.83	5.22
Savannah Sparrow	0.75	0.52	0.20	1.23	0.55	0.72
Fox Sparrow	0.26	0.23	0.30	0.23	0.25	0.45
Lincolnś Sparrow	2.73	1.09	1.27	2.56	1.56	1.68
White-crowned Sparrow	0.69	0.31	0.43	0.30	0.80	0.48
Dark-eyed Junco	2.33	1.18	3.84	2.92	3.86	3.17
Total (all species)	43.16	12.58	25.32	30.78	26.73	33.41

Table 5 Proportion of juvenile (HY) birds in total captures of common species and for all individuals, Creamer's Refuge migration station, fall 1997

Species	1992	1993	1994	1995	1996	1997
Alder Flycatcher	0.89	0.61	0.76	0.64	0.72	0.68
Hammondś Flycatcher	0.89	0.85	0.76	0.96	0.89	0.90
Black-capped Chickadee	0.94	0.75	0.69	0.90	0.93	0.94
Ruby-crowned Kinglet	0.82	0.90	0.89	0.91	0.87	0.87
Gray-cheeked Thrush	0.79	0.76	0.75	0.78	0.88	0.76
Swainsonś Thrush	0.82	0.79	0.86	0.91	0.96	0.90
American Robin	0.42	0.50	0.89	0.76	0.86	0.85
Orange-crowned Warbler	0.83	0.63	0.86	0.86	0.84	0.79
Yellow Warbler	0.91	0.58	0.88	0.84	0.94	0.94
Yellow-rumped Warbler	0.91	0.75	0.94	0.91	0.95	0.94
Blackpoll Warbler	0.94	0.71	0.86	0.94	0.96	0.92
Northern Waterthrush	0.93	0.87	0.94	0.93	0.97	0.90
Wilsonś Warbler	0.90	0.67	0.84	0.89	0.85	0.96
American Tree Sparrow	0.67	0.72	0.87	0.81	0.85	0.90
Savannah Sparrow	0.87	0.92	0.96	0.96	0.98	0.92
Fox Sparrow	0.69	0.77	0.79	0.81	0.78	0.68
Lincolnś Sparrow	0.92	0.79	0.93	0.95	0.97	0.93
White-crowned Sparrow	0.86	0.90	0.90	0.91	0.93	0.94
Dark-eyed Junco	0.84	0.88	0.96	0.90	0.91	0.89
Total (all individuals captured)	0.84	0.75	0.90	0.87	0.90	0.89

Table 6 Difference in fall capture rates using all nets and reduced set of 30 nets (used in 1997)

	Difference		
Species	1994	1995	1996
Alder Flycatcher	-0.14	-0.13	0.00
Hammond's Flycatcher	-0.10	-0.03	-0.03
Black-capped Chickadee	-0.10	0.04	-0.16
Ruby-crowned Kinglet	0.04	0.15	0.11
Gray-cheeked Thrush	0.10	0.06	0.00
Swainson's Thrush	0.01	0.02	-0.17
American Robin	0.00	0.04	-0.04
Orange-crowned Warbler	0.08	0.10	0.06
Yellow Warbler	0.03	-0.04	0.13
Yellow-rumped Warbler	0.05	0.07	0.13
Blackpoll Warbler	0.17	0.19	0.18
Northern Waterthrush	-0.08	-0.10	0.00
Wilson's Warbler	0.16	0.16	0.08
American Tree Sparrow	0.03	0.12	-0.15
Savannah Sparrow	-0.25	-0.11	-0.11
Fox Sparrow	0.03	0.04	0.08
Lincoln's Sparrow	0.09	0.07	0.08
White-crowned Sparrow	0.07	-0.17	0.01
Dark-eyed Junco	-0.05	-0.04	-0.04
$\bar{x}$ Absolute Difference	0.08	0.09	0.08
Paired-sampled *t*-test	$P > 0.15$	$P > 0.05$	$P > 0.35$

Table 7 Educational programs and visitors, Creamer's Refuge banding station, 1997

Season	Number of groups	Number of individuals in groups	Number of drop-in visitors
Spring	39	939	
Summer	17	294	400
Fall	39	1004	
Totals	95	2237	400

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ANNUAL RESEARCH PERFORMANCE REPORT

STATE: Alaska

COOPERATOR: Alaska Bird Observatory

GRANT NR.: SE-3-7

STUDY TITLE: Monitoring Neotropical and Migratory Birds in Alaska

AUTHOR: John M Wright

PERIOD: 1 July 1999–30 June 2000

SUMMARY

In 1999 monitoring of migratory land birds continued for the eighth year at the Creamer's Refuge migration station in a cooperative project with the Alaska Bird Observatory. Mist nets were used to capture birds in fall on 61 days between 15 July and 29 September. The standard fall array of 36 nets established in 1997 was operated again in 1999. The fall 1999 capture rate (34.9 birds/100 net hours) for all species was just above the average for the first 8 years of this project (31.8). Thirty-two species were captured, including 20 neotropical migrants. Seventy-seven percent of all individuals captured were neotropical migrants; of those, 40% were long-distance migrants wintering primarily south of the USA/Mexico border. American tree sparrows, yellow-rumped and orange-crowned warblers were captured most frequently, followed by dark-eyed juncos, Savannah sparrows, yellow warblers, blackpoll warblers, Lincoln's sparrows, Swainson's thrushes, and Wilson's warblers. The proportion of juvenile birds captured in fall, an index of production, was 88% in 1999, close to the long-term average of 87%. Data on timing of migration are being compiled and analyzed as part of a graduate student thesis.

The educational program continued with banding demonstrations for school classes operating at maximum capacity. Summer demonstrations increased, and "Alaska Bird Camp" ran a weeklong program in its second year.

Key words: Alaska, migration monitoring, mist netting, Neotropical migratory birds.

CONTENTS

BACKGROUND

Declines in populations of migrant land birds have been well documented in North America. Long distance migrants, including flycatchers, thrushes, and wood warblers that breed in North America and winter in Neotropical Central and South America are among the species of concern (Askins et al. 1990; Sauer and Droege 1992). Alaska is an important part of the breeding range of several species of boreal forest land birds known to be declining in other portions of their North American breeding range.

A concerted international conservation effort, *Partners In Flight* Neotropical Migratory Bird Conservation Program, was developed in the early 1990s to address this problem. In Alaska, the *Boreal Partners in Flight* working group provides coordination and direction for local projects so that a comprehensive statewide monitoring and research program can be formed from the individual efforts of the many partners.

The Creamer's Refuge migration station is operated by the Alaska Bird Observatory in cooperation with ADF&G and a host of other contributors. The migration station is part of the statewide monitoring network, providing information on abundance and productivity on a broad scale to complement Breeding Bird Survey, off-road point counts, and MAPS (Monitoring Avian Productivity and Survival) studies. Approximately 150 migration monitoring sites are located throughout North America. Creamer's is the northernmost migration monitoring station and the longest running of 6 stations in Alaska. Among the 19

species captured in adequate numbers for monitoring at the Creamer's migration station are 3 species of conservation concern (gray-cheeked thrush and blackpoll warbler: Alaska State "Species of Special Concern" and Boreal Partners In Flight "Priority Species for Conservation" and Hammond's flycatcher: Boreal Partners In Flight "Priority Species for Conservation").

OBJECTIVE

- Gather information in fall 1999 on the abundance and productivity of migratory songbirds as part of a long-term monitoring project in the boreal forest of central Alaska.

- Collect information on timing of migration, breeding, and molt for a variety of land birds breeding in central Alaska.

STUDY AREA

The migration station is located on Creamer's Field Migratory Waterfowl Refuge in Fairbanks and encompasses about 15 ha of boreal forest, shrub, and wetland habitats at the edge of farm fields.

METHODS

An array of mist nets was used to capture birds. Nets were opened about 7 hours each day, from sunrise to early afternoon, weather permitting. The fall 1999 netting season extended from 15 July to 29 September. In the first 5 years of this project, from 4 to 51 nets were operated on a given day at the station. In 1997 a standard array of mist nets was established using a subset of previous years' nets so that all nets could be operated consistently, regardless of bird abundance or number of staff available. This reduced set of nets was the standard array operated in 1999. Birds were banded with standard aluminum leg bands, and information was collected on age, sex, wing chord, tail length, fat index, breeding condition, and molt.

Public education programs were also provided at the banding station. A 30–45 minute banding demonstration with information about bird migration, biology, and conservation was provided to 2–3 classes of local school children each school day in May and September. Structured programs were also provided to groups from summer science camps and tours. In addition, the Alaska Bird Observatory operated the "Alaska Bird Camp," a weeklong, full day program for 10–12-year-olds. Scheduled visitors were supplied with activity guides and individual booklets before their visit to the banding station. Impromptu presentations were provided to unscheduled drop-in visitors.

RESULTS

FALL 1999

Abundance and Productivity

In fall 1999 nets were operated for 61 days for a total of 12,111 net hours, comparable to prior years (Table 1). A total of 4267 birds were captured, representing 32 species (Table 2). The overall capture rate of 34.76 birds/100 net hours was above the average (31.79) and was the third highest in the 8 years of this project. As in prior years, most species captured were Type A (38%) or Type B (25%) Neotropical migrants, as were most (77%) individuals (Type A, 40%; Type B, 37%). The American tree sparrow, and yellow-rumped and orange-crowned warblers were captured most frequently, followed by the dark-eyed junco, Savannah sparrow, yellow warbler, blackpoll warbler, Lincoln's sparrow, Swainson's thrush, and Wilson's warbler.

Among the 19 regularly captured species in fall, 2 (alder flycatcher and ruby-crowned kinglet) were captured at the lowest rates recorded in the 8 years of fall netting, and 1 (Lincoln's sparrow) was captured at a rate equaling the previous low record (Table 4). Two species (blackpoll warbler and Savannah sparrow) were captured at new record high rates. Overall, 9 species were caught at higher rates than their long-term average (1992–1999), 7 were captured at lower rates than average, and 3 were captured at average rates.

In fall 1999, 88% of birds captured were young of the year (HY, hatch year) (Table 5). This is close to the 8-year average (87%). The proportion of young in 10 of the 19 commonly captured species was higher in 1999 than the long-term average, in 6 species the proportion of young was lower than average, and 3 species were close to average. Only one species (ruby-crowned kinglet) set a new high for proportion of young, another (gray-cheeked thrush) equaled its previous high, and 1 (white-crowned sparrow) set a new low.

TIMING OF MIGRATION

Information on timing of migration, breeding, and molt are being compiled and analyzed as part of a thesis for a graduate degree by Anna-Marie Benson (biologist with the Alaska Bird Observatory), advised by Kevin Winker, Curator of Ornithology at the University of Alaska Museum.

EDUCATION

Forty-five school groups (1129 individuals) participated in banding demonstrations provided by the Alaska Bird Observatory in fall 1999, slightly more than in 1998. This is the maximum number that can be accommodated in September when the banding station is active while schools are in session. The Alaska Bird Observatory conducted its second annual, weeklong "Alaska Bird Camp" in 1999, with nine 10–12-year-olds attending. Workshops on the "Basics of Birding," "Warblers," and other topics were also provided on the Refuge.

CONCLUSIONS AND RECOMMENDATIONS

This was the eighth year of the long-term migratory bird monitoring effort at Creamer's Refuge. The banding station is a cooperative project conducted by the Alaska Bird Observatory with support from the Alaska Department of Fish and Game. This arrangement with a local nonprofit organization has proven capable of sustaining the consistent effort necessary to maintain a project requiring 15–20 years or more of data collection. Recent analyses and reviews have confirmed the usefulness of standardized netting stations for study of the abundance and productivity of migratory bird populations (Dunn and Hussell 1995; Johnson and Geupel 1996; Dunn et al. 1997). In addition to its value in monitoring species of concern, this project is also gathering important information on the timing of migration, reproduction, molt, juvenile dispersal, changes in body condition, and other life-history events. It has also become a valued educational program for regional schools and the general community.

ACKNOWLEDGMENTS

This project was supported by Endangered Species funding through Federal Aid in Wildlife Restoration. Funding was also provided by the Alaska Bird Observatory and its members, US Fish and Wildlife Service (Cost Share Challenge Grant), ABR Inc., Bureau of Land Management, Lawson–Valentine Foundation, the Skaggs Foundation, and other generous donors.

The dedicated board of directors and staff of the Alaska Bird Observatory are responsible for the success of this long-term project. I would especially like to thank Lori Quakenbush, Board President, Anna-Marie Benson, Chief Biologist, Nancy DeWitt, Executive Director, Steve Springer, Banding Biologist, and Andrea Swingley, Education Coordinator for the key roles they played in this effort. Thanks also to the interns and volunteers who regularly got up before dawn to run the nets. Mark Ross, ADF&G, helped coordinate visits by school groups and developed complementary educational programs for visiting school children.

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Table 1 Mist netting effort at Creamer's Refuge migration station, 1992–1999

Season		Year							
		1992	1993	1994	1995	1996	1997	1998	1999
Spring	Number of days nets open	42	43	41	45	44	42	40	40
	Net hours	6903	10,552	11,252	12,731	12,411	7,548	6,760	7,180
	Number of nets per day	16–29	16–33	27–47	36–47	33–45	26	26	24-26
Fall	Number of days nets open	46	53	52	58	57	66	55	61
	Net hours	5890	13,711	13,934	14,156	14,985	14,617	12,091	12,111
	Number of nets per day	4–35	11–47	21–51	16–49	18–49	36	36	26-36

Table 2 Birds captured at Creamer's Refuge migration station, 1999

Species	Migration Type[a]	Spring 1999	Fall 1999
Sharp-shinned Hawk (*Accipter striatus*)	B	2	5
Lesser Yellowlegs (*Tringa flavipes*)	A	9	
Solitary Sandpiper (*Tringa solitaria*)	A	7	
Northern Hawk Owl (*Surnia ulula*)	R	1	
Yellow-bellied Sapsucker (*Sphyrapicus varius*)	B	1	
Downy Woodpecker (*Picoides pubescens*)	R		2
Hairy Woodpecker (*Picoides villosus*)	R		2
Three-toed Woodpecker (*Picoides tridactylus*)	R		2
Northern Flicker (*Colaptes auratus*)	B	1	2
Alder Flycatcher (*Empidonax alnorum*)	A	1	57
Hammond's Flycatcher (*Empidonax hammondi*)	A	8	30
Tree Swallow (*Tachycineta bicolor*)	B	2	
Gray Jay (*Perisoreus canadensis*)	R	1	
Black-capped Chickadee (*Poecile atricapillus*)	R	10	50
Boreal Chickadee (*Poecile hudsonicus*)	R	4	
Ruby-crowned Kinglet (*Regulus calendula*)	B		64
Arctic Warbler (*Phylloscopus sibilatrix*)	P		4
Gray-cheeked Thrush (*Catharus minimus*)	A	11	49
Swainson's Thrush (*Catharus ustulatus*)	A	20	131
Hermit Thrush (*Catharus guttatus*)	B		19
American Robin (*Turdus migratorius*)	B	54	33
Varied Thrush (*Ixoreus naevius*)	N		3
Northern Shrike (*Lanius excubitor*)	N		4
Orange-crowned Warbler (*Vermivora celata*)	A	36	729
Yellow Warbler (*Dendroica petechia*)	A	4	203
Yellow-rumped Warbler (*Dendroica coronata*)	B	80	751
Townsend's Warbler (*Dendroica townsendi*)	A		3
Blackpoll Warbler (*Dendroica striata*)	A	2	81
Northern Waterthrush (*Seiurus noveboracensis*)	A	15	51
Wilson's Warbler (*Wilsonia pussilla*)	A	9	129
American Tree Sparrow (*Spizella arborea*)	N	4	780
Savannah Sparrow (*Passerculus sandwichensis*)	B	22	210
Fox Sparrow (*Passerella iliaca*)	B		70
Lincoln's Sparrow (*Melospiza lincolnii*)	A	12	161
Golden-crowned *Sparrow (Zonotricia atricapilla*)	N		4
White-crowned Sparrow (*Zonotrichia leucophrys*)	B	16	34
Dark-eyed Junco (*Junco hyemalis*)	B	44	458
Rusty Blackbird (*Euphagus carolinus*)	N	4	1
White-winged Crossbill (*Loxia leucoptera*)	N	1	
Common Redpoll (*Carduelis flammea*)	N	45	45
Totals: Individuals		426	4267
Species		29	32

Species	Migration Type[a]	Spring 1999	Fall 1999
Dates nets open		25 Apr–15 Jun	15 Jul–29 Sep
Number of days nets operated		40	61
Number of net hours		7180	12111

[a] Winter range/migration: A = primarily south of USA/Mexico border; B = some populations south of US/Mexico border; P = Pacific/Eurasia/Africa; N = North America; R = Resident.

Table 3 Capture rates (birds/100 net hr) in spring of common species and total for all species, Creamer's Refuge migration station, spring 1999

Species	1992	1993	1994	1995	1996	1997	1998	1999	1992-1999 Average
Hammond's Flycatcher	0.17	0.12	0.14	0.17	0.06	0.12	0.16	0.11	0.13
Ruby-crowned Kinglet	0.29	0.01	0.04	0.05	0.06	0.04	0.06	0.00	0.07
Gray-cheeked Thrush	0.23	0.13	0.19	0.09	0.18	0.07	0.21	0.15	0.16
Swainson's Thrush	0.41	0.45	0.49	0.38	0.63	0.33	0.58	0.28	0.44
American Robin	0.45	0.34	0.28	0.35	0.29	0.50	1.17	0.75	0.52
Orange-crowned Warbler	0.58	0.47	0.40	0.36	0.24	0.25	0.78	0.50	0.45
Yellow Warbler	0.67	0.26	0.36	0.06	0.17	0.13	0.18	0.06	0.24
Yellow-rumped Warbler	1.58	0.93	0.48	0.70	0.65	0.94	1.46	1.11	0.98
Northern Waterthrush	0.33	0.13	0.58	0.19	0.44	0.32	0.21	0.21	0.30
Wilson's Warbler	0.48	0.51	0.51	0.46	0.14	0.17	0.21	0.13	0.33
American Tree Sparrow	0.51	0.01	0.08	0.07	0.19	0.01	0.18	0.06	0.14
Savannah Sparrow	0.83	0.14	0.29	0.25	0.42	0.20	0.56	0.31	0.38
Lincoln's Sparrow	0.09	0.05	0.11	0.16	0.10	0.11	0.99	0.17	0.22
White-crowned Sparrow	0.20	0.08	0.16	0.08	0.07	0.17	0.44	0.22	0.18
Dark-eyed Junco	0.42	0.09	0.21	0.29	0.73	0.45	0.72	0.61	0.44
Common Redpoll	1.17	0.18	1.99	0.68	0.08	0.20	9.51	0.63	1.81
Total (all species)	10.46	4.27	6.91	4.63	4.87	4.29	17.28	5.93	7.33

Table 4 Capture rates (birds/100 net hr) in fall of common species and total for all species, Creamer's Refuge migration station, fall 1999

Species	1992	1993	1994	1995	1996	1997	1998	1999	1992-1999 Average
Alder Flycatcher	0.58	0.55	0.44	0.47	0.48	0.86	0.47	0.33	0.52
Hammond's Flycatcher	0.14	0.10	0.29	0.35	0.59	0.50	0.28	0.31	0.32
Black-capped Chickadee	0.58	0.18	0.21	0.48	0.31	0.23	0.36	0.34	0.34
Ruby-crowned Kinglet	0.88	0.65	0.91	0.87	1.56	1.36	1.15	0.51	0.99
Gray-cheeked Thrush	0.63	0.18	0.20	0.35	0.11	0.28	0.33	0.40	0.31
Swainson's Thrush	1.06	0.67	0.73	1.24	0.59	1.29	0.88	1.04	0.94
American Robin	2.73	0.15	0.27	0.24	0.24	0.27	0.27	0.27	0.56
Orange-crowned Warbler	7.35	1.71	4.23	6.12	3.06	4.41	7.59	5.48	4.99
Yellow Warbler	2.17	0.43	0.64	1.38	0.76	1.29	0.69	1.58	1.12
Yellow-rumped Warbler	13.40	0.41	7.18	4.15	7.77	8.44	11.17	5.60	7.27
Blackpoll Warbler	1.38	0.15	0.35	0.36	0.33	0.70	0.36	1.39	0.63
Northern Waterthrush	0.69	0.22	0.12	0.20	0.22	0.36	0.33	0.40	0.32
Wilson's Warbler	2.15	0.79	0.83	1.19	0.50	1.27	1.26	1.04	1.13
American Tree Sparrow	1.81	2.88	2.46	4.66	1.83	5.22	9.95	5.93	4.34
Savannah Sparrow	0.75	0.52	0.20	1.23	0.55	0.72	0.78	1.64	0.80
Fox Sparrow	0.26	0.23	0.30	0.23	0.25	0.45	0.58	0.57	0.36
Lincoln's Sparrow	2.73	1.09	1.27	2.56	1.56	1.68	2.35	1.09	1.79
White-crowned Sparrow	0.69	0.31	0.43	0.30	0.80	0.48	0.80	0.26	0.51
Dark-eyed Junco	2.33	1.18	3.84	2.92	3.86	3.17	6.75	3.38	3.43
Total (all species)	43.16	12.58	25.32	30.78	26.73	33.41	47.58	34.79	31.79

Table 5 Proportion of juvenile (HY, hatch year) birds in fall captures of common species and for all individuals, Creamer's Refuge migration station, fall 1999

Species	1992	1993	1994	1995	1996	1997	1998	1999	1992-1999 Average
Alder Flycatcher	0.89	0.61	0.76	0.64	0.72	0.68	0.82	0.63	0.72
Hammond's Flycatcher	0.89	0.85	0.76	0.96	0.89	0.90	1.00	0.83	0.89
Black-capped Chickadee	0.94	0.75	0.69	0.90	0.93	0.94	1.00	0.82	0.87
Ruby-crowned Kinglet	0.82	0.90	0.89	0.91	0.87	0.87	0.91	0.92	0.89
Gray-cheeked Thrush	0.79	0.76	0.75	0.78	0.88	0.76	0.90	0.90	0.82
Swainson's Thrush	0.82	0.79	0.86	0.91	0.96	0.90	0.89	0.93	0.88
American Robin	0.42	0.50	0.89	0.76	0.86	0.85	0.87	0.88	0.75
Orange-crowned Warbler	0.83	0.63	0.86	0.86	0.84	0.79	0.91	0.87	0.82
Yellow Warbler	0.91	0.58	0.88	0.84	0.94	0.94	0.90	0.90	0.86
Yellow-rumped Warbler	0.91	0.75	0.94	0.91	0.95	0.94	0.93	0.90	0.90
Blackpoll Warbler	0.94	0.71	0.86	0.94	0.96	0.92	0.84	0.96	0.89
Northern Waterthrush	0.93	0.87	0.94	0.93	0.97	0.90	0.98	0.88	0.93
Wilson's Warbler	0.90	0.67	0.84	0.89	0.85	0.96	0.96	0.98	0.88
American Tree Sparrow	0.67	0.72	0.87	0.81	0.85	0.90	0.93	0.87	0.83
Savannah Sparrow	0.87	0.92	0.96	0.96	0.98	0.92	0.88	0.95	0.93
Fox Sparrow	0.69	0.77	0.79	0.81	0.78	0.68	0.83	0.70	0.76
Lincoln's Sparrow	0.92	0.79	0.93	0.95	0.97	0.93	0.95	0.92	0.92
White-crowned Sparrow	0.86	0.90	0.90	0.91	0.93	0.94	0.93	0.68	0.88
Dark-eyed Junco	0.84	0.88	0.96	0.90	0.91	0.89	0.93	0.89	0.90
Total (all individuals captured)	0.84	0.75	0.90	0.87	0.90	0.89	0.92	0.88	0.87

Table 6 Educational programs and visitors, Creamer's Refuge banding station, 1999

Season	Number of groups	Number of individuals in groups	Number of drop-in visitors
Spring	39	916	
Summer	19	336	
Fall	45	1129	
Alaska Bird Camp	1	9	
Totals	104	2390	723

Alaska Department of Fish and Game
Division of Wildlife Conservation
September 2001

Monitoring Neotropical and Migratory Birds in Alaska

15 May 2000–14 May 2001

John M. Wright

Annual Research Performance Report
Endangered Species Conservation Fund
Federal Aid Study SE-3-8

If using information from this report, the reference may include the following: Wright, J.M. 2001. Monitoring neotropical and migratory birds in Alaska, May 2000–May 2001. Alaska Department of Fish and Game. Annual research report. Endangered species conservation fund federal aid study SE-3-8. Juneau, Alaska. 12 pp.

RESEARCH PERFORMANCE REPORT

STATE: Alaska

COOPERATOR: Alaska Bird Observatory

GRANT NR.: SE-3-8

STUDY TITLE: Monitoring Neotropical and other Migratory Birds

AUTHOR: John M Wright

CONTRACT PERIOD: May 15, 2000–May 14, 2001

SUMMARY

In year 2000 monitoring of migratory landbirds continued for the ninth year at the Creamer's Refuge migration station in a cooperative project with the Alaska Bird Observatory. Mist nets were used to capture birds in spring on 37 days between 5 April and 14 June, and in fall on 57 days between 15 July and 29 September. The spring 2000 capture rate, 7.27 birds/100 net hours, for all species was very near the average for the first 9 years of this project (7.32). We captured 26 species in spring, including 19 Neotropical migrants. Seventy percent of all individuals captured were Neotropical migrants. The most frequently captured species in spring were the yellow-rumped warbler, common redpoll, dark-eyed junco, and American robin. The fall 2000 capture rate, 38.4 for all species, was the third highest in the 9-year history of the migration station. Twenty-one of the 31 species captured in fall were Neotropical migrants. Eighty percent of all individual birds captured were Neotropical migrants. The proportion of juvenile birds captured in fall, an index of production, was 0.92 in fall 2000, equaling the previous high recorded in 1998 and well above the 9-year average of 0.87. Data on timing of migration, molt and fat storage were reported in a master's thesis and 2 publications.

The educational program continued with banding demonstrations for school classes and other programs operating at maximum capacity.

Key words: Alaska, migration monitoring, mist netting, Neotropical migratory birds, educational programs.

CONTENTS

BACKGROUND

Declines in populations of migrant landbirds have been well documented in North America. Long distance migrants, including flycatchers, thrushes, and wood warblers that breed in North America and winter in neotropical Central and South America, are among the species of concern (Askins et al. 1990; Sauer and Droege 1992). Alaska is an important part of the breeding range of several species of boreal forest landbirds known to be declining in other portions of their North American breeding range.

A concerted international conservation effort, *Partners In Flight* Neotropical Migratory Bird Conservation Program, was developed in the early 1990s to address this problem. In Alaska, the *Boreal Partners in Flight* working group provides coordination and direction for local projects so that a comprehensive statewide monitoring and research program can be formed from the individual efforts of the many partners.

The Creamer's Refuge migration station is operated by the Alaska Bird Observatory in cooperation with ADF&G and a host of other contributors. The migration station is part of the statewide monitoring network, providing information on abundance and productivity on a

broad scale to complement Breeding Bird Survey, off-road point counts, and MAPS (Monitoring Avian Productivity and Survival) studies. Approximately 150 migration-monitoring sites are located throughout North America. Creamer's is the northernmost monitoring station and the longest running of 6 stations in Alaska. Among the 19 species captured in adequate numbers for monitoring at the Creamer's migration station are 3 species of conservation concern (gray-cheeked thrush and blackpoll warbler: Alaska State "Species of Special Concern" and Boreal Partners In Flight "Priority Species for Conservation"; Hammond's flycatcher: Boreal Partners In Flight "Priority Species for Conservation").

OBJECTIVE

- Gather information in spring and fall 2000 on the abundance and productivity of migratory songbirds as part of a long-term monitoring project in the boreal forest of central Alaska.

- Collect information on timing of migration, breeding, and molt for a variety of landbirds breeding in central Alaska.

STUDY AREA

The migration station is located on Creamer's Field Migratory Waterfowl Refuge in Fairbanks and encompasses about 20 ha of boreal forest, shrub, and wetland habitats at the edge of farm fields.

METHODS

An array of mist nets was used to capture birds. Nets were opened about 7 hours each day from sunrise to early afternoon, weather permitting. In spring 2000 the netting was conducted from 25 April through 14 June. The fall 2000 netting season extended from 15 July to 30 September. The standard set of nets established in 1997 was operated in 2000. Birds were banded with standard aluminum leg bands, and information was collected on age, sex, wing chord, tail length, fat index, breeding condition, and molt.

Public education programs were also provided at the banding station. A 30–45 minute banding demonstration with information about bird migration, biology, and conservation was provided to 2–3 classes of local school children on most school days in May and September. Structured programs were also provided to groups from summer science camps and tours. In addition, the Alaska Bird Observatory operated the "Alaska Bird Camp", a weeklong, full-day program for 10–12-year-olds. Scheduled visitors were supplied with activity guides and individual booklets before their visit to the banding station. Impromptu presentations were provided to unscheduled drop-in visitors.

RESULTS

SPRING 2000

Abundance and Productivity

In spring 2000, nets were operated on 37 days between 25 April and 14 June for a total of 6177 net hours (Table 1). This netting effort was about 14% lower than the average for the previous 3 years due to inclement weather in 2000. We captured 449 birds, belonging to 26 species (Table 2). Seventy-three percent of the species captured were Neotropical migrants (38% Type A species wintering primarily south of the USA/Mexico border, 35% Type B species with some populations wintering south of the USA/Mexico border). Seventy percent of the individuals captured were Neoptropical migrants (17% Type A, 53 % Type B). The most frequently captured species were the yellow-rumped warbler, common redpoll, dark-eyed junco, and American robin. The overall capture rate in spring 2000 was nearly identical to the 9-year average (Table 3), but only 2 species (yellow-rumped warbler and dark-eyed junco) were captured at higher rates than their average. Nine species were captured at rates lower than average.

FALL 2000

Abundance and Productivity

In fall 2000, nets were operated for 57 days for a total of 12,265 net hours, very similar to the previous 2 years (Table 1). A total of 4713 birds were captured, with 31 species represented (Table 2). As in prior years, a high proportion of species captured (68%) was Neotropical migrants (39% Type A, 29% Type B). Neotropical migrants also comprised the majority of individuals captured (Type A, 22%; Type B, 58%). The yellow-rumped warbler, American tree sparrow, dark-eyed junco, orange-crowned warbler and Lincoln's sparrow were captured most frequently, followed by the yellow warbler and ruby-crowned kinglet.

The overall capture rate of 38.43 birds/100 net hours was above the 1992–2000 average (32.53) and was the third highest in the 9 years of this project (Table 4). Among the 19 regularly captured species in fall, 4 were captured at rates higher than their 9-year average, while 10 were captured at rates below their average.

In fall 2000, 92% of birds captured were young of the year (HY, hatch year) (Table 5). This is higher than the 9-year average (87%). The proportion of young in 6 of the 19 commonly captured species was higher in 2000 than the long-term average; in just 1 species the proportion of young was lower than average and 12 species were close to average. Four species set a new high for proportion of young, another equaled its previous high, and none set a new low.

Timing of Migration, Molt, and Fat Storage

PUBLICATIONS

Information on timing of migration, molt, and fat storage from data collected at the Creamer's Migration Station was reported in a thesis for a graduate degree by Anna-Marie Benson (biologist with the Alaska Bird Observatory), advised by Kevin Winker, Curator of Ornithology at the University of Alaska Museum (abstract in Appendix A., Benson 2000). Two publications using data from the Creamer's Migration Station were completed in 2000, "Timing of breeding range occupancy among high-latitude passerine migrants" (Benson and Winker 2000) and "Updated geographic distribution of eight species of passerines in central Alaska (Benson, Pogson and Doyle 2000).

EDUCATION

Sixty-one school groups (1645 individuals) participated in banding demonstrations provided by the Alaska Bird Observatory in spring and fall 2000 (Table 6). The Alaska Bird Observatory conducted its third annual weeklong "Alaska Bird Camp" in 2000, with ten 10–12-year-olds attending. Workshops on the "Basics of Birding," "Warblers," and other topics were also provided on the Refuge. More than 100 volunteers, including 10 school-age youth, assist in the banding project and other ABO programs. The Alaska Bird Observatory at the Creamer's Migration Station hosted the Western Bird Banding Association year 2000 annual meeting.

CONCLUSIONS AND RECOMMENDATIONS

This was the ninth year of the long-term migratory bird monitoring effort at Creamer's Refuge. The migration station is a cooperative project conducted by the Alaska Bird Observatory with support from the Department of Fish and Game. This arrangement with a local nonprofit organization has proven capable of sustaining the consistent effort necessary to maintain a project requiring 15–20 years or more of data collection. Recent analyses and reviews have confirmed the usefulness of standardized netting stations for study of the abundance and productivity of migratory bird populations (Dunn and Hussell 1995; Johnson and Geupel 1996; Dunn et al. 1997). In addition to its value in monitoring species of concern, this project is also gathering important information on the timing of migration, reproduction, molt, juvenile dispersal, changes in body condition, and other life-history events. It has also become a valued educational program for regional schools and the general community.

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The dedicated board of directors and staff of the Alaska Bird Observatory are responsible for the success of this long-term project. I would especially like to thank Anna-Marie Benson,

RESULTS

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FALL 2000

Abundance and Productivity

In fall 2000, nets were operated for 57 days for a total of 12,265 net hours, very similar to the previous 2 years (Table 1). A total of 4713 birds were captured, with 31 species represented (Table 2). As in prior years, a high proportion of species captured (68%) was Neotropical migrants (39% Type A, 29% Type B). Neotropical migrants also comprised the majority of individuals captured (Type A, 22%; Type B, 58%). The yellow-rumped warbler, American tree sparrow, dark-eyed junco, orange-crowned warbler and Lincoln's sparrow were captured most frequently, followed by the yellow warbler and ruby-crowned kinglet.

The overall capture rate of 38.43 birds/100 net hours was above the 1992–2000 average (32.53) and was the third highest in the 9 years of this project (Table 4). Among the 19 regularly captured species in fall, 4 were captured at rates higher than their 9-year average, while 10 were captured at rates below their average.

In fall 2000, 92% of birds captured were young of the year (HY, hatch year) (Table 5). This is higher than the 9-year average (87%). The proportion of young in 6 of the 19 commonly captured species was higher in 2000 than the long-term average; in just 1 species the proportion of young was lower than average and 12 species were close to average. Four species set a new high for proportion of young, another equaled its previous high, and none set a new low.

Timing of Migration, Molt, and Fat Storage

PUBLICATIONS

Information on timing of migration, molt, and fat storage from data collected at the Creamer's Migration Station was reported in a thesis for a graduate degree by Anna-Marie Benson (biologist with the Alaska Bird Observatory), advised by Kevin Winker, Curator of Ornithology at the University of Alaska Museum (abstract in Appendix A., Benson 2000). Two publications using data from the Creamer's Migration Station were completed in 2000, "Timing of breeding range occupancy among high-latitude passerine migrants" (Benson and Winker 2000) and "Updated geographic distribution of eight species of passerines in central Alaska (Benson, Pogson and Doyle 2000).

EDUCATION

Sixty-one school groups (1645 individuals) participated in banding demonstrations provided by the Alaska Bird Observatory in spring and fall 2000 (Table 6). The Alaska Bird Observatory conducted its third annual weeklong "Alaska Bird Camp" in 2000, with ten 10–12-year-olds attending. Workshops on the "Basics of Birding," "Warblers," and other topics were also provided on the Refuge. More than 100 volunteers, including 10 school-age youth, assist in the banding project and other ABO programs. The Alaska Bird Observatory at the Creamer's Migration Station hosted the Western Bird Banding Association year 2000 annual meeting.

CONCLUSIONS AND RECOMMENDATIONS

This was the ninth year of the long-term migratory bird monitoring effort at Creamer's Refuge. The migration station is a cooperative project conducted by the Alaska Bird Observatory with support from the Department of Fish and Game. This arrangement with a local nonprofit organization has proven capable of sustaining the consistent effort necessary to maintain a project requiring 15–20 years or more of data collection. Recent analyses and reviews have confirmed the usefulness of standardized netting stations for study of the abundance and productivity of migratory bird populations (Dunn and Hussell 1995; Johnson and Geupel 1996; Dunn et al. 1997). In addition to its value in monitoring species of concern, this project is also gathering important information on the timing of migration, reproduction, molt, juvenile dispersal, changes in body condition, and other life-history events. It has also become a valued educational program for regional schools and the general community.

ACKNOWLEDGMENTS

This project was supported by Endangered Species funding through Federal Aid in Wildlife Restoration. Funding was also provided by the Alaska Bird Observatory and its members, US Fish and Wildlife Service (Cost Share Challenge Grant), ABR Inc., Bureau of Land Management, Lawson-Valentine Foundation, the Skaggs Foundation, and other generous donors.

The dedicated board of directors and staff of the Alaska Bird Observatory are responsible for the success of this long-term project. I would especially like to thank Anna-Marie Benson,

Chief Biologist; Nancy DeWitt, Executive Director; David Shaw, Banding Biologist; and Andrea Swingley, Education Coordinator, for the key roles they played in this effort. Thanks also to the interns and volunteers who regularly were up before dawn to run the nets. Mark Ross, ADF&G, helped coordinate visits by school groups and developed complementary educational programs for visiting school children.

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Table 1 Mist netting effort at Creamer's Refuge migration station, 1992–2000

Season		Year								
		1992	1993	1994	1995	1996	1997	1998	1999	2000
Spring	Number of days nets open	42	43	41	45	44	42	40	40	37
	Net hours	6903	10,552	11,252	12,731	12,411	7,548	6,760	7,180	6,177
	Number of nets per day	16–29	16–33	27–47	36–47	33–45	26	26	24-26	21-26
Fall	Number of days nets open	46	53	52	58	57	66	55	61	57
	Net hours	5890	13,711	13,934	14,156	14,985	14,617	12,091	12,111	12,265
	Number of nets per day	4–35	11–47	21–51	16–49	18–49	36	36	26-36	33-36

Table 2 Birds captured at Creamer's Refuge migration station, 2000

Species	Migration Type[a]	Spring 2000	Fall 2000
Sharp-shinned Hawk (*Accipter striatus*)	B	2	4
Solitary Sandpiper (*Tringa solitaria*)	A	7	
Downy Woodpecker (*Picoides pubescens*)	R	1	
Yellow-bellied Flycatcher (*Empidonax flaviventris*)	A		1
Alder Flycatcher (*Empidonax alnorum*)	A		40
Hammond's Flycatcher (*Empidonax hammondi*)	A	11	37
Northern Shrike (*Lanius excubitor*)	N		1
Gray Jay (*Perisoreus canadensis*)	R	1	
Black-capped Chickadee (*Poecile atricapillus*)	R		96
Boreal Chickadee (*Poecile hudsonicus*)	R		8
Brown Creeper (*Certhia americana*)	R		1
Ruby-crowned Kinglet (*Regulus calendula*)	B	1	112
Gray-cheeked Thrush (*Catharus minimus*)	A	2	17
Swainson's Thrush (*Catharus ustulatus*)	A	13	29
Hermit Thrush (*Catharus guttatus*)	B	2	23
American Robin (*Turdus migratorius*)	B	34	14
Varied Thrush (*Ixoreus naevius*)	N	1	5
American pipit (*Anthus rubescens*)	N	1	
Orange-crowned Warbler (*Vermivora celata*)	A	13	471
Yellow Warbler (*Dendroica petechia*)	A	10	119
Yellow-rumped Warbler (*Dendroica coronata*)	B	126	1757
Townsend's Warbler (*Dendroica townsendi*)	A		5
Blackpoll Warbler (*Dendroica striata*)	A	2	30
Northern Waterthrush (*Seiurus noveboracensis*)	A	9	29
Wilson's Warbler (*Wilsonia pussilla*)	A	8	76
American Tree Sparrow (*Spizella arborea*)	N	10	812
Savannah Sparrow (*Passerculus sandwichensis*)	B	18	59
Fox Sparrow (*Passerella iliaca*)	B	4	20
Lincoln's Sparrow (*Melospiza lincolnii*)	A	1	203
Golden-crowned *Sparrow (Zonotricia atricapilla*)	N		1
White-crowned Sparrow (*Zonotrichia leucophrys*)	B	14	65
Dark-eyed Junco (*Junco hyemalis*)	B	38	660
Rusty Blackbird (*Euphagus carolinus*)	N	4	11
Common Redpoll (*Carduelis flammea*)	N	118	7
Pine Siskin (*Carduelis pinus*)	N		1
Totals: Individuals		449	4713
Species		26	31
Dates nets open		25 Apr–14 Jun	15 Jul–29 Sep
Number of days nets operated		37	57
Number of net hours		6177	12265

[a] Winter range/migration: A = primarily south of USA/Mexico border; B = some populations south of US/Mexico border; P = Pacific/Eurasia/Africa; N = North America; R = Resident.

Table 3 Capture rates (birds/100 net hr) in spring of common species and total for all species, Creamer's Refuge migration station, spring 2000

Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	1992-2000 Average
Hammond's Flycatcher	0.17	0.12	0.14	0.17	0.06	0.12	0.16	0.11	0.18	0.14
Ruby-crowned Kinglet	0.29	0.01	0.04	0.05	0.06	0.04	0.06	0.00	0.02	0.06
Gray-cheeked Thrush	0.23	0.13	0.19	0.09	0.18	0.07	0.21	0.15	0.03	0.14
Swainson's Thrush	0.41	0.45	0.49	0.38	0.63	0.33	0.58	0.28	0.21	0.42
American Robin	0.45	0.34	0.28	0.35	0.29	0.50	1.17	0.75	0.55	0.52
Orange-crowned Warbler	0.58	0.47	0.40	0.36	0.24	0.25	0.78	0.50	0.21	0.42
Yellow Warbler	0.67	0.26	0.36	0.06	0.17	0.13	0.18	0.06	0.16	0.23
Yellow-rumped Warbler	1.58	0.93	0.48	0.70	0.65	0.94	1.46	1.11	2.04	1.10
Northern Waterthrush	0.33	0.13	0.58	0.19	0.44	0.32	0.21	0.21	0.15	0.28
Wilson's Warbler	0.48	0.51	0.51	0.46	0.14	0.17	0.21	0.13	0.13	0.30
American Tree Sparrow	0.51	0.01	0.08	0.07	0.19	0.01	0.18	0.06	0.16	0.14
Savannah Sparrow	0.83	0.14	0.29	0.25	0.42	0.20	0.56	0.31	0.29	0.37
Lincoln's Sparrow	0.09	0.05	0.11	0.16	0.10	0.11	0.99	0.17	0.02	0.20
White-crowned Sparrow	0.20	0.08	0.16	0.08	0.07	0.17	0.44	0.22	0.23	0.18
Dark-eyed Junco	0.42	0.09	0.21	0.29	0.73	0.45	0.72	0.61	0.62	0.46
Common Redpoll	1.17	0.18	1.99	0.68	0.08	0.20	9.51	0.63	1.91	1.82
Total (all species)	10.46	4.27	6.91	4.63	4.87	4.29	17.28	5.93	7.27	7.32

Table 4 Capture rates (birds/100 net hr) in fall of common species and total for all species, Creamer's Refuge migration station, fall 2000

Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	1992-2000 Average
Alder Flycatcher	0.58	0.55	0.44	0.47	0.48	0.86	0.47	0.33	0.33	0.50
Hammond's Flycatcher	0.14	0.10	0.29	0.35	0.59	0.50	0.28	0.31	0.30	0.32
Black-capped Chickadee	0.58	0.18	0.21	0.48	0.31	0.23	0.36	0.34	0.78	0.39
Ruby-crowned Kinglet	0.88	0.65	0.91	0.87	1.56	1.36	1.15	0.51	0.91	0.98
Gray-cheeked Thrush	0.63	0.18	0.20	0.35	0.11	0.28	0.33	0.40	0.14	0.29
Swainson's Thrush	1.06	0.67	0.73	1.24	0.59	1.29	0.88	1.04	0.24	0.86
American Robin	2.73	0.15	0.27	0.24	0.24	0.27	0.27	0.27	0.11	0.51
Orange-crowned Warbler	7.35	1.71	4.23	6.12	3.06	4.41	7.59	5.48	3.84	4.87
Yellow Warbler	2.17	0.43	0.64	1.38	0.76	1.29	0.69	1.58	0.97	1.10
Yellow-rumped Warbler	13.40	0.41	7.18	4.15	7.77	8.44	11.17	5.60	14.33	8.05
Blackpoll Warbler	1.38	0.15	0.35	0.36	0.33	0.70	0.36	1.39	0.24	0.58
Northern Waterthrush	0.69	0.22	0.12	0.20	0.22	0.36	0.33	0.40	0.24	0.31
Wilson's Warbler	2.15	0.79	0.83	1.19	0.50	1.27	1.26	1.04	0.62	1.07
American Tree Sparrow	1.81	2.88	2.46	4.66	1.83	5.22	9.95	5.93	6.62	4.60
Savannah Sparrow	0.75	0.52	0.20	1.23	0.55	0.72	0.78	1.64	0.48	0.76
Fox Sparrow	0.26	0.23	0.30	0.23	0.25	0.45	0.58	0.57	0.16	0.34
Lincoln's Sparrow	2.73	1.09	1.27	2.56	1.56	1.68	2.35	1.09	1.66	1.78
White-crowned Sparrow	0.69	0.31	0.43	0.30	0.80	0.48	0.80	0.26	0.53	0.51
Dark-eyed Junco	2.33	1.18	3.84	2.92	3.86	3.17	6.75	3.38	5.38	3.65
Total (all species)	43.16	12.58	25.32	30.78	26.73	33.41	47.58	34.79	38.43	32.53

Table 5 Proportion of juvenile (HY, hatch year) birds in fall captures of common species and for all individuals, Creamer's Refuge migration station, fall 2000

Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	1992-2000 Average
Alder Flycatcher	0.89	0.61	0.76	0.64	0.72	0.68	0.82	0.63	0.75	0.72
Hammond's Flycatcher	0.89	0.85	0.76	0.96	0.89	0.90	1.00	0.83	0.92	0.89
Black-capped Chickadee	0.94	0.75	0.69	0.90	0.93	0.94	1.00	0.82	0.92	0.88
Ruby-crowned Kinglet	0.82	0.90	0.89	0.91	0.87	0.87	0.91	0.92	0.93	0.89
Gray-cheeked Thrush	0.79	0.76	0.75	0.78	0.88	0.76	0.90	0.90	0.88	0.82
Swainson's Thrush	0.82	0.79	0.86	0.91	0.96	0.90	0.89	0.93	0.93	0.89
American Robin	0.42	0.50	0.89	0.76	0.86	0.85	0.87	0.88	0.92	0.77
Orange-crowned Warbler	0.83	0.63	0.86	0.86	0.84	0.79	0.91	0.87	0.82	0.82
Yellow Warbler	0.91	0.58	0.88	0.84	0.94	0.94	0.90	0.90	0.92	0.87
Yellow-rumped Warbler	0.91	0.75	0.94	0.91	0.95	0.94	0.93	0.90	0.93	0.91
Blackpoll Warbler	0.94	0.71	0.86	0.94	0.96	0.92	0.84	0.96	1.00	0.90
Northern Waterthrush	0.93	0.87	0.94	0.93	0.97	0.90	0.98	0.88	0.90	0.92
Wilson's Warbler	0.90	0.67	0.84	0.89	0.85	0.96	0.96	0.98	0.88	0.88
American Tree Sparrow	0.67	0.72	0.87	0.81	0.85	0.90	0.93	0.87	0.96	0.84
Savannah Sparrow	0.87	0.92	0.96	0.96	0.98	0.92	0.88	0.95	0.98	0.94
Fox Sparrow	0.69	0.77	0.79	0.81	0.78	0.68	0.83	0.70	0.80	0.76
Lincoln's Sparrow	0.92	0.79	0.93	0.95	0.97	0.93	0.95	0.92	0.97	0.92
White-crowned Sparrow	0.86	0.90	0.90	0.91	0.93	0.94	0.93	0.68	0.92	0.89
Dark-eyed Junco	0.84	0.88	0.96	0.90	0.91	0.89	0.93	0.89	0.95	0.91
Total (all individuals captured)	0.84	0.75	0.90	0.87	0.90	0.89	0.92	0.88	0.92	0.87

Table 6 Educational programs and visitors, Creamer's Refuge banding station, 2000

Program	Number of groups	Number of individuals in groups
Spring and Fall Banding	61	1,645
Demonstrations		
Invited Programs	2	30
Summer Adult Groups	6	92
Summer Youth Groups	9	181
Alaska Bird Camp	1	10
Workshops, Walks, Seminars	9	295
Western Bird Banding Assoc.	1	46
Independent Visitors		428
Totals	89	2727

Appendix A. Abstract of M.S. Thesis by Anna-Marie Benson, Temporal patterns of migration, molt, and fat storage among high-latitude passerine migrants. University of Alaska, Fairbanks.

Aspects of migration, fattening, and molt in trans-continental passerine migrants were examined during spring and fall migration in Fairbanks, Alaska (64 50' N, 147 50'W). From 1992 to 1998, 25,718 birds of 18 species were banded. Based on median dates of spring and autumn passage, species-level estimates of the duration of breeding range occupation ranged from 48 to 129 days. Adults departed significantly later than immatures in 11 of 18 species examined and significantly earlier in only one species, the Alder Flycatcher. Adults had significantly higher fat score than immatures in most species, but these differences were attributable to the influence of ambient temperatures, length of preceding night, and the time of day the bird was captured. Adults of many species overlapped the final stages of prebasic molt with autumn migration, and individuals that did so had less stored fat than those that were not molting.

Alaska Department of Fish and Game
Division of Wildlife Conservation
September 2002

Monitoring Neotropical and Migratory Birds in Alaska

16 May 2001–15 May 2002

John M. Wright

Annual Research Performance Report
Endangered Species Conservation Fund
Federal Aid Project E-1-1-1

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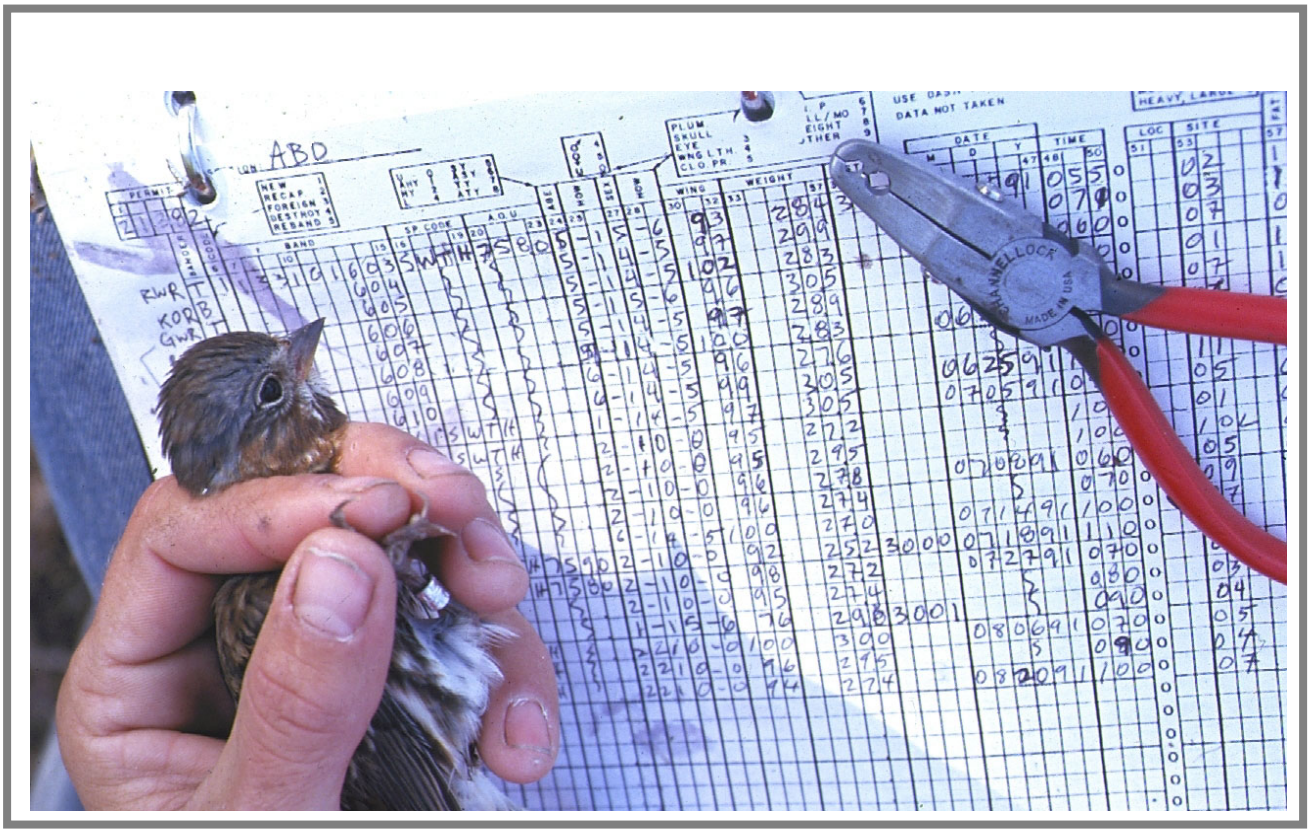

ADF&G

Alaska Bird Observatory

Banding fox sparrow while monitoring migratory landbirds

Grant E-1-1
Project 1
December 2002
Federal Aid in Wildlife Restoration

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

ANNUAL PERFORMANCE REPORT
ENDANGERED SPECIES PROJECT

STATE: Alaska

COOPERATOR: Alaska Bird Observatory

GRANT NR.: E-1-1,1

TITLE: Monitoring Neotropical and other Migratory Birds

AUTHOR: John M Wright

PERIOD: 16 May 2001–15 May 2002

SUMMARY

In 2001 monitoring of migratory landbirds continued for the tenth year at the Creamer's Refuge migration station in a cooperative project with the Alaska Bird Observatory. Mist nets were used to capture birds in spring on 37 days between 5 April and 7 June, and in fall on 57 days between 15 July and 23 September. The spring 2001 capture rate for all species, 8.84 birds/100 net hours, was 18% above the average for the first 10 years of this project. Twenty-nine species were captured in the spring, including 21 Neotropical migrants. Sixty-six percent of all individuals captured were Neotropical migrants. The most frequently captured species in spring were the common redpoll, yellow-rumped warbler, violet-green swallow, American robin, yellow warbler, and dark-eyed junco. In fall 2001 the capture rate for all species combined, 21.02, was the second lowest in the 10-year history of the migration station. Twenty-two of the 33 species captured in fall were Neotropical migrants. Eighty-seven percent of all individual birds captured were Neotropical migrants. The yellow-rumped warbler, orange-crowned warbler, dark-eyed junco, American tree sparrow, and Lincoln's sparrow were captured most frequently. The proportion of juvenile birds captured in fall, an index of production, was 0.91 in fall 2000, above the 10-year average of 0.88.

The educational program provided banding demonstrations with conservation information to 82 groups with 2000 participants. Sixty-eight volunteers, including 8 school-age youth and 11 interns, participated in the banding project and other bird studies.

Key words: Alaska, educational programs, migration monitoring, mist netting, Neotropical migratory birds.

CONTENTS

BACKGROUND

Declines in populations of migrant landbirds have been well documented in North America. Long distance migrants, including flycatchers, thrushes and wood warblers that breed in North America and winter in Neotropical Central and South America, are among the species of concern (Askins et al. 1990; Sauer and Droege 1992). Alaska is an important part of the breeding range of several species of boreal forest landbirds known to be declining in other portions of their North American breeding range.

A concerted international conservation effort, *Partners In Flight* Neotropical Migratory Bird Conservation Program, was developed in the early 1990s to address this problem. In Alaska the *Boreal Partners in Flight* working group provides coordination and direction for local

projects so that a comprehensive statewide monitoring and research program can be formed from the individual efforts of the many partners.

The Creamer's Refuge migration station is operated by the Alaska Bird Observatory in cooperation with the Alaska Department of Fish and Game (ADF&G) and a host of other contributors. The migration station is part of the statewide monitoring network, providing information on abundance and productivity on a broad scale to complement Breeding Bird Survey, off-road point counts, and MAPS (Monitoring Avian Productivity and Survival) studies. Approximately 150 migration monitoring sites are located throughout North America. Creamer's is the northernmost migration monitoring station and the longest-running of 6 stations in Alaska. Among the 19 species captured in adequate numbers for monitoring at the Creamer's migration station are 3 species of conservation concern (gray-cheeked thrush and blackpoll warbler: Alaska State "Species of Special Concern" and Boreal Partners In Flight "Priority Species for Conservation"; Hammond's flycatcher: Boreal Partners In Flight "Priority Species for Conservation").

OBJECTIVE

- Gather information in spring and fall 2001 on the abundance and productivity of migratory songbirds as part of a long-term monitoring project in the boreal forest of central Alaska.

- Collect information on timing of migration, breeding, and molt for a variety of landbirds breeding in central Alaska.

STUDY AREA

The migration station is located on Creamer's Field Migratory Waterfowl Refuge in Fairbanks and encompasses about 20 ha of boreal forest, shrub, and wetland habitats at the edge of farm fields and boreal forest.

METHODS

An array of mist nets was used to capture birds. Nets were opened about 6 hours each day, from sunrise to around noon, weather permitting. In spring 2001 the netting was conducted from 25 April through 7 June. The fall 2001 netting season extended from 15 July to 23 September. The standard set of nets established in 1997 was operated in 2001, but the netting hours were shortened by closing approximately 1 hour earlier. Analysis of previous year's data indicated there were few birds captured in early afternoon. Birds were banded with standard aluminum leg bands, and information was collected on age, sex, wing chord, tail length, fat index, breeding condition, and molt.

Public education programs were also provided at the banding station. A 30–45 minute banding demonstration with information about bird migration, biology, and conservation was provided to 2–3 classes of local school children on most school days in May and September. Structured programs were also provided to groups from summer science camps and tours.

Scheduled visitors were supplied with activity guides and individual booklets before their visit to the banding station. Impromptu presentations were conducted for drop-in visitors.

RESULTS

SPRING 2001

Abundance

In spring 2001, nets were operated on 34 days between 25 April and 7 June for a total of 5137 net hours (Table 1). This netting effort was well below the previous 4 years' effort, which averaged 6916. Four hundred and fifty-four birds were captured, belonging to 29 species (Table 2). Seventy-two percent of the species captured were Neotropical migrants (41% Type A species wintering primarily south of the U.S./Mexico border, 31% Type B species with some populations wintering south of the U.S./Mexico border). Sixty-six percent of the individuals captured were Neoptropical migrants (32% Type A, 34 % Type B). The most frequently captured species were the common redpoll, yellow-rumped warbler, violet-green swallow, American robin, yellow warbler, and dark-eyed junco. The overall capture rate in spring 2001 was nearly 18% above the 10-year average (Table 3). Seven common species were captured at higher rates than their average, while 9 were captured at rates lower than average.

FALL 2001

Abundance and Productivity

In fall 2001, nets were operated for 57 days for a total of 11,821 net hours, just 2.5% below the average of the prior 3 years (Table 1). A total of 2485 birds were captured, with 33 species represented (Table 2). As in prior years, a high proportion of species captured (66%) was Neotropical migrants (36% Type A, 30% Type B). Neotropical migrants also comprised the majority of individuals captured (Type A, 37%; Type B, 50%). The yellow-rumped warbler, orange-crowned warbler, dark-eyed junco, American tree sparrow, and Lincoln's sparrow were captured most frequently. Trends in capture rates of common species over the first 10 years of this project are portrayed in Figure 1.

The overall capture rate of 21.02 birds/100 net hours was the second lowest in the 10 years of this project, 33% below the 10-year average (Table 4). Among the 19 regularly captured species in fall, just 3 were captured at rates higher than their 9-year average, 3 were captured at rates equaling their average, while 13 were captured at rates below their average.

In fall 2001, 91% of birds captured were young of the year (HY, hatch year) (Table 5). This is higher than the 10-year average (88%). The proportion of young in 7 of the 19 commonly captured species was higher in 2001 than the 10-year average, in just 2 species the proportion of young was lower than average, and 10 species were close to average.

TIMING OF MIGRATION, MOLT, AND FAT STORAGE

Information on timing of migration, molt, and fat storage from data collected at the Creamer's Migration Station was recently reported in a master's thesis and 2 publications (Benson 2000; Benson et al. 2000; Benson and Winker 2001).

EDUCATION

Banding demonstrations with conservation education programs were presented to 82 school, camp, youth and adult groups (2000 participants) and 321 independent visitors (Table 6). Overall, more than 4600 people attended programs or visited the banding station. Sixty-eight volunteers, including 8 school-age children, assisted at the banding station. Eleven interns were trained and participated in bird studies.

CONCLUSIONS AND RECOMMENDATIONS

This was the tenth year of the long-term migratory bird monitoring effort at Creamer's Refuge. The migration station is a cooperative project conducted by the Alaska Bird Observatory with support from ADF&G. This arrangement with a local nonprofit organization has proven capable of sustaining the consistent effort necessary to maintain a project requiring 15–20 years or more of data collection. Recent analyses and reviews have confirmed the usefulness of standardized netting stations for study of the abundance and productivity of migratory bird populations (Dunn and Hussell 1995; Johnson and Geupel 1996; Dunn et al. 1997). In addition to its value in monitoring species of concern, this project is also gathering important information on the timing of migration, reproduction, molt, juvenile dispersal, changes in body condition, and other life-history events. It has also become a valued educational program for regional schools and the general community.

ACKNOWLEDGMENTS

This project was supported by Endangered Species funding through Federal Aid in Wildlife Restoration. Funding was also provided by the Alaska Bird Observatory and its members, US Fish and Wildlife Service (Cost Share Challenge Grant), ABR Inc., Bureau of Land Management, and other generous donors.

The dedicated board of directors and staff of the Alaska Bird Observatory are responsible for the success of this long-term project. I would especially like to thank Anna-Marie Benson, Chief Biologist; Nancy DeWitt, Executive Director; David Shaw, Banding Biologist; and Andrea Swingley, Education Coordinator for the key roles they played in this effort. Thanks also to the interns and volunteers who regularly got up before dawn to run the nets. Mark Ross (ADF&G) helped coordinate visits by school groups and developed complementary educational programs for visiting school children.

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BENSON A-M AND K WINKER. 2001. Timing of breeding range occupancy among high-latitude passerine migrants. *Auk* 118:513–519.

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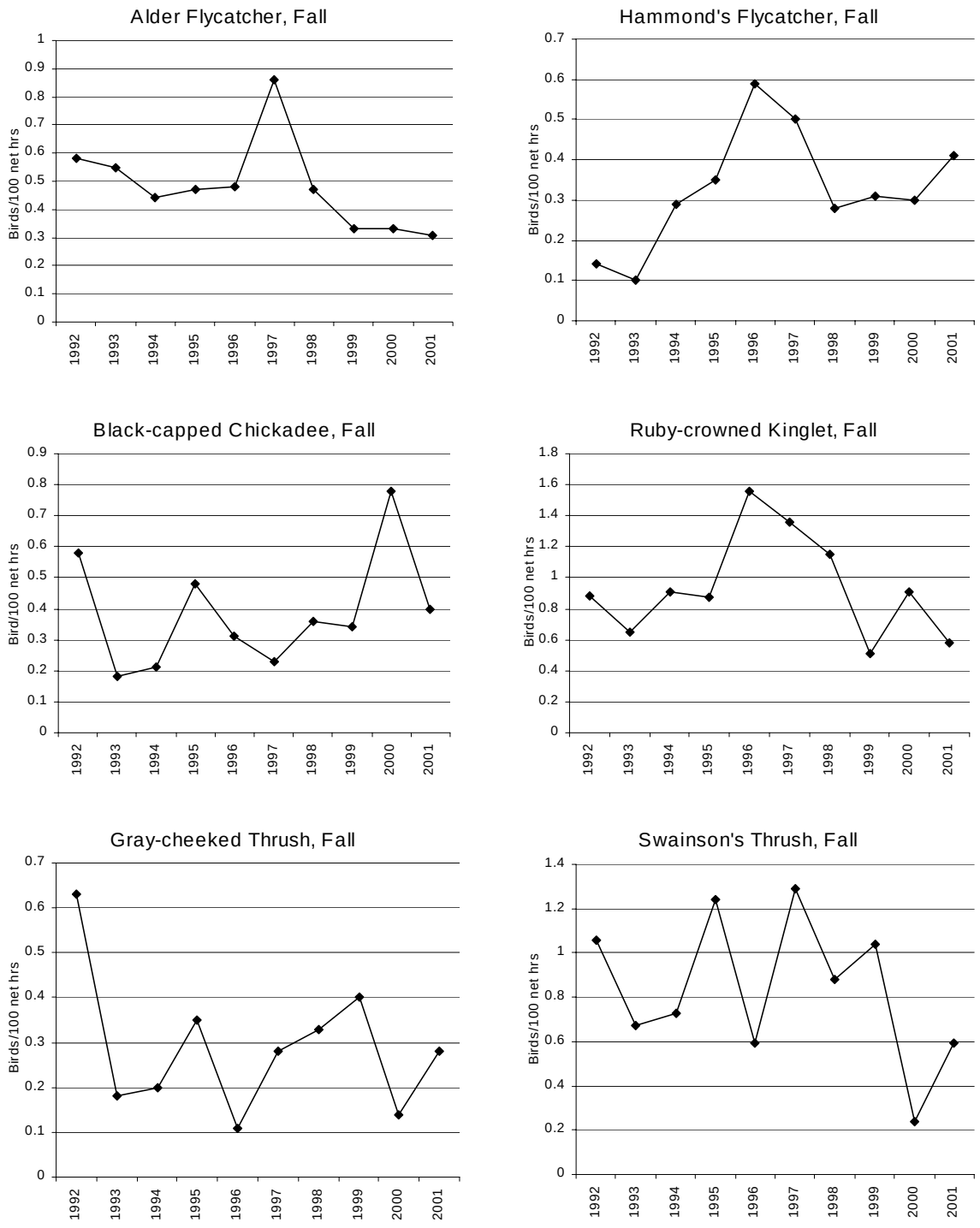

Figure 1 Trends in capture rates of common species at the Creamer's Migratory Banding Station, 1992–2001

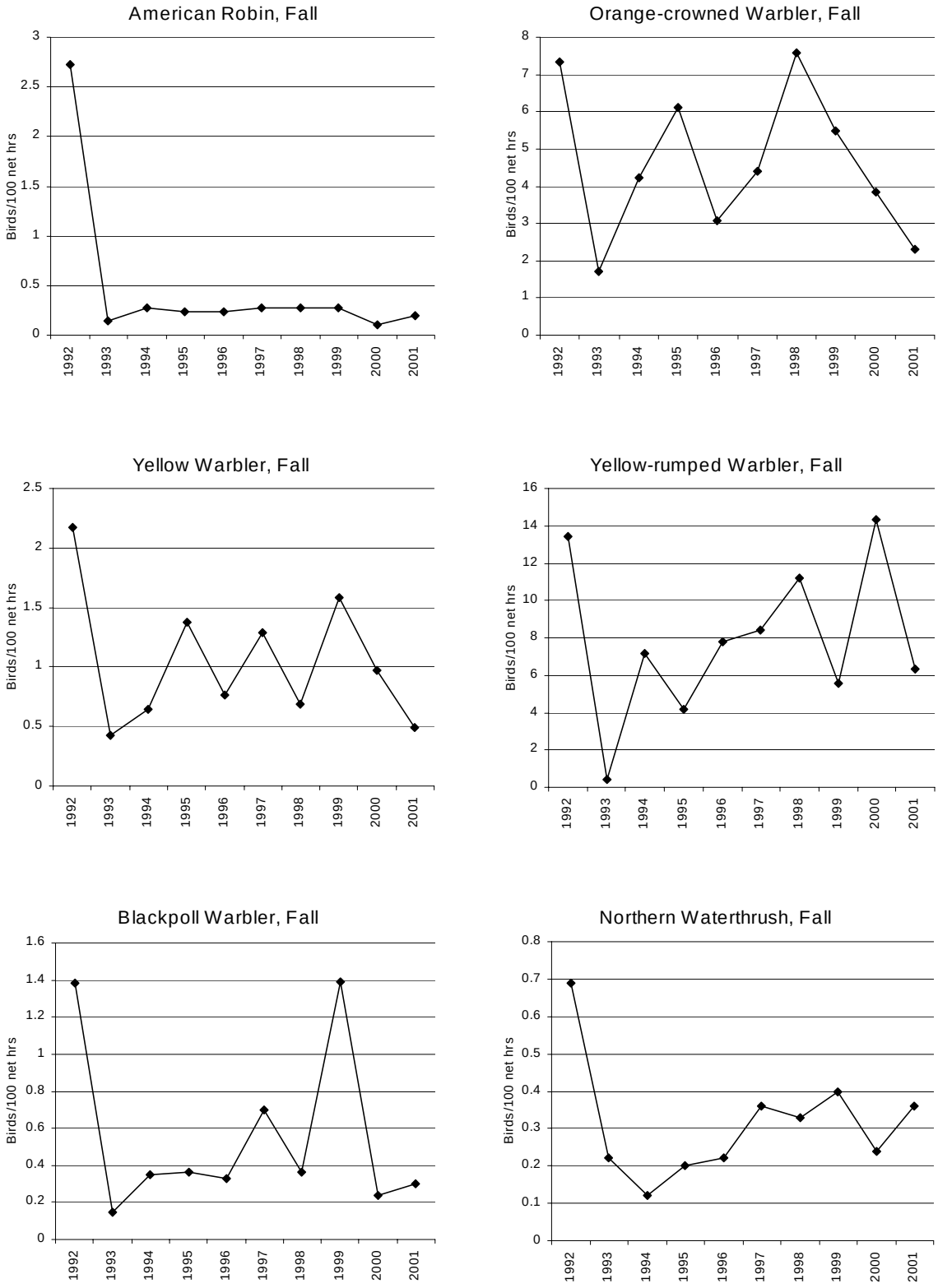

Figure 1 (cont'd) Trends in capture rates of common species at the Creamer's Migratory Banding Station, 1992–2001

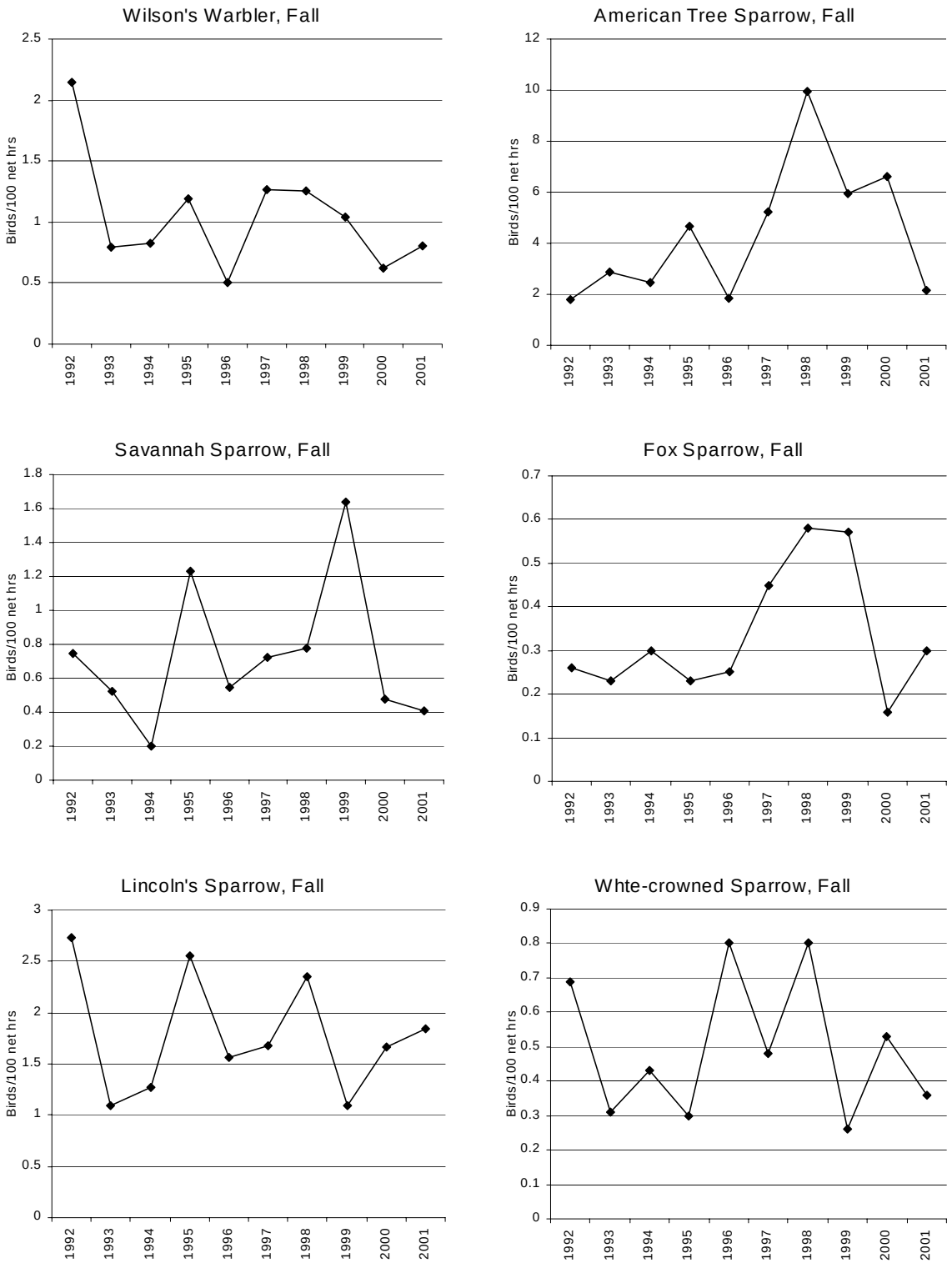

Figure 1 (cont'd) Trends in capture rates of common species at the Creamer's Migratory Banding Station, 1992–2001

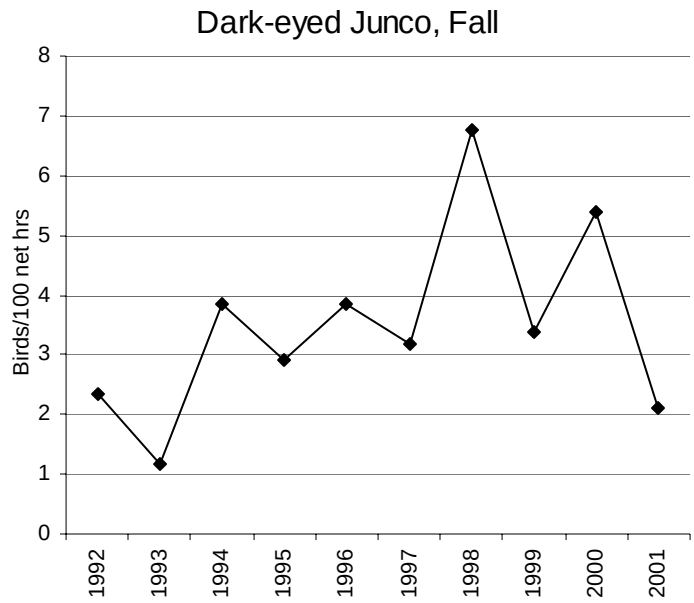

Figure 1 (cont'd) Trends in capture rates of common species at the Creamer's Migratory Banding Station, 1992–2001

Table 1 Mist netting effort at Creamer's Refuge migration station, 1992–2001

Season	Status	Year									
		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Spring	Number of days nets open	42	43	41	45	44	42	40	40	37	34
	Net hours	6,903	10,552	11,252	12,731	12,411	7,548	6,760	7,180	6,177	5,137
	Number of nets per day	16–29	16–33	27–47	36–47	33–45	26	26	24–26	21–26	17–26
Fall	Number of days nets open	46	53	52	58	57	66	55	61	57	57
	Net hours	5,890	13,711	13,934	14,156	14,985	14,617	12,091	12,111	12,265	11,821
	Number of nets per day	4–35	11–47	21–51	16–49	18–49	36	36	26–36	33–36	36

Table 2 Birds captured at Creamer's Refuge migration station, 2001

Species	Migration type[a]	Spring 2001	Fall 2001
Sharp-shinned Hawk (*Accipiter striatus*)	B	1	1
Northern Goshawk (*Accipiter gentiles*)	R		1
Merlin (*Falco columbarius*)	B		1
Lesser Yellowlegs (*Tringa flavipes*)	B	1	
Solitary Sandpiper (*Tringa solitaria*)	A	8	
Downy Woodpecker (*Picoides pubescens*)	R	2	
Hairy Woodpecker (*Picoides villosus*)	R		3
Three-toed Woodpecker (*Picoides tridactylus*)	R		1
Yellow-bellied Flycatcher (*Empidonax flaviventris*)	A		1
Alder Flycatcher (*Empidonax alnorum*)	A		37
Hammond's Flycatcher (*Empidonax hammondi*)	A	12	48
Tree Swallow (*Tachycineta bicolor*)	B	6	
Violet-green Swallow (*Tachycineta thalassina*)	A	51	
Cliff Swallow (*Petrochelidon pyrrhonota*)	A	1	
Northern Shrike (*Lanius excubitor*)	N		1
Black-capped Chickadee (*Poecile atricapillus*)	R	10	47
Boreal Chickadee (*Poecile hudsonicus*)	R	1	6
Brown Creeper (*Certhia americana*)	R		1
Ruby-crowned Kinglet (*Regulus calendula*)	B		68
Gray-cheeked Thrush (*Catharus minimus*)	A	2	33
Swainson's Thrush (*Catharus ustulatus*)	A	10	70
Hermit Thrush (*Catharus guttatus*)	B		15
American Robin (*Turdus migratorius*)	B	28	23
Varied Thrush (*Ixoreus naevius*)	N		6
Bohemian Waxwing (*Bombycilla garrulus*)	R	1	
Orange-crowned Warbler (*Vermivora celata*)	A	11	271
Yellow Warbler (*Dendroica petechia*)	A	27	58
Yellow-rumped Warbler (*Dendroica coronata*)	B	64	748
Townsend's Warbler (*Dendroica townsendi*)	A		5
Blackpoll Warbler (*Dendroica striata*)	A	12	35
Northern Waterthrush (*Seiurus noveboracensis*)	A	9	43
Wilson's Warbler (*Wilsonia pussilla*)	A	2	95
American Tree Sparrow (*Spizella arborea*)	N	3	256
Savannah Sparrow (*Passerculus sandwichensis*)	B	12	48
Fox Sparrow (*Passerella iliaca*)	B	4	35
Lincoln's Sparrow (*Melospiza lincolnii*)	A	2	217
White-crowned Sparrow (*Zonotrichia leucophrys*)	B	12	43
Dark-eyed Junco (*Junco hyemalis*)	B	27	251
Rusty Blackbird (*Euphagus carolinus*)	N	5	
Common Redpoll (*Carduelis flammea*)	N	129	18
Pine Siskin (*Carduelis pinus*)	N	1	1
Totals: Individuals		454	2,485
Species		29	33
Dates nets open		25 Apr–7 Jun	15 Jul–23 Sep
Number of days nets operated		34	57
Number of net hours		5,137	11,821

[a] Winter range/migration: A = primarily south of U.S./Mexico border; B = some populations south of U.S./Mexico border; P = Pacific/Eurasia/Africa; N = North America; R = Resident.

Table 3 Capture rates (birds/100 net hr) in spring of common species and total for all species, Creamer's Refuge migration station, spring 2001

Species	Year										1992–2001
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	$\bar{x}$
Hammond's Flycatcher	0.17	0.12	0.14	0.17	0.06	0.12	0.16	0.11	0.18	0.23	0.15
Ruby-crowned Kinglet	0.29	0.01	0.04	0.05	0.06	0.04	0.06	0.00	0.02	0.00	0.06
Gray-cheeked Thrush	0.23	0.13	0.19	0.09	0.18	0.07	0.21	0.15	0.03	0.04	0.13
Swainson's Thrush	0.41	0.45	0.49	0.38	0.63	0.33	0.58	0.28	0.21	0.19	0.40
American Robin	0.45	0.34	0.28	0.35	0.29	0.50	1.17	0.75	0.55	0.55	0.52
Orange-crowned Warbler	0.58	0.47	0.40	0.36	0.24	0.25	0.78	0.50	0.21	0.21	0.40
Yellow Warbler	0.67	0.26	0.36	0.06	0.17	0.13	0.18	0.06	0.16	0.53	0.26
Yellow-rumped Warbler	1.58	0.93	0.48	0.70	0.65	0.94	1.46	1.11	2.04	1.25	1.11
Northern Waterthrush	0.33	0.13	0.58	0.19	0.44	0.32	0.21	0.21	0.15	0.18	0.27
Wilson's Warbler	0.48	0.51	0.51	0.46	0.14	0.17	0.21	0.13	0.13	0.04	0.28
American Tree Sparrow	0.51	0.01	0.08	0.07	0.19	0.01	0.18	0.06	0.16	0.06	0.13
Savannah Sparrow	0.83	0.14	0.29	0.25	0.42	0.20	0.56	0.31	0.29	0.23	0.35
Lincoln's Sparrow	0.09	0.05	0.11	0.16	0.10	0.11	0.99	0.17	0.02	0.04	0.18
White-crowned Sparrow	0.20	0.08	0.16	0.08	0.07	0.17	0.44	0.22	0.23	0.23	0.19
Dark-eyed Junco	0.42	0.09	0.21	0.29	0.73	0.45	0.72	0.61	0.62	0.53	0.47
Common Redpoll	1.17	0.18	1.99	0.68	0.08	0.20	9.51	0.63	1.91	2.51	1.89
Total (all species)	10.46	4.27	6.91	4.63	4.87	4.29	17.28	5.93	7.27	8.84	7.48

Table 4 Capture rates (birds/100 net hr) in fall of common species and total for all species, Creamer's Refuge migration station, fall 2001

Species	Year										1992–2001	
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	$\bar{x}$	s
Alder Flycatcher	0.58	0.55	0.44	0.47	0.48	0.86	0.47	0.33	0.33	0.31	0.48	0.16
Hammond's Flycatcher	0.14	0.10	0.29	0.35	0.59	0.50	0.28	0.31	0.30	0.41	0.33	0.14
Black-capped Chickadee	0.58	0.18	0.21	0.48	0.31	0.23	0.36	0.34	0.78	0.40	0.39	0.18
Ruby-crowned Kinglet	0.88	0.65	0.91	0.87	1.56	1.36	1.15	0.51	0.91	0.58	0.94	0.32
Gray-cheeked Thrush	0.63	0.18	0.20	0.35	0.11	0.28	0.33	0.40	0.14	0.28	0.29	0.14
Swainson's Thrush	1.06	0.67	0.73	1.24	0.59	1.29	0.88	1.04	0.24	0.59	0.83	0.31
American Robin	2.73	0.15	0.27	0.24	0.24	0.27	0.27	0.27	0.11	0.19	0.47	0.75
Orange-crowned Warbler	7.35	1.71	4.23	6.12	3.06	4.41	7.59	5.48	3.84	2.29	4.61	1.91
Yellow Warbler	2.17	0.43	0.64	1.38	0.76	1.29	0.69	1.58	0.97	0.49	1.04	0.53
Yellow-rumped Warbler	13.40	0.41	7.18	4.15	7.77	8.44	11.17	5.60	14.33	6.33	7.88	4.01
Blackpoll Warbler	1.38	0.15	0.35	0.36	0.33	0.70	0.36	1.39	0.24	0.30	0.56	0.44
Northern Waterthrush	0.69	0.22	0.12	0.20	0.22	0.36	0.33	0.40	0.24	0.36	0.31	0.15
Wilson's Warbler	2.15	0.79	0.83	1.19	0.50	1.27	1.26	1.04	0.62	0.80	1.05	0.45
American Tree Sparrow	1.81	2.88	2.46	4.66	1.83	5.22	9.95	5.93	6.62	2.17	4.35	2.51
Savannah Sparrow	0.75	0.52	0.20	1.23	0.55	0.72	0.78	1.64	0.48	0.41	0.73	0.40
Fox Sparrow	0.26	0.23	0.30	0.23	0.25	0.45	0.58	0.57	0.16	0.30	0.33	0.14
Lincoln's Sparrow	2.73	1.09	1.27	2.56	1.56	1.68	2.35	1.09	1.66	1.84	1.78	0.56
White-crowned Sparrow	0.69	0.31	0.43	0.30	0.80	0.48	0.80	0.26	0.53	0.36	0.50	0.19
Dark-eyed Junco	2.33	1.18	3.84	2.92	3.86	3.17	6.75	3.38	5.38	2.12	3.49	1.53
Total (all species)	43.16	12.58	25.32	30.78	26.73	33.41	47.58	34.79	38.43	21.02	31.38	9.93

Table 5 Proportion of juvenile (HY, hatch year) birds in fall captures of common species and for all individuals, Creamer's Refuge migration station, fall 2001

Species	Year										1992–2001
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	$\bar{x}$
Alder Flycatcher	0.89	0.61	0.76	0.64	0.72	0.68	0.82	0.63	0.75	0.59	0.71
Hammond's Flycatcher	0.89	0.85	0.76	0.96	0.89	0.90	1.00	0.83	0.92	0.87	0.89
Black-capped Chickadee	0.94	0.75	0.69	0.90	0.93	0.94	1.00	0.82	0.92	0.98	0.89
Ruby-crowned Kinglet	0.82	0.90	0.89	0.91	0.87	0.87	0.91	0.92	0.93	0.96	0.90
Gray-cheeked Thrush	0.79	0.76	0.75	0.78	0.88	0.76	0.90	0.90	0.88	0.85	0.83
Swainson's Thrush	0.82	0.79	0.86	0.91	0.96	0.90	0.89	0.93	0.93	0.87	0.89
American Robin	0.42	0.50	0.89	0.76	0.86	0.85	0.87	0.88	0.92	0.87	0.78
Orange-crowned Warbler	0.83	0.63	0.86	0.86	0.84	0.79	0.91	0.87	0.82	0.90	0.83
Yellow Warbler	0.91	0.58	0.88	0.84	0.94	0.94	0.90	0.90	0.92	0.92	0.87
Yellow-rumped Warbler	0.91	0.75	0.94	0.91	0.95	0.94	0.93	0.90	0.93	0.93	0.91
Blackpoll Warbler	0.94	0.71	0.86	0.94	0.96	0.92	0.84	0.96	1.00	0.88	0.90
Northern Waterthrush	0.93	0.87	0.94	0.93	0.97	0.90	0.98	0.88	0.90	0.88	0.92
Wilson's Warbler	0.90	0.67	0.84	0.89	0.85	0.96	0.96	0.98	0.88	0.95	0.89
American Tree Sparrow	0.67	0.72	0.87	0.81	0.85	0.90	0.93	0.87	0.96	0.91	0.85
Savannah Sparrow	0.87	0.92	0.96	0.96	0.98	0.92	0.88	0.95	0.98	0.96	0.94
Fox Sparrow	0.69	0.77	0.79	0.81	0.78	0.68	0.83	0.70	0.80	0.74	0.76
Lincoln's Sparrow	0.92	0.79	0.93	0.95	0.97	0.93	0.95	0.92	0.97	0.95	0.93
White-crowned Sparrow	0.86	0.90	0.90	0.91	0.93	0.94	0.93	0.68	0.92	0.88	0.89
Dark-eyed Junco	0.84	0.88	0.96	0.90	0.91	0.89	0.93	0.89	0.95	0.92	0.91
Total (all individuals captured)	0.84	0.75	0.90	0.87	0.90	0.89	0.92	0.88	0.92	0.91	0.88

Table 6 Educational programs and visitors, Creamer's Refuge banding station, 2001

Program	Number of groups	Number of individuals in groups
Spring and fall banding demonstrations	68	1700
Invited programs	34	1371
Workshops, walks, seminars	29	920
Summer adult groups	8	206
Summer youth groups	6	94
Independent visitors	N/A	321
Totals	145	4652

FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

PROJECT TITLE: Monitoring Neotropical Migratory Birds in Alaska

PRINCIPAL INVESTIGATOR: John Wright

COOPERATORS: Alaska Bird Observatory, US Fish & Wildlife Service, Boreal *Partners in Flight*, Friends of Creamer's Field, Bureau of Land Management

FEDERAL AID GRANT PROGRAM: Endangered Species Section 6

GRANT AND SEGMENT NR.: E-1-1

PROJECT NR.: 1.0

WORK LOCATION: Creamer's Field, Fairbanks.

STATE: Alaska

PERIOD: 16 May 2001 – 15 May 2002

I. PROGRESS ON PROJECT OBJECTIVES IN THIS PERIOD

OBJECTIVE 1: Gather information in spring and fall 2001 on the abundance and productivity of migratory songbirds as part of a long-term monitoring project in the boreal forest of central Alaska.

An array of mist nets was used to capture birds. Nets were opened about 6 hours each day, from sunrise to around noon, weather permitting. Abundance was measured in spring and fall with productivity measured only in fall.

In spring 2001, nets were operated on 34 days between 25 April and 7 June for a total of 5137 net hours. Four hundred and fifty-four birds were captured, belonging to 29 species. Seventy-two percent of the species captured were Neotropical migrants. Sixty-six percent of the individuals captured were Neoptropical migrants. The most frequently captured species were the common redpoll, yellow-rumped warbler, violet-green swallow, American robin, yellow warbler, and dark-eyed junco. The overall capture rate in spring 2001 was nearly 18% above the 10-year average. Seven common species were captured at higher rates than their average, while 9 were captured at rates lower than average.

In fall 2001, nets were operated for 57 days between 15 July and 23 September for a total of 11,821 net hours, just 2.5% below the average of the prior 3 years. A total of 2485 birds were captured, with 33 species represented. As in prior years, a high proportion of species captured (66%) was Neotropical migrants. Neotropical migrants also comprised the

majority of individuals captured. The yellow-rumped warbler, orange-crowned warbler, dark-eyed junco, American tree sparrow, and Lincoln's sparrow were captured most frequently.

In fall 2001, 91% of birds captured were young of the year (HY, hatch year). This is higher than the 10-year average (88%). The proportion of young in 7 of the 19 commonly captured species was higher in 2001 than the 10-year average, in just 2 species the proportion of young was lower than average, and 10 species were close to average.

OBJECTIVE 2: Collect information on timing of migration, breeding, and molt for a variety of landbirds breeding in central Alaska.

Information on timing of migration, molt, and fat storage from data collected at the Creamer's Migration Station was recently reported in Benson and Winker 2001. (See section on publications.)

II. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

None.

III. PUBLICATIONS

BENSON A-M AND K WINKER. 2001. Timing of breeding range occupancy among high latitude passerine migrants. *Auk* 118:513-519.

IV. APPENDIX

See attached detailed report.

V. PROJECT COSTS FOR THIS SEGMENT PERIOD

FEDERAL AID SHARE $ 20,000 STATE SHARE $ 6,667 = TOTAL $26,667

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