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WHITE-FACED IBIS IN WASHINGTON IN 2001: A SIGNIFICANT INCURSION AND ATTEMPTED BREEDING

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The White-faced Ibis (*Plegadis chihi*) is a colonial nesting waterbird of the Great Basin, and until recently it did not occur annually in Washington (Aanerud and Mattocks 2000). Population increases in recent decades (Ryder and Many 1994, Ivey et al. 2002), in combination with a tendency to wander in response to changing water levels, created an unprecedented incursion of ibises to Washington in the spring of 2001. This paper describes the numbers and pattern of occurrence of White-faced Ibises in Washington in spring 2001.

SOURCES OF INFORMATION

We compiled observations of White-faced Ibis in Washington during May and June 2001 from a variety of sources. We used reports submitted to the regional editors of *North American Birds*; messages posted on Tweeters, an electronic list-serve for Pacific Northwest birders (http://www.scn.org/earth/tweeters/FAQ.html), including responses to a solicitation we posted; a popular account of the ibis incursion (WOSNews 76); and our own field notes. Ibis reports from previous years were compiled from published reports (Jewett et al. 1953), and from regional reports in *Audubon Field Notes*, *American Birds*, and *North American Birds*. Our estimate of the number of ibises found in spring 2001 is based on peak numbers reported at each location, eliminating reports from adjoining locations when it seemed possible that the same birds had occurred at both.

Drought information was obtained from records compiled by the Northwest River Forecast Center, National Weather Service. As an indicator of winter precipitation, we used the annual estimate of January through July runoff at the Dalles Dam (data from 1928-2001; available at: http://www.nwrfc.noaa.gov/cgi-bin/s_brief) because it is readily available and is an indication of conditions over a broad geographic area, the Columbia Basin.

RESULTS

We estimate that a minimum of 295 White-faced Ibises occurred in Washington during May and June 2001 (Table 1, Appendix 1); a number that almost equaled the previous total of Washington records (336). Most of the 2001 records were from the southern half of the state, generally near the Columbia River or in the Columbia Basin. Almost all of the ibises disappeared by the end of May, but a small group that lingered at Kahlotus Lake, Franklin County, initiated breeding activities, including nest construction. However, even this group disappeared by late June, ending the incursion.

The earliest reports were from the southeast corner of Washington: on 7 May when 30 were observed near Asotin, and on 9 May when 24 were at the Walla Walla River delta. Most reports came from the next 10-day period, 11-20 May, when at least 290 birds were reported. Flocks of more than 5 birds were reported from 8 counties during mid-May: Adams (≥61 in 3 locations), Benton (25; probably the same flock seen on 9 May in Walla Walla), Clark (36), Franklin (≤40), Grays Harbor (15), Pacific (47 in 2 flocks), Pierce (12), and Walla Walla (25 birds at 3 locations). Several of these reports were of flocks in flight, often over unsuitable habitat, indicating a lot of movement during this time period. The number of reports tapered off very quickly after 20 May, with 37 birds remaining, although the northernmost records came during the last third of the month. Aside from the small flock of ≥18 at Kahlotus Lake, there were only 4 other locations with ibises after 20 May. A group of 15 was near Wallula, Walla Walla County, one was at Walla Walla, one was at the Nisqually National

Table 1. White-faced Ibis reports (n = 639) in Washington by year between 1909 and 2001, in comparison to January – July runoff (in million acre-feet) at the Dalles Dam on the Columbia River. Records were taken from Jewett et al. (1953), from regional reports in *Audubon Field Notes*, *American Birds*, and *North American Birds*, and from messages posted on Tweeters, an electronic list-serve.

Year	White-faced Ibis reports	January–July runoff	Year	White-faced Ibis reports	January–July runoff
1909	1	-	1990	0	100
1951	1	125	1991	1	107
1974	1	157	1992	51	71
1981	6	104	1993	10	88
1982	1	135	1994	1	75
1983	0	123	1995	5	104
1984	0	124	1996	5	139
1985	20	90	1997	1	159
1986	1	113	1998	2	104
1987	32	79	1999	3	124
1988	91	76	2000	103	98
1989	0	93	2001	303	56

Wildlife Refuge, and two were at Kent. The latter two were the northernmost reports of the incursion.

Breeding activities at Kahlotus Lake were first noted on 26 May, when Tweit, Flores, Steve Mlodinow and Ryan Shaw found 15 birds and observed several of them landing in dense marsh near the center of the lake. This behavior was thought to be nest site prospecting. On 3 June, Mike and MerryLynn Denny observed ibises at apparent nesting platforms of this site and observed copulation at these platforms on 9 June (WOSNews 76). On 16 June, Flores and Randy Hill photographed two incomplete nest platforms where they had observed two ibises possibly standing on platforms. The platform structures appeared incomplete, raising the possibility of abandonment before eggs could be laid. Water was still surrounding the nesting area at this time but had fallen to less than 0.6 meters in depth. At this time, a coyote (*Canis latrans*) was observed walking in the marsh near the nest area. The breeding attempt was apparently unsuccessful as the last reports of ibises at Kahlotus Lake were from 30 June. The lake level dropped substantially through June (WOSNews 76; George Gerdts, personal communication) reducing the lake by half at the end of the month. Flores returned to the site on 7 July to find exposed mud flats around marsh where the platforms were found. Abandonment of nesting sites by ibises due to dropping water levels has been previously documented (Neel 1994). Despite their lack of success, this effort constitutes the first documented attempt at breeding by this species in Washington.

Unusual movements of White-faced Ibises were noted elsewhere in the late spring of 2001. At least seven were found in British Columbia between 14 and 28 May (Cecile 2001). Ibises were apparently so numerous in western Oregon in spring 2001 that observers did not try to estimate the total numbers involved (Mlodinow et al. 2001). An enormous coastal invasion was reported in northern California, with >1350 birds reported between Monterey and Humboldt counties (Roberson et al. 2001). In the eastern United States, White-faced Ibis numbers were substantial, with reports from eight states (Brinkley 2001). In the Rocky Mountain region, however, there was almost no evidence of elevated numbers or unusual distributions or movements; Idaho reported only one extralimital record (Trochell 2001).

Winter precipitation levels in the Columbia Basin in 2000-01 were about half of the average amount, resulting in a severe drought in the interior. The runoff at The Dalles Dam of about 56 million acre-feet between January and July was the second lowest runoff level since measurements began in 1928. The lowest was 53.4 million acre-feet in 1977, following the severe drought of 1976-77. Average January-July runoff is about 103 million acre-feet. Other drought years in the last two decades included 1987, 1988, 1992 and 1994.

DISCUSSION

The ibis incursion of spring 2001 was apparently triggered by the widespread, extreme drought conditions throughout much of the northwestern portion of their breeding range. Under such conditions White-faced Ibises have been reported to move great distances and exploit new wetland habitats (Ryder 1967, Taylor et al. 1989, Ryder and Many 1994, Earnst et al. 1998, Ivey et al. 2002). Previous drought years have produced above average numbers of ibises in Washington. For example, there were 91 ibis records in 1988 and 51 records in 1992 (Table 1). The other well-above average ibis year was 2000 (103 records), which at 98 million acre feet runoff was not a drought year but was only slightly below average. All but 4% of the reports from 1981 through 2001 were from years with runoff below the average of 105 million acre-feet (Table 1), providing strong evidence of a linkage between drought conditions in their primary breeding areas in the Intermountain West and their dispersion into Washington.

The frequency of ibis records in Washington is also on the increase. Prior to the drought of 1988 there were only 63 records, and prior to 1981 there were only three records (Table 1). The numbers of breeders in the northwestern portion of their range has been increasing in recent decades (Taylor et al. 1989, Ivey et al. 1988, Littlefield 1990, Gilligan et al. 1994, Ivey et al. 2002), creating a much larger source population for dispersal or colonization.

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LITERATURE CITED

Aanerud, K.R. and P.W. Mattocks, Jr. 2000. Fourth report of the Washington Bird Records Committee. Washington Birds 7:7-24.

Brinkley, E.S. 2001. The changing seasons. North American Birds 55:258-263.

Cecile, D.G. 2001. British Columbia-Yukon. North American Birds 55:342-346.

Earnst, S.L., L. Neel, G.L. Ivey, and T. Zimmerman. 1998. Status of the White-faced Ibis: breeding colony dynamics of the Great Basin population, 1985-1997. Colonial Waterbirds 20:301-313.

Gilligan, J., D. Rogers, M. Smith, and A. Contreras. 1994. Birds of Oregon: status and distribution. Cinclus Publications, McMinnville, Oregon.

Ivey, G.L., M.A. Stern, and C.G. Carey. 1988. An increasing White-faced Ibis population in Oregon. Western Birds 19:105-108.

Ivey, G.L., S.L. Earnst, E.P. Kelchin, L. Neel, and D.S. Paul. 2002. White-faced Ibis update and management guidelines: Great Basin population. United States Fish and Wildlife Service, Portland, Oregon.

Littlefield, C.D. 1990. Birds of Malheur National Wildlife Refuge, Oregon. Oregon State University Press, Corvallis, Oregon.

Mlodinow, S., G. Lillie, and B. Tweit. 2001. Oregon-Washington. North American Birds 55:347-351.

Neel, L. 1994. Waterbird and shorebird investigations. Pages 14-17 *in* Herron, G. B. (editor). Population surveys, species distribution, and key habitats of selected nongame species. P-R Report, Federal Aid Project W-53-R-20, Nevada Department of Wildlife, Reno, Nevada.

Roberson, D., D.S. Singer, S.A. Glover, S.B. Terrill, and T.P. Ryan. 2001. Middle Pacific Coast. North American Birds 55:351-354.

Ryder, R.A. 1967. Distribution, migration and mortality of the White-faced Ibis (*Plegadis chihi*) in North America. Bird Banding 38:257-277.

Ryder, R.R. and D.E. Many. 1994. White-faced Ibis (*Plegadis chihi*). The Birds of North America 130:1-24.

Taylor, D.M., C.H. Trost, and B. Jamison. 1989. The biology of White-faced Ibis in Idaho. Western Birds 20:125-133.

Trochell, D. 2001. Idaho – Western Montana. North American Birds 55:325 -327.

Tweit, B. and J. Johnson. 1992. Oregon/Washington region. American Birds 46:1171-1173.

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Appendix 1. Observations of White-faced Ibises in Washington during May – June 2001.

Date	Locale	Number	Source of Information[a] and Comments
Eastern Washington			
Adams County			
12 May	Othello	3	B. and N. LaFramboise, Tweeters; Para Ponds
13 May	Othello	1	B. Flores; Para Ponds
15 May	Columbia NWR	10	R. Hill, Tweeters; Marsh Unit 2
17 May	Hooper	48	B. Flores; flying over
19 May	Columbia NWR	2	B. Tweit, M. Breece
Asotin County			
7 May	Near Asotin	30	B. Woodley; NAB 55
Benton County			
11 May	Yakima R mouth	25	B. Woodley; LCBAS
Franklin County			
17 May	near Kahlotus	37	D. Rockwell, WOSNews; flying north
18 May	Kahlotus Lake	40	M. Denny, personal communication
26 May	Kahlotus Lake	15	B. Tweit, B. Flores; nesting?
1 June	Kahlotus Lake	4	A. Stepniewski, WOSNews; no evidence of nesting
3 June	Kahlotus Lake	18	M. Denny, Tweeters; nest construction noted
3 June	Kahlotus Lake	8	D. Paulson, personal communication
6 June	Kahlotus Lake	11	J. Buchanan, G. Hayes, personal communication; several settled in tall marsh
7 June	Kahlotus Lake	5	E. Henriksen, Tweeters
9 June	Kahlotus Lake	3	B. Flores, WOSNews
9 June	Kahlotus Lake	16	M. Denny, Tweeters; copulation noted
10 June	Kahlotus Lake	10	R. Rowlett, personal communication; dusk circling flight
13 June	Kahlotus Lake	13	T. Aversa, personal communication; one carried nesting material, landed in tall marsh vegetation
16 June	Kahlotus Lake	6	B. Flores, R. Hill, Tweeters
20 June	Kahlotus Lake	6	G. Gerdts, personal communication
23 June	Kahlotus Lake	8	M. Denny, WOSNews; no sign of nesting
24 June	Kahlotus Lake	5	K. Kemper, personal communication
25 June	Kahlotus Lake	1	T. Aversa, personal communication; flushed from tall marsh vegetation
26 June	Kahlotus Lake	4	E. Hunn, personal communication
30 June	Kahlotus Lake	15	M. Denny, WOSNews; over 50% of lake was exposed mud
Walla Walla County			
9 May	Walla Walla R mouth	24	B. Tweit, WOSNews
12 May	DeTour Road	1	M. Denny, NAB 55

12 May	unspecified	10	L. Goodhew, WOSNews; flying south
18 May	Iowa Beef	14	M. Denny, WOSNews
26 May	Iowa Beef	15	T. Aversa, LCBAS
2 June	Walla Walla	1	M. Denny, WOSNews
3 June	Walla Walla	1	M. Denny, WOSNews
Western Washington			
Clark County			
20 May	Ridgefield NWR	36	P. Sullivan, Tweeters
Grays Harbor County			
11 May	Brady Loop Road	15	K. Sable, Tweeters; flew overhead
King County			
24 May	Kent	2	R. Orness, personal communication
25 May	Kent	2	R. Orness, personal communication
26 May	Kent	1	D. Beaudette, Tweeters
Pacific County			
11 May	Near Long Beach	26	R. Rogers, NAB 55
19 May	Ilwaco	21	M. Patterson, NAB 55
Pierce County			
20 May	Sumner	12	C. Wright, personal communication; flying east
Thurston County			
21 May	Nisqually NWR	1	W. Palsson, Bird Box
22 May	Nisqually NWR	1	P. Sullivan, Tweeters

[a] Sources include Bird Box, an electronic mail box with transcripts posted on Tweeters; LCBAS, Lower Columbia Basin Audubon Society newsletter; NAB, North American Birds; Tweeters, an electronic list serve; and WOSNews, Washington Ornithological Society newsletter.

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BALD EAGLE NESTING CHRONOLOGY IN WESTERN WASHINGTON

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As the Bald Eagle (*Haliaeetus leucocephalus*) population increases in Washington, nesting eagles are exposed to increased human activity (Watson et al. 2002). Because eagle responses to human activities vary during the nest cycle (Watson 2004), understanding the chronology of eagle nesting activities to know when they are most vulnerable to disturbance is important. In 1993 and 1994, I determined the timing of nesting events of Bald Eagles at 35 nests; 29 nests along Puget Sound and 6 on Hood Canal. Eagles were observed for 6 hours at least every other day from November through August.

Courtship began for the first of 35 pairs of eagles on 31 December, although occasional nest building occurred in November when eagles first arrived on territories. Consistent nest building, mutual calling, aerial courtship, and copulation signaled the initiation of courtship. Ninety percent of pairs were courting daily by the first week of February (Figure 1). Nest maintenance and courtship flights were observed occasionally throughout the remaining nest stages, but eagles were not observed to copulate after they began to incubate eggs.

Eagles began incubating eggs, identified by the prone posture of adults on the nest, as early as 8 February. Ninety percent of pairs were incubating by the fourth week of March (Figure 1), and the latest date incubation began was 13 April.

In most cases the raised brooding posture of adults and feeding of young indicated the presence of hatched eggs in the nest. At 5 nests where hatch date was not determined, I used a 35-day incubation period to estimate age of young (Webb 1987). Young hatched as early as 14 March, and as late as 19 May, and 90% of young hatched by 4 May (Figure 1). Brooding was most intense the first 2 weeks after hatching, corresponding with the period of independence that begins at 15 days when young begin to thermoregulate (Bortolotti 1984).

By 30 April the prefledging period began, when the first eaglets were no longer brooded and they fed themselves. By 16 June, young at 90% of nests were independent, except that the adults continued to deliver prey to young at the nest (Figure 1).

The post-fledging period began with the fledging of young, from 16 June through 16 August, when eaglets were an average of 11 weeks old (SD=2, n = 26 successful nests). Ninety percent of young fledged by the fourth week of July (Figure 1). Adults provided food during this period, and except for occasional scavenging, young did not capture prey. Average du-

ration of the post-fledging period was 29 days (SD=13, n = 26 young). The post-fledging period ended when young migrated, as evidenced by their absence from territories for >2 consecutive days. Migration of young from 13 territories began 12 July and ended 19 August (Figure 1). Average age of juveniles at migration was 15 weeks (SD=2).

The nesting chronology of Bald Eagles in western Washington was similar to that in Oregon and California (Isaacs et al. 1983, Hunt et al. 1992). The date of dispersal of west-coast eagles is about a month earlier than populations at similar latitudes from Montana eastward (Table 1). In Florida, Bald Eagles fledge early in the year because that population initiates nesting in November (Wood et al. 1998). Bald Eagle populations on the west-coast also have the shortest post-fledging periods and youngest age of dispersal of North American populations (Table 1). Shorter periods of post-fledging dependence may be indicative of greater food availability that enhances physical condition, promotes earlier migration, and increased probability that juveniles will forage successfully for themselves (Wood et al. 1998). Initiation of northward fall migration by juvenile and breeding eagles in Washington and California corresponds with summer and fall salmon runs in coastal British Columbia and southeastern Alaska where migrant eagles congregate at coastal rivers to feed on spawned salmon (Hunt et al. 1992).

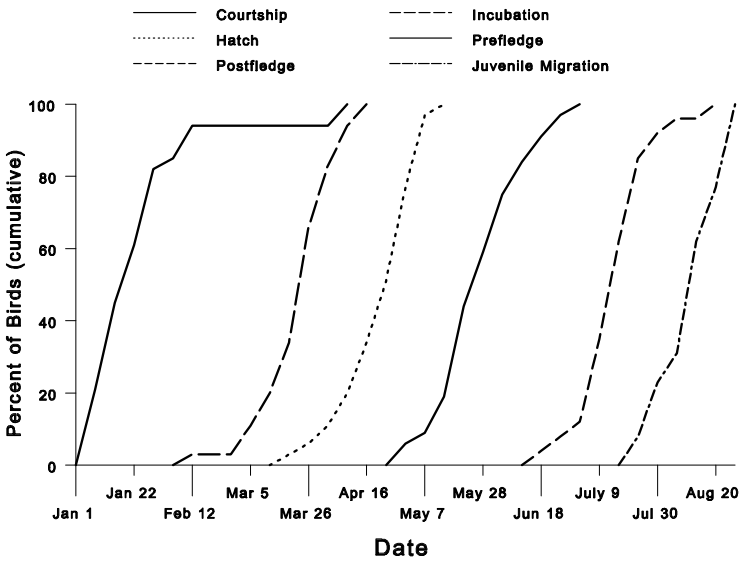

Figure 1. Chronology of nesting events of Bald Eagles in Washington based on behaviors of 35 eagle pairs, 26 nestlings, and 13 juveniles.

Table 1. Characteristics of the postfledging period for Bald Eagles throughout North America (adapted from Wood et al. 1998).

Mean Duration (weeks)	Mean Age (weeks)	Dispersal Date	No. Young	Location	Source
3.5	16	7/19-8/22	15	California	Hunt et al.1992
4	15	7/21-8/19	13	Washington	This study
6.5	-	8/22-10/5	15	Montana	McClelland et al. 1996
7	18	4/23-7/30	40	Florida	Wood et al. 1998
7	20	8/20-10/21	18	Maine	McCollough 1986
7.5	-	by 9/30	18	Saskatchewan	Gerrard et al. 1974
9	22	9/13-10/28	8	Minnesota	Kussman 1977

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LITERATURE CITED

Bortolotti, G. R. 1984. Physical development of nestling Bald Eagles with emphasis on the timing of growth events. Wilson Bulletin 96:524-542.

Gerrard, P., J. M. Gerrard, D. W. A Whitfield, and W. J. Maher. 1974. Post-fledging movements of juvenile Bald Eagles. Blue Jay 32:219-227.

Hunt, W. G., R. E. Jackman, C. G. Thelander, and R. N. Lehman. 1992. Northward post-fledging migration of California Bald Eagles. Journal of Raptor Research 26:19-23.

Isaacs, F. B., R. G. Anthony, and R. J. Anderson. 1983. Distribution and productivity of nesting Bald Eagles in Oregon, 1978-82. Murrelet 64:33-38.

Kussman, J. V. 1977. Post-fledging behavior of the northern Bald Eagle, *Haliaeetus leucocephalus alascanus* Townsend, in the Chippewa National Forest, Minnesota. Ph.D. Dissertation, University of Minnesota, St. Paul, Minnesota.

McClelland, B. R., P. T. McClelland, R. E. Yates, E. L. Caton, and M. E. McFadzen. 1996. Fledging and migration of juvenile Bald Eagles from Glacier National Park, Montana. Journal of Raptor Research 30:79-89.

McCollough, M. A. 1986. The post-fledging ecology and population dynamics of Bald Eagles in Maine. Ph.D. Dissertation, University of Maine, Orono, Maine.

Watson, J.W. 2004. Responses of nesting Bald Eagles to experimental pedestrian activity. Journal of Raptor Research 38:295-304.

Watson, J.W., D. Stinson, K. R. McAllister, and T. E. Owens. 2002. Population status of Bald Eagles breeding in Washington at the end of the twentieth century. Journal of Raptor Research 36:161-169.

Webb, D. R. 1987. Thermal tolerance of avian embryos: a review. Condor 89:874-898.

Wood, P. B., M. W. Collopy, and C. M. Sekerak. 1998. Postfledging nest dependence period for Bald Eagles in Florida. Journal of Wildlife Management 62:333-339.

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DISTRIBUTION AND ABUNDANCE OF WINTERING NORTHERN SHRIKES IN WASHINGTON

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The Northern Shrike (*Lanius excubitor*) breeds north of about 57° N in North America and winters regularly south to the northern and central USA (to about 36° N; Root 1988, AOU 1998) where its abundance typically varies among years (Davis and Morrison 1988). This shrike is a winter resident and migrant throughout much of Washington where it typically uses open habitats characterized by patchy shrub cover used for perching and prey handling (Jewett et al. 1953). Most work on the winter abundance of this species was conducted at a continental scale (Davis and Morrison 1988, Atkinson 1995), with few studies conducted at the state or regional level (e.g. Hubbard 1978). The objectives of this paper were to: (1) describe the distribution and abundance of wintering Northern Shrikes in Washington, and (2) determine whether patterns of annual winter abundance of these shrikes were similar among sites or regions.

METHODS

I assessed the recent distribution and abundance of Northern Shrikes using Christmas Bird Count (CBC) data from 17 count circles (Figure 1) where the species was regularly recorded. Seven of the circles were in eastern Washington and were characterized by open, predominantly agricultural and shrub-steppe habitats in relatively flat or rolling terrain (see Chappell et al. 2001). Conversely, the ten circles in western Washington included a variety of forested habitats, although the seven more rural of these locations also contained large estuaries with associated wetlands and/or agricultural habitats (Chappell et al. 2001). Three of the westside circles (Kent-Auburn, Seattle, Tacoma) included mostly urban and suburban habitats. These circles included neighborhoods, parks, and scattered open greenbelts that provided suitable habitat for Northern Shrikes. For most of the analyses I treated these three circles separately from the remainder of the west-side circles due to the preponderance of urban and suburban habitats.

For each count circle I recorded the types of information used in most analyses of CBC data. Specifically, I recorded both the number of Northern Shrikes and the total party miles. I used 1977-1978 as the beginning of the analysis period because earlier CBC efforts were much less intensive and extensive at most localities in Washington. With the exception of Skagit Bay (10 years) and Toppenish (14 years), the CBC circles were host to counts for ≥16 years in the 20-year period between 1977-78 and 1996-97.

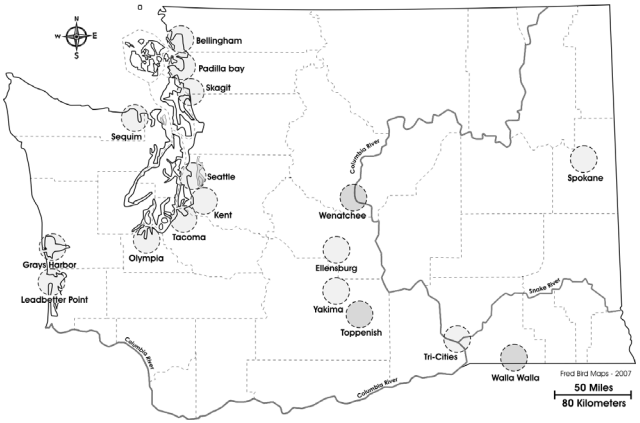

Figure 1. Distribution of Christmas Bird Count locations in Washington used in the analysis of Northern Shrike abundance.

A number of researchers have commented on the importance of standardizing CBC data to account for possible effects of differing levels of observer effort (e.g. Raynor 1975, Bock and Root 1981). This is an important consideration, yet care must be taken to avoid modifying data that are more appropriately presented in raw form, particularly when count results are not related to observer effort. Atkinson (1993, 1995) used an index value based on the number of birds observed per party mile because Northern Shrikes are territorial on their wintering grounds (Atkinson 1993, Rimmer and Darmstadt 1996) and are therefore likely to be under-represented when observer effort is lower. Before adopting this observer-effort index, however, I evaluated the data to determine whether there were any associations between the number of shrikes observed and the level of observer effort (number of party miles) for each circle. Spearman rank analysis (Zar 1984) indicated significant ($P < 0.05$) or marginally significant ($P < 0.10$) positive correlations between the number of shrikes observed and the level of observer effort at six sites. For this reason I converted all count data to an index of shrikes/100 party miles prior to subsequent analyses.

My primary interest was to determine whether the abundance of Northern Shrikes encountered during CBCs varied among regions of the state. Therefore, I used analysis of variance (ANOVA; Zar 1984) to determine if there were any differences among the three combined categories of sites (east-side, west-side rural, and west-side urban/suburban) in the mean index abundance of Northern Shrikes per year. The Tukey test (Zar 1984) was then used to identify specific differences among regions in the mean index abundance of shrikes.

One way to evaluate variability in shrike abundance is to search for relationships among sites in the abundance of birds over time. I used correlation matrices to assess whether any pairs of CBC circles had simi-

lar patterns of shrike abundance over the analysis period within both the eastern and western regions of the state. To determine whether there were regional patterns of abundance among years I conducted a Spearman rank analysis on combined east- and west-side data sets.

RESULTS

The abundance of Northern Shrikes varied substantially among circles and regions. The highest mean and single high unmodified (i.e., raw) counts were from Spokane and Bellingham. Five CBC circles had one or more single high counts >20 birds and 10 circles had high counts >10 birds (Table 1). The highest mean index values were from Wenatchee and Ellensburg (Table 1). An analysis of count index values indicated a significant difference in shrike abundance among the three groups of circles (ANOVA; $df = 2$, $F = 57.7$, $P < 0.0001$). The index of abundance was highest at circles in eastern Washington (mean ± SE [standard error] = 2.12 ± 0.15 shrikes/100 party miles), followed by western Washington rural (1.11 ± 0.09) and western Washington urban/suburban (0.52 ± 0.05); each of these group means was significantly different than the other two (all values of $q \geq 5.5$, all levels of $P < 0.001$).

Table 1. Mean abundance (± standard error [SE]) and mean index abundance (number of birds/100 party miles, ± SE) of Northern Shrikes at Christmas Bird Count sites in Washington, 1977-78 to 1996-97.

Site	Mean No.	SE	Range	Mean index	SE	No. Years
Eastern Washington						
Ellensburg	8.33	1.58	0-21	3.12	0.54	17
Spokane	12.40	1.76	0-37	2.30	0.30	20
Tri-Cities	3.90	0.50	0-9	1.33	0.19	20
Toppenish	9.29	1.44	3-23	2.57	0.37	14
Walla Walla	6.00	0.82	0-14	1.89	0.30	20
Wenatchee	9.75	1.06	3-18	3.19	0.29	20
Yakima	3.45	0.39	0-7	1.00	0.13	20
Western Washington Rural						
Bellingham	10.50	1.34	2-25	1.36	0.18	20
Grays Harbor	3.50	1.21	0-21	0.56	0.13	18
Leadbetter Pt.	1.06	0.30	0-4	1.05	0.32	17
Olympia	3.17	0.36	1-7	0.64	0.09	18
Padilla	6.25	0.92	0-14	1.37	0.29	16
Sequim	5.00	0.96	0-15	1.48	0.28	19
Skagit	7.20	1.18	2-13	2.25	0.38	10
Western Washington Urban/Suburban						
Kent	3.24	0.48	1-8	0.63	0.07	17
Seattle	1.74	0.31	0-6	0.44	0.07	19
Tacoma	2.55	0.32	1-5	0.49	0.07	20

The correlation matrix revealed somewhat ambiguous patterns of abundance among sites. Only 4 of 15 (27%) possible among-circle comparisons in eastern Washington were significantly and positively correlated; two of the correlations were only marginally significant (Appendix 1). This indicated that the annual abundance of shrikes was related only among 4 pairs of circles (Ellensburg/Spokane, Tri-Cities/Yakima, Walla Walla/Wenatchee, and Wenatchee/Yakima; see Figure 2). Similarly, only 11 of 36 (31%) possible among-circle comparisons in western Washington were positively correlated, two of which were marginal (Appendix 2). Moreover, five among-circle comparisons in western Washington were significantly, but negatively correlated (Bellingham/Kent, Bellingham/Leadbetter, Bellingham/Tacoma, Grays Harbor/Padilla, and Padilla/Tacoma; see Figure 3). Spearman rank correlation analyses indicated a significant positive relationship between the pooled east-side and west-side urban/suburban circles ($r_s = 0.57$, $P < 0.01$), but not between the two west-side groups ($r_s = 0.23$, $P > 0.2$) or between the west-side rural and the east-side circles ($r_s = 0.26$, $P > 0.2$).

DISCUSSION

My results indicated that the abundance of Northern Shrikes varied substantially among sites and regions. In general, Northern Shrikes were more abundant at sites in eastern Washington than at sites in the western part of the state. This is not surprising given the comparatively greater amount of apparently suitable, open habitats found in eastern Washing-

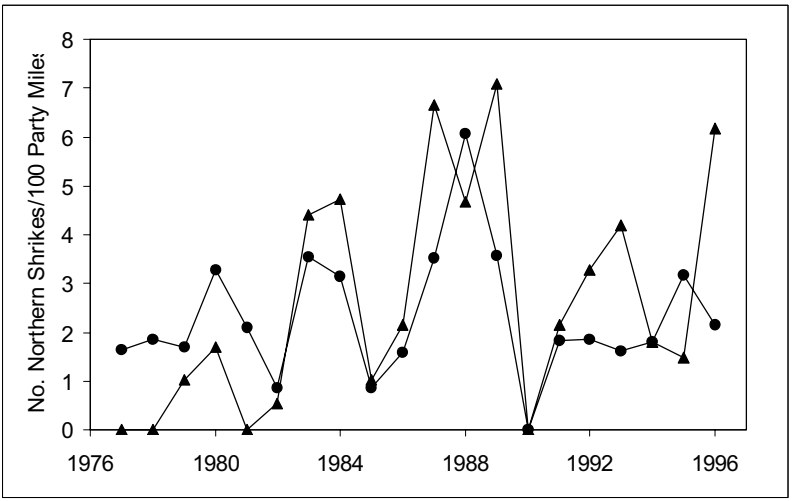

Figure 2. Example of two sites in eastern Washington (Ellensburg and Spokane) with positively correlated Christmas Bird Count totals (number of birds/100 party miles) of Northern Shrikes between 1977-78 and 1996-97.

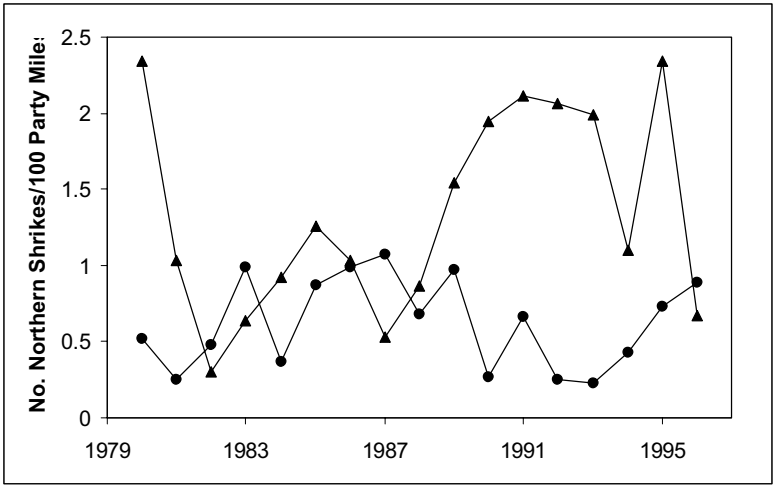

Figure 3. Example of two sites in western Washington (Bellingham and Kent) with negatively correlated Christmas Bird Count totals (number of birds/100 party miles) of Northern Shrikes between 1979-80 and 1996-97.

ton. Calculation of "ecological densities" (i.e., the number of shrikes per unit area of suitable habitat) was beyond the scope of this project, but merits consideration, as such information may indicate a greater density of shrikes per unit area of open habitats in western Washington. This type of assessment will require more precise determination of habitat suitability for this species.

Consistent with the general habitat-abundance relationship noted above, rural CBCs in western Washington supported greater numbers of shrikes than the urban/suburban sites. However, Northern Shrikes were regularly present, often in fairly substantial numbers, at the urban/suburban sites. This likely reflects the shrike's ability to use a wide variety of prey, including birds, during winter (Atkinson and Cade 1993, Cade and Atkinson 2002). It would be of value to determine whether there were different energetic costs, rates of mortality, or levels of subsequent reproductive output (or other elements of fitness) for those birds overwintering in the three different categories of CBC circles. Detection of such differences would provide a valuable measure of the quality of overwintering habitats.

ACKNOWLEDGMENTS

I thank the participants of the various CBCs; their collective efforts were essential in establishing the long-term database used for this study. I thank Diane Mitchell for providing reference materials, John Pierce for

help with computer manipulations, and Eugene Hunn, Dan Stephens and Matt Vanderhagen for providing comments that improved the manuscript. Michael Donahue acted as primary editor for the review of this paper.

LITERATURE CITED

American Ornithologists' Union. 1998. Check-list of North American birds. Seventh edition. American Ornithologists' Union, Washington, D.C.

Atkinson, E.C. 1993. Winter territories and night roosts of Northern Shrikes in Idaho. Condor 95:515-527.

Atkinson, E.C. 1995. Northern Shrikes (*Lanius excubitor*) wintering in North America: a Christmas Bird Count analysis of trends, cycles, and interspecific interactions. Proceedings of the Western Foundation of Vertebrate Zoology 6:39-44

Atkinson, E.C. and T.J. Cade. 1993. Winter foraging and diet composition of Northern Shrikes in Idaho. Condor 95:528-535.

Bock, C.E. and T.L. Root. 1981. The Christmas Bird Count and avian ecology. Studies in Avian Biology 6:17-23.

Cade, T.J. and E.C. Atkinson. 2002. Northern Shrike *Lanius excubitor*. The Birds of North America 671:1-32.

Chappell, C.B., R.C. Crawford, C. Barrett, J. Kagan, D.H. Johnson, M. O'Mealy, G.A. Green, H.L. Ferguson, W.D. Edge, E.L. Greda, and T.A. O'Neil. 2001. Wildlife habitats: descriptions, status, trends, and system dynamics. Pages 22-114 *in* Johnson, D.H. and T.A. O'Neil (editors). Wildlife-habitat relationships in Oregon and Washington. Oregon State University Press, Corvallis, Oregon.

Davis, D.E. and M.L. Morrison. 1988. Changes in cyclic patterns of abundance in four avian species. American Birds 41:1341-1343, 1345-1347.

Hubbard, J.P. 1978. The status of the Northern Shrike in New Mexico. Western Birds 9:159-168.

Raynor, G.S. 1975. Techniques for evaluating and analyzing Christmas Bird Count data. American Birds 29:626-633.

Rimmer, C.C and C.H. Darmstadt. 1996. Non-breeding site fidelity in Northern Shrikes. Journal of Field Ornithology 67:360-366.

Root, T. 1988. Atlas of wintering North American birds: an analysis of Christmas Bird Count data. University Chicago Press, Chicago, Illinois.

Zar, J.H. 1984. Biostatistical analysis (second edition). Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

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Appendix 1. Correlation matrix of abundance index values (number of Northern Shrikes/100 party miles) for Christmas Bird Count locations in eastern Washington (1977-1978 - 1996-1997). Significant positive correlations are indicated in bold (P<0.05) and italic (P<0.10). Data for Toppenish were not included in analysis due to limited CBC effort in period indicated.

	Ellensburg	Spokane	Tri-Cities	Wenatchee	Walla Walla	Yakima
Ellensburg	1.00					
Spokane	0.53	1.00				
Tri-Cities	-0.16	-0.03	1.00			
Wenatchee	-0.07	0.05	0.08	1.00		
Walla Walla	0.22	0.28	-0.27	0.37	1.00	
Yakima	0.21	0.34	0.53	0.36	0.17	1.00

Appendix 2. Correlation matrix of abundance index values (number of Northern Shrikes/100 party miles) for Christmas Bird Count locations in western Washington (1977-1978 – 1996-1997). Significant positive and negative correlations are indicated in bold (P<0.05) and italic (P<0.10). Data for Skagit were not included in analysis due to limited CBC effort in period indicated.

	Bellingham	Grays H.	Kent	Leadbetter	Olympia	Padilla	Sequim	Seattle	Tacoma
Bellingham	1.00								
Grays H.	-0.31	1.00							
Kent	**-0.49**	0.35	1.00						
Leadbetter	*-0.37*	0.26	**0.76**	1.00					
Olympia	-0.26	**0.49**	0.23	**0.64**	1.00				
Padilla	**0.59**	*-0.37*	-0.18	-0.09	-0.09	1.00			
Sequim	0.28	**0.45**	*0.41*	0.26	0.21	0.08	1.00		
Seattle	0.09	-0.18	0.20	0.15	-0.16	*0.41*	-0.32	1.00	
Tacoma	*-0.42*	**0.50**	**0.82**	**0.53**	0.26	**-0.44**	**0.50**	0.03	1.00

Washington Birds 9:20-23 (2006)

NEW SITE FOR GREEN-TAILED TOWHEES (*Papilo chlorurus*) IN THE NORTHERN BLUE MOUNTAINS OF WASHINGTON

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The Green-tailed Towhee (*Pipilo chlorurus*) is currently considered a sensitive species on the Umatilla National Forest in southeastern Washington. Although it is rather common in much of eastern Oregon (Gilligan et al. 1994, Paige and Ritter 1999, Scheuering and Powell 2003), it is rare and local in Washington, occurring at only a few locations above 1200 meters in the Blue Mountains (Jewett et al. 1953, Weber and Larrison 1977, Smith et al. 1997). We conducted a survey funded by the U.S. Forest Service to determine the extent of the towhee's contemporary breeding range on the Pomeroy Ranger District of the Umatilla National Forest in Garfield and Asotin counties, Washington.

We searched for towhees by traveling road-based transects and broadcasting a recording of the species' primary territorial spring song. We broadcast the song via loud speakers for 45 seconds at 65 decibels and then listened for five minutes for responses at each station. Stations were visited between 08:00 and 14:30 hours on 22 May, 19 June, and 26 June 2003. Stations were placed every 500 meters along roads in appropriate habitat. We chose sites for our search effort based on evaluation of aerial photographs that included the primary physical features and habitat, described below, that matched the attributes of sites used by Green-tailed Towhees in eastern Oregon.

Based on our field experience in the Blue Mountains, Oregon Canyon Mountains, Steens Mountain, and Mahogany Mountain (all in eastern Oregon), we defined suitable Green-tailed Towhee habitat as dry, steep (>35%) slopes, often with open talus and patches of dense woody shrubs, on west- or south-facing aspects. Sites where Green-tailed Towhees occur during the breeding season in northeastern Oregon support dense patches of native woody shrubs and low trees, primarily creambush oceanspray (*Holodiscus discolor*), mountain maple (*Acer glabrum*), currents (*Ribes* species), mallow ninebark (*Physocarpus malvaceus*), chokecherry (*Prunus virginiana*), stiff sage (*Artemesia rigida*), and, perhaps most importantly, curlleaf mountain mahogany (*Cercocarpus ledifolius*). In our experience,

the range of the Green-tailed Towhee matches closely with that of curlleaf mountain mahogany in Oregon. Numerous flowering low- to medium-height forbs also characterized most occupied territories in the Oregon Blue Mountains (M. Denny, personal observation).

Between 22 May and 26 June, we made 18 survey stops at candidate sites in our study area. On 19 June 2003, we detected a singing adult Green-tailed Towhee at Sunset Viewpoint (located at N 46.10.348, W 117.32.060) at an elevation of 1942 meters and about 80 kilometers south of Pomeroy, Garfield County, Washington, on U.S. Forest Service road 40. After playing the song tape we instantly detected a territorial adult towhee male in a mixed patch of mountain maple, creambush oceanspray and mallow ninebark 20 meters below us on a steep, west-facing talus slope above the Tucannon River. This bird sang loudly 5 times and allowed very brief glimpses. Within 45 minutes and about one kilometer to the south we heard (but did not see) two additional singing males along the same steep, west-facing slope. These birds were in mixed patches of mountain mahogany, mallow ninebark, creambush oceanspray and Douglas-fir (*Pseudotsuga menziesii*). These 3 detections represent new locations of this species in the Blue Mountains of southeastern Washington. These sites are also the highest elevation reported for this species in Washington, although well below the elevation reported elsewhere (Paige and Ritter 1999). We listened for additional towhees for nearly an hour along this slope but heard none except for the ones we had first encountered. We found it interesting that Spotted Towhees (*Papilo maculates*) were present at each of the sites where we encountered Green-tailed Towhees; we used great care to identify each species. The area where we found the 3 towhees

Green-tailed Towhee habitat west of Sunset Point, Garfield County, Washington (photograph by Bill Dowdy).

is about 11 kilometers northwest of the Wenatchee Guard Station, the first known site for the Green-tailed Towhee in Washington (Jewett et al. 1953).

After leaving the Sunset Viewpoint sites, we then worked our way toward the Wenatchee Guard Station area. At Wenatchee Guard Station we surveyed to the southeast along the ridge of the steep, south-facing slope above the Grande Ronde River. There we detected and watched a singing male Green-tailed Towhee down the slope about 115 meters before we played the tape. This bird sang while perched atop a clump of dead willow (*Salix* species). We watched it sing for more than 10 minutes. Later we detected a second adult bird that flew into the same clump of dead woody shrubs; this second bird remained silent. On 21 June 2003 Denny returned to this site with Michael Willison and MerryLynn Denny and observed a pair of Green-tailed Towhees singing, preening, and chasing one another (M. Denny, unpublished data).

After three days of surveying for this sensitive species on the Pomeroy Ranger District of the Umatilla National Forest in Garfield and Asotin counties, we conclude that it is present in extremely low numbers at sites that meet very restricted habitat criteria. In the northern Blue Mountains this species seems to be restricted to steep, dry slopes (often talus) with south- or west-facing aspects. Dense patches of dead or live woody native shrubs appear to attract this neotropical migrant in the areas we found them in our survey. Of the 18 stations surveyed, 5 birds were detected at 4 stations. Curlleaf mountain mahogany was present at all stations where Green-tailed Towhees were detected, but it was not present at all stations visited, as its distribution in the Blue Mountains is very patchy. Although all 18 stations we visited were in areas that met our definition of suitable habitat, we failed to detect Green-tailed Towhees at 14 of them.

We believe that because the survey stations were near the northern edge of the species' range that not all territories are occupied every year. We will continue to monitor this species and note changes in distribution, abundance or rates of occupancy as we suspect the local population may not be stable due to the low numbers of individuals in the region, although more information would be needed to determine this. We invite interested birders and biologists to report additional Green-tailed Towhee sightings from the Umatilla National Forest in Washington to help us develop a better understanding of the range and status of this sensitive species in Washington.

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LITERATURE CITED

Gilligan, J., M. Smith, D. Rogers, and A. Contreras. 1994. Birds of Oregon: status and distibution. Cinclus Publications, McMinnville, Oregon.

Jewett, S.G., W.P. Taylor, W.T. Shaw, and J.W. Aldrich. 1953. Birds of Washington State. University of Washington Press, Seattle, Washington.

Paige, C. and S.A. Ritter. 1999. Birds in a sagebrush sea: managing sagebrush habitats for bird communities. Partners in Flight Western Working Group, Boise, Idaho.

Scheuering, R.W. and J. Powell. 2003. Green-tailed Towhee (*Pipilo chlorurus*). Pages 532-533 *in* Marshall, D.B., M.G. Hunter, and A.L. Contreras (editors). The birds of Oregon: a general reference. Oregon State University Press, Corvallis, Oregon.

Smith, M.R., P.W. Mattocks, Jr., and K.M. Cassidy. 1997. Breeding birds of Washington State. Seattle Audubon Society Publications in Zoology No. 1. Seattle, Washington.

Weber, J.W. and E.J. Larrison. 1977. Birds of southeastern Washington. University Press of Idaho, Moscow, Idaho.

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Washington Birds 9:24-34 (2006)

BLACK-BELLIED PLOVERS AT TOTTEN INLET, WASHINGTON: PHENOLOGY OF SPRING MIGRATION, AND CHANGES IN WINTER, SPRING AND AUTUMN ABUNDANCE

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The Black-bellied Plover (*Pluvialis squatarola*) is a common winter resident and migrant shorebird in western Washington. Although Black-bellied Plovers are common at Willapa Bay (Widrig 1979, Buchanan and Evenson 1997), Grays Harbor (Herman and Bulger 1981, Paulson 1993), and outer coastal beaches (Buchanan 1992), only a few sites in Puget Sound support flocks of birds (Evenson and Buchanan 1997, Buchanan 2005.

Totten Inlet, in southern Puget Sound, has supported among the highest densities of Black-bellied Plovers in the region (Buchanan 2005). Between 1980-81 and 1987-88, the winter abundance of Black-bellied Plovers at Totten Inlet ranged between 65 and 104 birds, and between 1980 and 1988, up to 185 birds were recorded during spring migration (Buchanan 1988). Less abundant during autumn than in spring or winter, high counts of Black-bellied Plovers in July-September ranged between 15 and 38 (Buchanan 1988). Subsequent counts in all seasons have been higher than those previously reported for this site, with high counts of 146 (winter), 339 (spring) and 74 (autumn) between 1990-91 and 1995-96 (Evenson and Buchanan 1997).

Peak spring migration of this species in the Pacific Northwest is described as occurring in late April and occasionally extending into early May (Widrig 1979, Herman and Bulger 1981, Butler and Campbell 1987, Buchanan 1988, Paulson 1993, Butler 1994). However, the studies investigating migration timing have tended to be short-term and they did not evaluate among-year variation or population trends. Consequently, the timing of spring migration has not been intensively examined.

In this study I investigated two aspects of the occurrence of Black-bellied Plovers at Totten Inlet. In this paper I present information on the abundance of migrant and wintering birds at the site, and describe long-term changes in the abundance of the species. Because of the dearth of long-term data on migration timing, I also present information on the phenology of spring migration.

STUDY AREA

Totten Inlet is a small estuary, fed by Kennedy and Schneider creeks, at the south end of Puget Sound at the eastern edge of Mason County,

Washington. The site includes a small area of saltmarsh vegetation (about 5 hectares) which is used by roosting Black-bellied Plovers, and about 130 hectares of intertidal mudflats (at mean lower low water) that appear to support a substantial population of invertebrates important as prey to this species (J. Buchanan, unpublished data). The site is described in greater detail elsewhere (Brennan et al. 1985, Buchanan 1988).

METHODS

During visits to Totten Inlet, I observed plovers from the northern edge of the saltmarsh or from the uplands along the western side of the inlet (see Buchanan 1988). My visits to the site occurred during periods when substantial tide flats were exposed during mid-phases (e.g., tide heights of 2.0-2.4 meters) of the falling or rising tide periods, generally between 1.5 and 3 hours before or after high tide, depending on tide height. Counts were made during these periods because (1) plovers often left the site during higher tides, (2) many plovers were not visible at the high tide roost site from either of the two vantage points, and (3) the birds were usually well distributed across open mudflats and easy to count.

The number of birds present during spring migration varied annually, and this made it difficult to evaluate migration phenology by simply using mean abundance data. I therefore standardized the data to control for annual variability. I calculated the timing of spring migration by using data from years during which I made at least 3 visits to the site between 1 April and 10 May. For each of the 12 years that met this criterion (1982, 1984-1988, 1995, 1998-2002) I identified the highest seasonal count. I then used counts made during each five-day period between 1 April and 10 May and related them to the seasonal high count. For example, if an annual high count of 450 was recorded, the standardized value for a count of 396 in a different count period was 396÷450=0.88). The means of the standardized values in each five-day count period were calculated to determine migration phenology. Counts were not made in all five-day intervals in all years, so the number of counts used to calculate the means differed among five-day periods.

Preliminary evaluation of my data indicated that plover abundance at Totten Inlet had changed over time. I therefore used regression analysis (Neter et al. 1990) to determine whether there were relationships between the abundance of Black-bellied Plovers and year of count. Because the relationships were nonlinear, year was fitted as a quadratic function in polynomial models. For the winter and autumn analyses I used count totals from November through February, and October, respectively. For the spring period I used data from 11-30 April, the four five-day periods of greatest plover abundance at this site. In years with two or more site visits during the indicated periods I used two counts, randomly selecting them from a pool of data in years with >2 visits. In five winters, four springs and three autumns I included data for single counts for more complete coverage of the study period. The analyses included data from 19 winter peri-

ods: 1980-81 through 1990-91, 1992-93 through 1994-95, 1997-98, and 1999-2000 through 2002-2003; and from 11 autumn periods: 1980, 1982, 1983, 1985-88, and 1999-2002. Data for the spring analyses included the spring years, above, and 1990, 1991, 1993, and 1996, for a total of 16 spring periods.

I identified three scenarios that might explain changes in Black-bellied Plover abundance over time. All three scenarios require additional data collection, and one of them could be investigated by examining salmon escapement data, under the assumption that an increase in escapement might result in accumulation of more nutrients on the tide flats.

RESULTS AND DISCUSSION

Phenology

In the 12 years of the phenology study the highest counts were always recorded between 11 and 30 April, with the mean peak count occurring in the interval between 21 and 25 April (Figure 1). The peak count was recorded between 21 and 25 April in six of the 12 years. On average, count totals increased steadily prior to the peak and then declined abruptly after 30 April. The highest count during the study was 1032 birds in 2002.

Black-bellied Plover numbers in spring at Totten Inlet consistently peaked in late April. The onset of migration appeared to occur before 10 April, as most counts before that date were transitional from the lower winter totals (Buchanan 1988; Evenson and Buchanan 1997; J. Buchanan, unpublished data). The steady increase in numbers in mid- to late-April coincided with the reported departure timing of Black-bellied Plovers from sites in central coastal California (Page et al. 1979, Shuford et al. 1989).

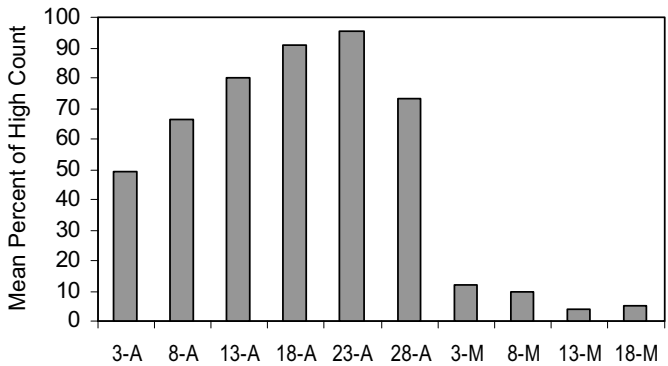

Figure 1. Mean standardized annual abundance of spring migrant Black-bellied Plovers observed during 5-day count periods at Totten Inlet, Washington. The number of years for which data were available varied for the ten 5-day count periods depicted by bars in the graph (4, 6, 8, 6, 10, 11, 6, 8, 6, and 4 years). Dates shown are the mid-points in each five-day period.

Table 1. Results of regression analyses relating mean or high counts of Black-bellied Plovers and year of count in winter, spring and autumn at Totten Inlet, Washington

Model	*df*	r^2	*F*-ratio	*P*
Winter mean count	30	0.74	39.4	<0.0001
Winter high count	17	0.82	35.2	<0.0001
Spring mean count	21	0.90	89.6	<0.0001
Spring high count	11	0.96	98.1	<0.0001
Autumn mean count	17	0.82	35.3	<0.0001
Autumn high count	9	0.91	36.5	0.0002

Changes in Abundance

I found positive curvilinear relationships between abundance of Black-bellied Plovers and year of count in winter, spring and autumn (Table 1, Figures 2-4). The r^2 value associated with each model indicated the amount of the variance in counts explained by the independent variable. For example, the r^2 value in the peak spring model indicated that 96% of the variance in counts was explained by year modeled as a quadratic function. The r^2 value was quite high for all models

Increases in mean and high counts of Black-bellied Plovers over the past two decades were pronounced in all seasons. There are at least three possible explanations for these increased counts at Totten Inlet, the first of which is that the observed increase reflects global or regional changes in Black-bellied Plover populations. This explanation is not feasible for a number of reasons. First, the rapid nature of the increase is not likely for

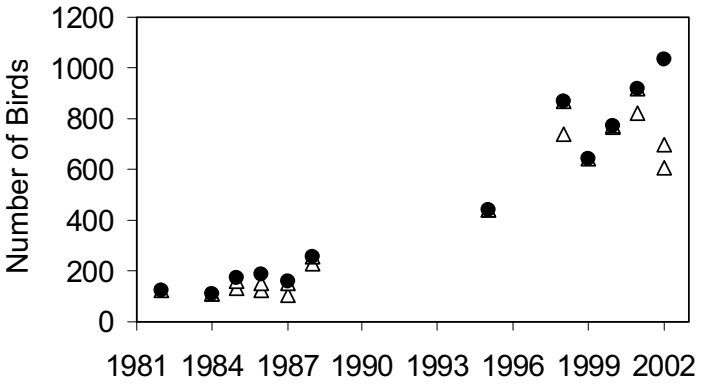

Figure 2. Mean (triangles) and high counts (shaded circles) of Black-bellied Plovers during spring at Totten Inlet, Washington, between 1982 and 2002.

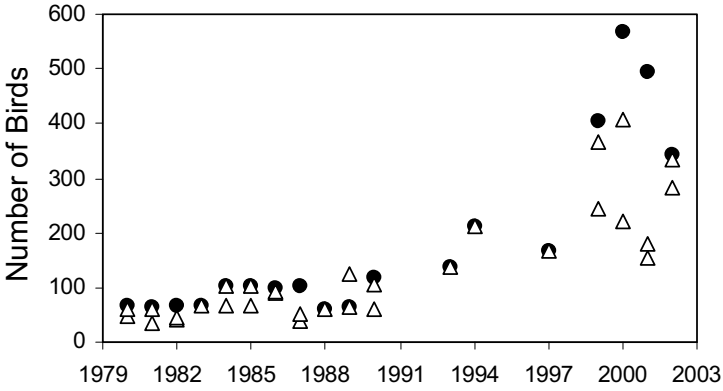

Figure 3. Mean (triangles) and high counts (shaded circles) of Black-bellied Plovers during winter at Totten Inlet, Washington, between 1980-81 and 2002-03.

a species, such as the Black-bellied Plover, with a slow potential population growth rate. Second, it is believed that North American populations of Black-bellied Plovers are declining (Morrison et al. 2001), although this has not been demonstrated along the Pacific coast. Third, Christmas Bird Count data from the primary sites for this species in the region (for list of primary sites, see Evenson and Buchanan 1997) indicate no discernable increase in population trends over the last 20 years (Figures 5, 6).

The second alternative, one that can be applied only during migration, is that the recent higher counts represent a change in the amount of time that a percentage of the Black-bellied Plovers remain at the site during migration. In other words, the actual total number of birds passing through during migration in more recent years may have been less than or equal to

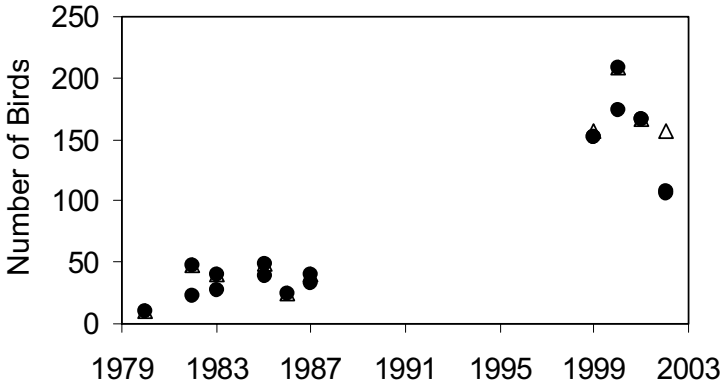

Figure 4. Mean (triangles) and high counts (shaded circles) of Black-bellied Plovers during autumn at Totten Inlet, Washington, between 1980 and 2002.

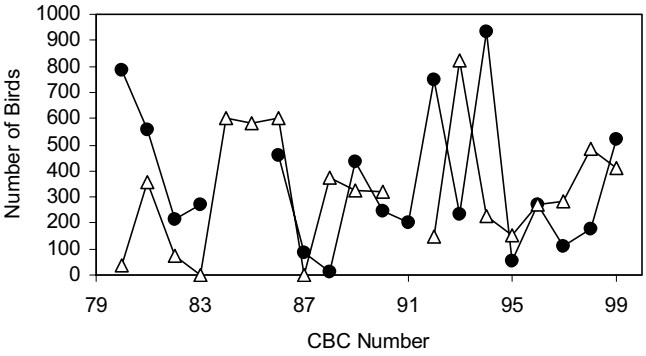

Figure 5. Trends in the abundance of Black-bellied Plovers during Christmas Bird Counts at Grays Harbor (shaded circles) and Sequim/Dungeness (triangles), Washington. Data are from the Cornell Laboratory of Ornithology website.

totals in earlier years and only appeared to be greater. This could occur if successive migrants remained at the site for longer periods and accumulated to a higher peak, in contrast to the alternate explanation, wherein turnover was brief and accumulations were less notable, even though similar numbers of birds were using the site in all years. In contrast to other hypotheses, this scenario includes the possibility that prey populations declined or changed and that plovers require more time to accumulate lipid reserves needed to fuel their migrations. Evaluation of this alternative would require monitoring prey abundance and making subsequent comparisons with plover abundance. In addition, mark-recapture (Warnock and Bishop 1998) could be used to determine the length of time plovers spend at the site. The obvious abundance of large invertebrates in spring does not support this hypothesis. This alternative does not explain the increase in Black-bellied Plover abundance in winter.

The third possible explanation is that the recent increase was unique to this site and reflected changes such as recent enhancement of on-site prey resources. Although comprehensive migration data are lacking for Puget Sound, winter data from Christmas Bird Counts indicate that the abundance of Black-bellied Plovers has not changed at other sites in the region (Figures 5, 6) and that the increase in abundance over the last 20 years is unique to Totten Inlet. A thorough evaluation of this scenario would require monitoring prey abundance and making subsequent comparisons with plover counts.

A noteworthy attribute of Totten Inlet is its annual fall run of chum salmon (*Oncorhynchus keta*). These fish are present in great numbers and their spawned-out carcasses are plentiful on the shores and mudflats of the inlet in late fall and winter (Jauquet et al. 2003). This is by far the most abundant salmonid that spawns in Kennedy or Schneider creeks (Jeff Cederholm, personal communication). Recent research has shown

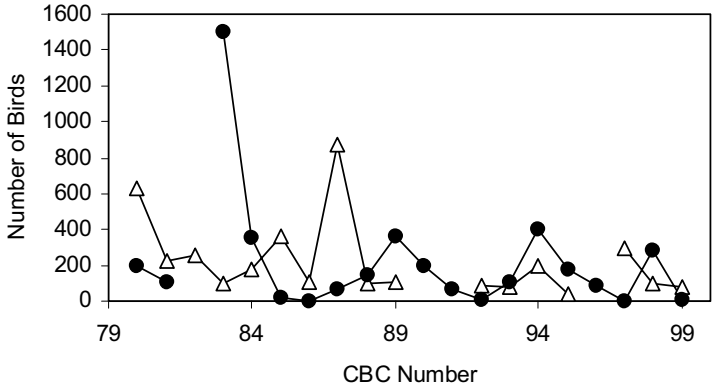

Figure 6. Trends in the abundance of Black-bellied Plovers during Christmas Bird Counts at Padilla Bay (shaded circles) and Leadbetter Point (triangles), Washington. Data are from the Cornell Laboratory of Ornithology website.

that salmon carcasses provide substantial nutrients to terrestrial (Reimchen et al. 2003) and estuarine ecosystems (Jauquet et al. 2003). Furthermore, nutrients from salmon carcasses at Totten Inlet have been found to persist through the winter and into spring (Jauquet et al. 2003). Escapement data maintained by the Washington Department of Fish and Wildlife indicate that the chum salmon runs at both Kennedy Creek and Schneider Creek have increased significantly since 1982 and 1985, respectively (Figure 7). These increases occurred following a reduction in the commercial harvest at this site in 1984 due to concerns about over-harvest of these stocks (Jauquet et al. 2003).

Several other salmon species, including pink salmon (*O. gorbuscha*), chinook salmon (*O. tshawytscha*), and coho salmon (*O. kisutch*), spawn in the river systems associated with other important Black-bellied Plover sites in the Greater Puget Sound (Dungeness River, Samish River, Stillaguamish River). I evaluated salmon escapement data (from Washington Department of Fish and Wildlife) from these rivers between 1980 or 1983 and 2000 to determine whether there were changes in the total biomass of these three species during the last two decades. For biomass calculations I used mean mass values of 1.8 kg, 5.4 kg, and 4.1 kg, for *gorbuscha*, *tshawytscha*, and *kisutch*, respectively (data from Washington Department of Fish and Wildlife). Regression analyses of these data indicated no association between escapement biomass with year over the last two decades (all r^2 values >0.3, all P values >0.39; see Figure 8). In short, Black-bellied Plover abundance at Totten Inlet increased during an extended period when chum salmon escapement increased dramatically at the site. At the same time, however, winter abundance of Black-bellied Plovers remained stable at other Puget Sound sites associated with rivers with salmon runs that did not appreciably change over time. These findings support the third hypothesis posited above.

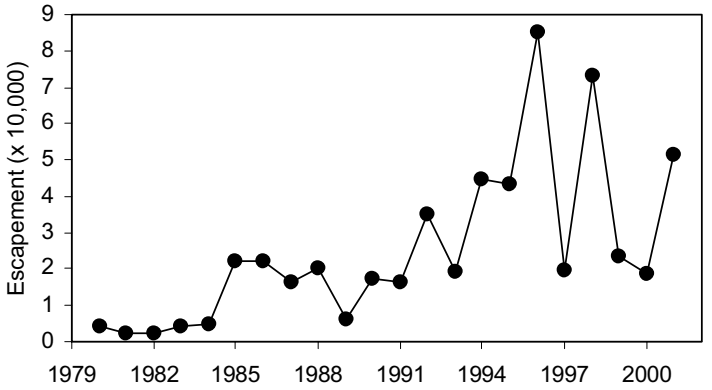

Figure 7. Annual chum salmon escapement at Kennedy Creek, Totten Inlet, Washington. Data are from the Washington Department of Fish and Wildlife.

The apparent relationship between the increasing size of the chum salmon run and an increasing abundance of Black-bellied Plovers at Totten Inlet suggests a very important relationship. Nutrients from salmon carcasses are known to enrich riverine and estuarine systems (see review by Cederholm et al. 1999). I speculate that an enrichment in levels of ^{15}N and ^{13}C (Reimchen et al. 2003) from an increasing source of chum salmon carcasses over the period of this study enhanced conditions for invertebrate prey populations (e.g. polychaetes) used by this plover. This in turn apparently resulted in increased numbers of Black-bellied Plovers. Potential relationships between chum salmon (or other salmon species) escapement and the abundance of other shorebirds at Totten Inlet have not been evaluated (J. Buchanan, unpublished data). To my knowledge, such an apparent population response by a vertebrate species to an increasing abundance of salmon has not been demonstrated in the scientific literature and supports the contention that chum salmon may function as a keystone species (Willson and Halupka 1995; see Mills et al. 1993).

GENERAL DISCUSSION

The health of salmon populations in Totten Inlet and elsewhere may be a key (and overlooked) component of shorebird conservation. Nineteen of 31 North American shorebird species evaluated by Morrison et al. (2001) were thought to be experiencing significant population declines. Eight of those species (Black-bellied Plover, Semipalmated Plover [*Charadrius semipalmatus*], Ruddy Turnstone [*Arenaria interpres*], Red Knot [*Calidris canutus*], Western Sandpiper [*C. mauri*], Least Sandpiper [*C. minutilla*], Dunlin [*C. alpina*], and Short-billed Dowitcher [*Limnodromus griseus*]) occur regularly in marine estuaries in western Washington (Paulson 1993).

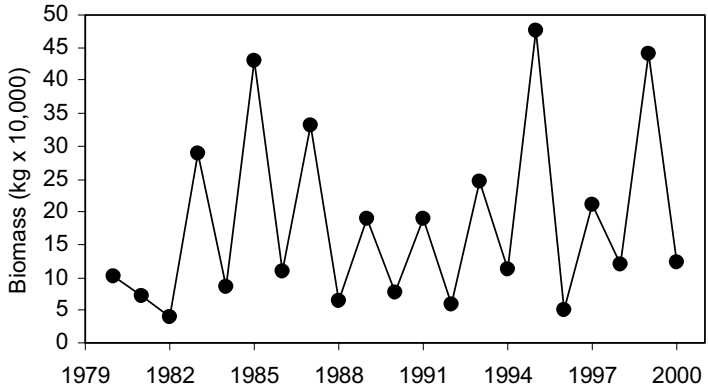

Figure 8. Annual combined escapement biomass of pink salmon, chinook salmon, coho salmon and chum salmon at Dungeness River, Samish River and Stillaguamish River, Washington. Data are from the Washington Department of Fish and Wildlife.

It is unknown whether other runs of salmon in the region can be managed to produce increases similar to that noted at Totten Inlet. If nutrient levels and invertebrate prey abundance can be enhanced elsewhere by increases in salmon escapement, some shorebird populations, and perhaps other species, may benefit from effective salmon conservation.

Totten Inlet clearly supports a great number of wintering and migrant Black-bellied Plovers. Recent high counts are among the highest reported in Washington away from the outer coast (Paulson 1993, Evenson and Buchanan 1997, Page et al. 1999). Moreover, the density of Black-bellied Plovers at Totten Inlet may be the highest in the state (J. Buchanan, unpublished data). These findings indicate that Totten Inlet has become perhaps the most important site for this species in Puget Sound.

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LITERATURE CITED

Brennan, L.A., Buchanan, J.B., Herman, S.G., and Johnson, T.M. 1985. Interhabitat movements of wintering Dunlins in western Washington. Murrelet 66:11-16.

Buchanan, J.B. 1988. The abundance and migration of shorebirds at two Puget Sound estuaries. Western Birds 19:69-78.

Buchanan, J.B. 1992. Winter abundance of shorebirds at coastal beaches of Washington. Washington Birds 2:12-19.

Buchanan, J.B. 2005. Black-bellied Plover (*Pluvialis squatarola*). Pages 132-133 Wahl, T.R., B. Tweit, and S.G. Mlodinow (editors). Birds of Washington: status and distribution. Oregon State University Press, Corvallis, Oregon.

Buchanan, J.B. and J.R. Evenson. 1997. Abundance of shorebirds at Willapa Bay, Washington. Western Birds 28:158-168.

Butler, R.W. 1994. Distribution and abundance of Western Sandpipers, Dunlins, and Black-bellied Plovers in the Fraser River estuary. Pages 18-23 *in* Butler, R.W. and K. Vermeer (editors), The abundance and distribution of estuarine birds in the Strait of Georgia, British Columbia. Occasional Paper No. 83, Canadian Wildlife Service, Victoria, British Columbia.

Butler, R.W. and R.W. Campbell. 1987. The birds of the Fraser River delta: populations, ecology and international significance. Occasional Paper No. 65, Canadian Wildlife Service, Victoria, British Columbia.

Cederholm, C.J., M.D. Kunze, T. Murota, and A. Sibatani. 1999. Pacific salmon carcasses: essential contributions of nutrients and energy for aquatic and terrestrial ecosystems. Fisheries 24 (10):6-15.

Evenson, J.R. and Buchanan, J.B. 1997. Seasonal abundance of shorebirds at Puget Sound estuaries. Washington Birds 6:34-62.

Herman, S.G. and J.B. Bulger. 1981. Distribution and abundance of shorebirds during the 1981 spring migration at Grays Harbor, Washington. U.S. Army Corps of Engineers, contract report DACW67-81-M-0936. Seattle, Washington.

Jauquet, J., N. Pittman, J.A. Heinis, S. Thompson, N. Tatyama, and J. Cederholm. 2003. Observations of chum salmon consumption by wildlife and changes in water chemistry at Kennedy Creek during 1997-2000. American Fisheries Society Symposium 34:71-88.

Mills, L.S., M.E. Soule, and D.F. Doak. 1993. The keystone species concept in ecology and conservation. BioScience 43:219-224.

Morrison, R.I.G., Y. Aubry, R.W. Butler, G.W. Beyersbergen, G.M. Donaldson, C.L. Gratto-Trevor, P.W. Hicklin, V.H. Johnston, and R.K. Ross. 2001. Declines in North American shorebird populations. Wader Study Group Bulletin 94:34-38.

Neter, J., W. Wasserman, and M.H. Kutner. 1990. Applied linear statistical models: regression, analysis of variance, and experimental designs (third edition). Richard D. Irwin, Inc., Homewood, Illinois.

Page, G.W. and Gill, R.E. Jr. 1994. Shorebirds of western North America: late 1800s to late 1900s. Studies in Avian Biology 15:285-309.

Page, G., L.E. Stenzel, and C.M. Wolfe. 1979. Aspects of the occurrence of shorebirds on a central California estuary. Studies in Avian Biology 2:15-32.

Page, G.W., L.E. Stenzel, and J.E. Kjelmyr. 1999. Overview of shorebird abundance and distribution in wetlands of the Pacific coast of the contiguous United States. Condor 101:461-471.

Paulson, D. 1993. Shorebirds of the Pacific Northwest. University of Washington Press, Seattle, Washington.

Paulson, D.R. 1995. Black-bellied Plover (*Pluvialis squatarola*). The Birds of North America, 186:1-28.

Reimchen, T.E., D.D. Mathewson, M.D. Hocking, J. Moran, and D. Harris. 2003. Isotopic evidence for enrichment of salmon-derived nutrients in vegetation, soil, and insects in riparian zones in coastal British Columbia. American Fisheries Society Symposium 34:59-69.

Shuford, W.D., G.W. Page, J.G. Evens, and L.E. Stenzel. 1989. Seasonal abundance of waterbirds at Point Reyes: a coastal California perspective. Western Birds 20:137-265.

Warnock, N. and M.A. Bishop. 1998. Spring stopover ecology of migrant Western Sandpipers. Condor 100:456-467.

Widrig, R.S. 1979. The shorebirds of Leadbetter Point. Independently published.

Willson, M.F. and K.C. Halupka. 1995. Anadromous fish as keystone species in vertebrate communities. Conservation Biology 9:489-497.

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RELATIVE FREQUENCY OF MEMBERS OF THE SLATE-COLORED JUNCO(*Junco hyemalis hyemalis*) COMPLEX IN THE NORTHERN PUGET TROUGH

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The Dark-eyed Junco (*Junco hyemalis*) exhibits remarkable geographic variability. It is currently considered to consist of 15 subspecies (Rising 1996) that were once grouped into as many as six species (American Ornithologists' Union 1931). Of these former species, two are known to occur in Washington: Oregon Junco (formerly *J. oreganus*) and Slate-colored Junco (formerly *J. hyemalis*). The former *J. oreganus* is further subdivided into five races, and the former *J. hyemalis* into three races (Rising 1996). In the *hyemalis* group, the Northern Slate-colored Junco (*J.h. hyemalis*) breeds from western Alaska to eastern Canada and northeastern United States, while the Cassiar Junco (*J.h. cismontanus*) breeds from central Yukon southeast to north-central and eastern British Columbia as well as in west-central Alberta (Rising 1996). Importantly, *cismontanus* is thought to represent a stable population of hybrids between Slate-colored and Oregon Juncos (Rising 1996) and perhaps is best not considered a true Slate-colored Junco at all.

The precise status of Slate-colored Juncos in Washington is poorly understood. Jewett et al. (1953) considered both *J.h. hyemalis* and *cismontanus* to be casual winter residents throughout the state. Hunn (1982) listed Slate-colored Juncos as rare from late September through mid-April in King County. Lewis and Sharpe (1987), Wahl (1995), and Stepniewski (1999) do not address the status of this subspecies group in any detail. To better understand the occurrence of Slate-colored Juncos in northwestern Washington, I report here the relative frequency of Slate-colored Juncos in flocks of juncos in autumn, winter and spring.

METHODS

To evaluate the relative frequency of *hyemalis* juncos in the northern Puget Trough I reviewed my field notes and extracted data that could be used to determine the frequency of occurrence of different junco races. I used data from sites below 100 meters in Island, Skagit, Snohomish and Whatcom counties collected between January 1997 and December 2002. I limited the analysis to this relatively homogeneous area to exclude *J.h. oreganus* breeding areas as much as possible. I used data from early August through late May so that migrant Dark-eyed Juncos would be present.

I used data on junco groups observed in areas I visited while bird watching. When junco flocks were encountered I tallied the number of juncos present and identified them to race. I identified *hyemalis* and *cismontanus* juncos according to characteristics discussed in Rising (1996). Not all juncos in these two groups can be successfully identified and classified, though during this study very few such birds were encountered. About 10%-20% of juncos listed as *oreganus* were not identified to species group, mostly due to my inability to see certain birds long enough to make this distinction. I believe this unidentified portion should be consistent across calendar periods.

Data collected from119 dates were used, 84 dates of which were between 1 October and 30 April, the period during which *oreganus* juncos were found on every trip. The low counts of *oreganus* juncos during May and August (all counts five or lower) confirmed that the breeding population in the areas surveyed was quite small and, consequently, should have little effect on the final data. The predominant terrestrial habitats surveyed were agricultural (including crop-fields, pastures, and their weedy edges) and lowland riparian areas dominated by alder (*Alnus* species) and willow (*Salix* species). Blackberry (*Rubus* species) thickets in both habitats were typically given special attention.

I evaluated the data to determine if the proportion of *hyemalis* juncos in junco flocks differed seasonally. I first calculated two sets of ratios: 1) *hyemalis* and *oreganus* juncos, and 2) a mixed group of *hyemalis* and *cismontanus* juncos compared with *oreganus* juncos. Ratios were calculated for each of three periods in each month. For each month, "early" was defined as days 1 – 10, "mid" as days 11 – 20, and "late" as day 21 through the end of the given month.

RESULTS

On the 119 trips from 1 August through 31 May, a total of 8893 juncos was tallied, 40 of which were *hyemalis*, 11 of which were *cismontanus*, and 8842 were *oreganus*. Of these, 8757 *oreganus*, all of the *cismontanus*, and all but one of the *hyemalis* were found between 1 October and 30 April. The first clearly migrant *oreganus* appeared in mid-September and the last were seen early to mid-May. Dates totaling fifty or more *oreganus* juncos per trip began in mid-October and persisted through early April.

The earliest fall *hyemalis* was recorded on 21 September 1998 at the Skagit Wildlife Management Area, and the latest spring bird was located on 5 April 1998 at the same location. Dates of *cismontanus* occurrence ranged from 29 October to 4 April. Between 20 September and 10 April, *hyemalis* juncos were detected on 24 of 81 dates and *hyemalis* or *cismontanus* juncos were located on 28 of the 81 dates. An apparent peak in the occurrence of *hyemalis* and *cismontanus* juncos was noted from 21 October through 30 November, during which time 20 (50%) of the *hyemalis* and 7 (64%) of the *cismontanus* were identified. During this period, *hyemalis* juncos were detected on 11 of 20 outings and *hyemalis* or *cismontanus* juncos were observed on 13 of 20 outings. Also during this period, only 2380 (26.9%) of

the *oreganus* were counted. The ratio of *hyemalis to oreganus* juncos was 2.8 times higher from late October through late November than during the remainder of the early October through late April period (0.0084 vs. 0.0030). The ratio of (*hyemalis* + *cismontanus*):*oreganus* shows an even greater difference (3x) when comparing these time spans (0.011 vs. 0.0036).

DISCUSSION

During the course of this study, migrant *oreganus* juncos were present in the northern lowland Puget Trough from mid-September to early or mid-May, with large numbers noted from mid-October through early April. This matches well with previous published information for Whatcom County (Wahl 1995).

The occurrence of Slate-colored Junco in the northern lowland Puget Trough can be viewed in two different ways, depending on whether or not *cismontanus* is considered part of Slate-colored Junco along with *J.h. hyemalis*. Most authorities combine *cismontanus* and *hyemalis* juncos (Jewett et al. 1953, A.O.U. 1957, Rising 1996, Sibley 2000, Campbell et al. 2001), even though some of them note that *cismontanus* is apparently a hybrid population between *oreganus* and *hyemalis* juncos (Rising 1996, Sibley 2000). Using either definition, Slate-colored Juncos formed a substantially larger portion of junco flocks from late October through late November. Furthermore, Slate-colored Juncos were more likely to be detected during this span, with Slate-colored Juncos found on approximately one-half of the trip dates between late October and late November and about one-quarter of trips during the remainder of the late September through early April period.

By a commonly used terminology, the above data would place Slate-colored Junco as uncommon from late September through early April, except late October through late November, at which time it would be considered fairly common (Garrett and Dunn 1981, Mlodinow 1984, Peterjohn 2001). My results agree with Hunn (1982), though his definitions place Slate-colored Junco as rare, even at the above frequencies noted.

The relative occurrence of *hyemalis* and *cismontanus* juncos in Washington has not been previously assessed. Interestingly, Campbell et al. (2001) assign all British Columbia Slate-colored Junco records to *J.h. cismontanus*, even though the breeding range of *hyemalis* closely approaches that province (American Ornithologists' Union 1957, Rising 1996). In this study, among the Slate-colored Junco group, 78% were *hyemalis* and 22% were *cismontanus*. Further studies to evaluate the status of *hyemalis* and *cismontanus* in the remainder of Washington would be of great interest.

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LITERATURE CITED

American Ornithologists' Union. 1931. Check-list of North American birds, fourth edition. American Ornithologists' Union, Lancaster, Pennsylvania.

American Ornithologists' Union. 1957. Check-list of North American birds, fifth edition. Port City Press, Baltimore, Maryland.

American Ornithologists' Union. 1998. Check-list of North American birds, seventh edition. American Ornithologists' Union, Washington, D.C.

Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser, A.C. Stewart, and M.C.E. McNall. 2001. The birds of British Columbia, volume 4. University of British Columbia Press, Vancouver, British Columbia.

Garrett, K. and J. Dunn. 1981. Birds of southern California. Los Angeles Audubon Society, Los Angeles, California.

Hunn, E.S. 1982. Birding in Seattle and King County. Seattle Audubon Society, Seattle, Washington.

Jewett, S.G., W.P. Taylor, W.T. Shaw, and J.W. Aldrich. 1953. Birds of Washington State. University of Washington Press, Seattle, Washington.

Lewis, M.G. and F.A. Sharpe. 1987. Birding in the San Juan Islands. The Mountaineers, Seattle, Washington.

Mlodinow, S.G. 1984. Chicago area birds. Chicago Review Press, Chicago, Illinois.

Peterjohn, B.G. 2001. The birds of Ohio. Wooster Book Company, Wooster, Ohio.

Rising, J.D. 1996. A guide to the identification and natural history of the sparrows of the United States and Canada. Academic Press, San Diego, California.

Sibley, D. A. 2000. The Sibley guide to birds. Alfred A. Knopf, New York, New York.

Stepniewski, A. 1999. The birds of Yakima County, Washington. Yakima Valley Audubon Society, Yakima, Washington.

Wahl, T.R. 1995. Birds of Whatcom County. T.R. Wahl, Bellingham, Washington.

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SIXTH REPORT OF THE WASHINGTON BIRD RECORDS COMMITTEE

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The Washington Bird Records Committee (WBRC) has met twice – on 14 April 2002 and 16 November 2003 – since the publication of its fifth report (Aanerud 2002). During these meetings the WBRC examined 128 reports of 62 species. The Committee accepted 110 reports as records, representing 86 percent of the total number reviewed. This rate of record acceptance is similar to other state records committees. As a result of these deliberations, the Committee added three new species to the Checklist of Washington Birds: Bean Goose, Eurasian Hobby, and Painted Bunting. Dusky Thrush and Bay-breasted Warbler were placed on the Supplementary List, a category of records that are accepted by the Committee on the basis of a single observer sight report.

EVALUATION PROCEDURES

It has been ten years since the publication of Washington Bird Records Committee's first report (Tweit and Paulson 1994). The original purposes of the WBRC are much the same now as then: maintain a valid Washington Bird Checklist, achieve a standard for acceptance of credible records of rarities, and establish an archive of written descriptions, photographs, and recordings. Procedures and conventions of the WBRC have remained consistent since its inception. A description of the Committee's evaluation procedures was detailed in the introduction of the first report and is briefly summarized here.

The WBRC meets usually once each year but twice annually when possible. The agenda for each meeting always includes an assessment of the Committee's past work and an establishment of new goals. Prior to each meeting, a packet of written materials and photographic evidence is distributed by the Committee Secretary to each committee member to allow time for thoughtful study and evaluation. At our meetings, the reports are considered individually and in taxonomic order. Additional evidentiary materials are sometimes presented during discussions of submitted reports, as it is not always possible to include such information in the preliminary packets. A final vote follows the end of the discussion of each report. It is the intent of the Committee to share knowledge and

expertise among themselves such that all members are as fully informed as possible. Occasionally one or more members may request to evaluate additional information before a vote is conducted for a particular report. With the full committee's concurrence, a vote can be deferred pending collection of additional information or to solicit additional expertise outside the WBRC. The Committee occasionally contacts an observer to solicit additional information if it is felt that the identification of the bird reported is likely correct, but there is insufficient detail in the report for outright acceptance.

The WBRC's decisions provide a contemporary judgment that becomes part of the permanent record. A conservative standard for accepting reports as records has been adopted to assure that accepted records have met a critical standard on par with that of the scientific community. Acceptance of a record requires an affirmative vote by at least 7 of the 8 Committee members; consequently, 2 dissenting votes are sufficient to determine a report unacceptable. Archived materials are retained for possible reassessment.

Many bird reports are submitted by the Committee's own members. There is mindfulness among Committee members to write descriptions for all "review" species seen. Past experience has proven that all too often a rarity seen by many results in far too few written submissions. The Committee votes on Committee member's reports with a full quorum present. Concerns have been raised that an unfair advantage might occur in the evaluation of such member's reports. While Committee members certainly understand this concern, we continue to support this voting convention because an open discussion with all Committee members present ultimately achieves the fairest result. The WBRC evaluates individual Committee member's reports with at least an equally critical discernment and has rejected reports that were not well substantiated.

This is the first report of the WBRC to consider a report of a subspecies that has special interest. A documented Bewick's Swan was accepted as a record based on this merit. There has always been an interest to evaluate reports of rare subspecies, but the challenge for the WBRC was how to proceed on this issue. A list of birds for consideration was prepared by one of our members, and following the input of the other Committee members, is now functioning as our guideline. Publication of this list will be forthcoming.

For purposes of the Committee's work, and for use in this document, information submitted to the WBRC to support an observation is considered a "report." A "record" is a report that has been accepted by the WBRC. The taxonomy and nomenclature used in this text are based on the American Ornithologists' Union checklist of North American birds (American Ornithologists' Union 1998). Committee members who voted on the reports contained herein were: Kevin Aanerud, Tom Aversa (November 2003 only), Bob Boekelheide, Phil Mattocks, Steve Mlodinow, Dennis Paulson, Andy Stepniewski (April 2002 only), Bob Sundstrom, and Bill Tweit.

Records supported by photographs, videotape, or recorded vocalizations are indicated in the text with a "plus sign" (+) next to the initials of the relevant contributor. Contributor's initials are associated with all accepted records, but have been removed from unaccepted reports. A list of contributors is found at the end of this document. The initial observer of a particular bird is cited only if they provided a written description or other evidence.

ACCEPTED RECORDS

Greater Shearwater (*Puffinus gravis*). A Greater Shearwater off Westport, Grays Harbor County, 24 August 2002 (+CA, BL) was Washington's first and only the fifth for the northeast Pacific.

Manx Shearwater (*Puffinus puffinus*). Three Manx Shearwater reports were accepted: one off Westport, Grays Harbor County, within 3.2 kilometers of shore, 4 August 2001 (BL); two birds about 3.2 kilometers off Westport, Grays Harbor County, 18 May 2002 (BT); and one about 16 kilometers west of La Push, Clallam County, 10 May 2002 (SH). These are added to 19 previous records, ranging from 24 March to 10 October, nine of which were from June and July. All descriptions eliminated Black-vented Shearwater (*P. opisthomelas*), Townsend's Shearwater (*P. auricularis auricularis*), and Newell's Shearwater (*P. a. newelli*). See Mlodinow (2004b) for details regarding the apparent colonization of the northeast Pacific by Manx Shearwater.

Brown Booby (*Sula leucogaster*). Washington's second Brown Booby rode a sailboat's mast from Blake Island, Kitsap County, to Tacoma, Pierce County, on 18 May 2002 (JM). This record received one dissenting vote, based on concerns of ship-assistance. Washington's third record occurred shortly thereafter, when a Brown Booby was photographed off Westport, Grays Harbor County, at latitude 46.55.08, longitude 124.55.07 on 5 October 2002 (+BT, +GSM, +RTS, +FF, BL). Both records involved birds of undetermined age. Washington and Oregon now have four records combined, all since 1997, and three of which are from October (Aanerud and Mattocks 2000, Marshall et al. 2003).

Snowy Egret (*Egretta thula*). Four reports of Snowy Egrets were accepted, bringing the state total to 29: one at Blaine, Whatcom County, 22 August – 10 September 2001 (WW); two at Ridgefield National Wildlife Refuge, Clark County, 8 – 11 October 2001 (JE); one near Corfu, Grant County, 20 – 25 May 2002 (+DG, BT); and one at Edmonds, Snohomish County, 20-22 May 2002 (TP). Snowy Egret records are accruing at an increasing rate, with 13 having occurred from 1999 through 2002.

Little Blue Heron (*Egretta caerulea*). An adult Little Blue Heron graced a slough near Ellensburg, Kittitas County, 8 – 9 June 2002 (+SR, +SM). This was Washington's third record and the first since 1989. The previous records were of birds that were first found in October.

Yellow-crowned Night Heron (*Nyctanassa violacea*). Washington's second Yellow-crowned Night Heron was an immature at Wenatchee,

Chelan County, on 24 September 2001 (DB). The state's previous record was from Walla Walla, Walla Walla County, from 30 May until 8 June 1993 (Tweit and Skriletz 1996). Oregon has no records of this species (Marshall et al. 2003).

Bean Goose (*Anser fabalis*). Washington's first Bean Goose record was at Hoquiam, Grays Harbor County, 7 – 17 December 2002 (+PS, +RS, +BT). Eurasian experts identified this bird as *A. f. middendorfii*, which breeds in eastern Siberia (Mlodinow 2004a). Most previous North American records of Bean Goose are from Alaska during spring, but there are five prior records outside Alaska, including three of *middendorfii* (Mlodinow 2004a). Notably, Alaska had its first two fall records during September 2002 (Tobish 2002). Discussions with aviculturalists and investigation of aviculturalist listserves revealed that Bean Geese are likely not kept captive anywhere in North America and that *middendorfii* is very rare in captivity, even in Eurasia.

Emperor Goose (*Chen canagica*). An Emperor Goose, still mostly in juvenile plumage, was near Vancouver Lake, Clark County, on 25 October 2001 (TA). Though typically Emperor Geese largely have molted their juvenile plumage by this date (Headley 1967), the description ruled out all other goose species. Another Emperor Goose was near Bruceport, Pacific County, from 18 January until 20 February 2002 (+SM). There have been only four records of this species since it was added to the review list in 1999. There were 29 published reports in Washington from 1982 – 1999, mostly from mid-October into early April, and entirely from west of the Cascade Mountains (Wahl et al. 2005).

Bewick's Swan (*Cygnus columbianus bewickii*). An adult Bewick's Swan was at the corner of Frenchman's Hill and Dodson roads, Grant County, 1 April 2002 (EK). Though there have been rumors of Bewick's Swans occurring in Washington, this is the first documented record. In Oregon, a single Bewick's Swan was found in Klamath County during 1974, 1975, 1979, 1980, and 1981, and singles were also in Multnomah and Tillamook counties (Gilligan et al. 1994). More recently, there have been three additional reports from Oregon, all from the eastside, including one on 10 March 2002 in Wheeler County (Marshall et al. 2003). Also of note was a Bewick's Swan seen on 29 March 2002 in southeastern British Columbia near Kamloops (Cecile 2002). The preponderance of records coming from east of the Cascades instinctively seems unlikely, as most Asian waterfowl are found predominantly west of the Cascades (e.g., Eurasian Wigeon *Anas penelope*, Tufted Duck *Aythya fuligula*). However, Whistling Swans *(C. c. columbianus*) migrating through eastern Washington and Oregon mostly originate from the west-central Alaskan coast, whereas those in western Washington originate mostly from the Alaska Peninsula (Bellrose 1976). Consequently, both Bewick's and Whooper Swans (*C. cygnus*) seem more likely to meet Whistling Swans bound for the eastside of Washington and Oregon. A summary of Bewick's Swan identification can be found in Knapton (2000).

Falcated Duck (*Anas falcata*). Washington's third Falcated Duck was an adult male on Samish Flats, Skagit County, 21 February – 26 March 2002 (TA, +JEi, +RS, BT). The one dissenting committee member expressed concerns regarding origin, though there were no specific data suggesting a problem in this regard. Furthermore, another Falcated Duck was in Lassen County, California, 19 March – 2 April 2002 (Glover et al. 2002). Washington's previous records are from Naselle, Pacific County, 3 January 1979, and Sequim, Clallam County, 3 July 1993 (Tweit and Paulson 1994, Aanerud and Mattocks 2000).

Tufted Duck (*Aythya fuligula*). A male Tufted Duck in alternate plumage was at Hoquiam, Grays Harbor County, 9 – 20 February 2002 (BFi). This is the fifth record since the committee started reviewing this species in 1999. Prior to 1999, there were about forty published reports, with approximately 75% from the westside, and all from between the dates of 10 October and 14 May (Wahl et al. 2005).

Red-shouldered Hawk (*Buteo lineatus*). Accepted reports include an adult at Conboy Lake National Wildlife Refuge, Klickitat County, on 12 September 2001 (JE); an adult near Brady, Grays Harbor County, from August to 5 December 2001 (TA); one at Bay Center, Pacific County, on 4 October 2002 (DP); an immature near Vancouver Lake, Clark County, 5 October 2002 (+SM); an immature at Ridgefield National Wildlife Refuge, Clark County, from 30 November until 20 December 2002 (SM); an immature at Bachelor Island, Clark County, on 20 December 2002 (+JE); an immature at Skagit Wildlife Management Area, Skagit County, 25 September – 24 November 2002 (TA, MDo); an immature at Westport, Grays Harbor County, on 26 December 2002 (BS); one at Ocean Shores, Grays Harbor County, on 11 January 2003 (+GG); and an immature on the Lewis Flats, Cowlitz County, on 6 March 2003 (BT). These ten records increase the state total to 25 records. Breeding and wintering populations have steadily increased in western Oregon over the last 30 years, with breeding records as far north as Polk County (Marshall et al. 2003).

Broad-winged Hawk (*Buteo platypterus*). A dark morph adult Broad-winged Hawk was seen soaring with Red-tailed Hawks (*Buteo jamaicensis*) at Phileo Lake, Spokane County, on 1 April 2002 (MM). The early date was of some concern but not unreasonable given occasional early arrivals within the main portion of this species' range. This is the state's tenth record and the fourth from spring. Notably, this species has been seen annually during fall in small numbers at Chelan Ridge (*WOSNews* 66:1). These sightings are very likely correct, but most remain undocumented.

Eurasian Hobby (*Falco subbuteo*). Washington's first Eurasian Hobby spent most of 20 October 2001 at Discovery Park, Seattle, King County, before departing ahead of an oncoming cold front (KA, +PC, TBF, DH). There were only ten previous North American records, all from Alaska (Dunn et al. 2002). Interestingly, Alaska's second fall record was at Shemya Island, 21 September – 5 October 2001 (Dunn et al. 2002).

Upland Sandpiper (*Bartramia longicauda*). An Upland Sandpiper was along Deno Road, near Spokane, Spokane County, 6 – 22 July 2002

(JA, +SR, DB). This species nested in the Spokane Valley from 1929 (and likely earlier) to 1993, with no more than 12 birds found in any given year (McAllister 1995). The 2002 record was only the fifth since this species was apparently extirpated as a breeding species.

Hudsonian Godwit (*Limosa haemastica*). Three Hudsonian Godwit records were added, bringing the total number of records to 17. A juvenile was at Blaine, Whatcom County, on 26 August 2001 (CB); two were at Bottle Beach (Ocosta), Grays Harbor County, on 12 May 2002 (CC); and one was at Grandview, Yakima County, on 15 May 2003 (+DG). Unfortunately, through 2002, eight other reports have yet to be reviewed.

Bar-tailed Godwit (*Limosa lapponica*). The southbound migrations of 2001 and 2002 were very good for Bar-tailed Godwits. Six reports have been accepted, and at least three other reports include photographs and will likely be reviewed at the next WBRC meeting. Two adults were at Ocean Shores, Grays Harbor County, on 7 July 2001 (+SM); a juvenile was at Blaine, Whatcom County, 14 – 22 September 2001 (JD, +SM); single juveniles were at Tokeland, Pacific County, 16 October 2001 through February 2002 (+SM) and 6 – 13 October 2002 (+SM); one was at Westport, Grays Harbor County, on 19 October 2002 (+SM); and a possible *L. l. lapponica* was at Blaine, Whatcom County, 28 August – 1 September 2002 (JD). The above records add to the 23 previous ones, and the wintering bird at Tokeland provided Washington's first winter record. The taxonomy of Bar-tailed Godwit is uncertain. There is considerable variation from west to east, with the easternmost birds having the whitest rump, lower back, and underwing and the westernmost birds being heavily mottled with gray in these areas (Hayman et al. 1986). Most authorities recognize two to three races, with *lapponica* breeding in Scandinavia and easternmost Russia, *baueri* in western Russia and Alaska, and the intermediate *menzbieri* in central Russia (Hayman et al. 1986), although some authorities recognize three additional subspecies in Russia (Engelmoer and Roselaar 1998). Birds identified as *menzbieri* have been identified on several occasions in Japan (Brazil 1991) and *menzbieri* is the predominant race in western Australia during winter (Simpson and Day 1999). The bird in Blaine was described as having a "blazing" white rump extending up to the middle of the back and underwing coverts that were "white with small and sparse gray marks." This description seems to indicate *lapponica*, though *menzbieri* could not be eliminated. There are two other west coast records of white-rumped Bar-tailed Godwits: an adult at Pt. Mugu, California, 30 August 1990 (Small 1994), and a juvenile at Bolinas Lagoon, California, 20 Sep 1988 (G. McCaskie, in litt, California Bird Record Committee files).

Curlew Sandpiper (*Calidris ferruginea*). Washington's seventh accepted Curlew Sandpiper was an adult at Crockett Lake, Island County, on 18 July 2002 (+KA, PC). Two of the previous records are from May, three are from September/October, and one was from July. A report (with photograph) from near Long Beach, Pacific County, 5 – 11 August 2000 (Mlodinow and Tweit 2001) is pending review.

Buff-breasted Sandpiper (*Tryngites subruficollis*). Two Buff-breasted Sandpipers were documented at Ocean Shores, Grays Harbor County, 4 September 2001 (RL, +RS) but up to three were reported there 7 – 16 September 2001 (Mlodinow et al. 2002a); one was at Samish Flats, Skagit County, on 25 August 2001 (MB); four were on Fir Island, Skagit County, on 7 September 2002 (MB); and one was on Fir Island, Skagit County, on 15 September 2002 (+SM). Only one other report has been reviewed and accepted since this species was added to the review list in 1999 (Aanerud and Mattocks 2000). About 185 Buff-breasted Sandpipers were reported from Washington prior to 1999, about 90% of which were along the outer coast and 6% from the Puget Trough (Wahl et al. 2005).

Ruff (*Philomachus pugnax*). Two juvenile Reeves were videotaped near Florence, Snohomish County, on 8 September 2003 (+SM), a juvenile Ruff and a juvenile Reeve were videotaped there on 13 September 2003 (+SM), and an unsexed juvenile Ruff was videotaped there on 25 September 2003 (+SM). These represent the first accepted records since this species was added to the review list in 1999 (Aanerud and Mattocks 2000), though there are several reports awaiting review, including some supported by excellent photographs. There were about 40 Washington records of Ruff prior to 1999, mostly from late August to late September and mostly from western Washington (Wahl et al. 2005).

Laughing Gull (*Larus atricilla*). Washington's third Laughing Gull was an immature at Wentachee, Chelan County, on 4 September 2001 (DB). Previous records are from 1 September 1975 and 14 August 1982 on the outer coast (Tweit and Skriletz 1996).

Lesser Black-backed Gull (*Larus fuscus*). An adult Lesser Black-backed Gull at Port Angeles, Clallam County, on 4 September 2002, was Washington's second record (BN). Washington's prior record was a bird that apparently returned to the Walla Walla River delta, Walla Walla County, and nearby areas during winters of 1999 – 2000 through 2002 – 2003 (Aanerud 2002, Mlodinow et al. 2003). A report (with photograph) from Clarkston, Asotin County, 16 – 24 March 2002 (Mlodinow et al. 2002b), is pending review.

Thick-billed Murre (*Uria lomvia*). Washington's eighth record of Thick-billed Murre occurred after a twelve year hiatus when an alternate plumaged adult was located approximately 50 kilometers off Westport, Grays Harbor County, on 17 February 2002 (SM, PB, +DVP). The state's ninth record was added shortly thereafter when an alternate adult was found near Diamond Point, Clallam County, and relocated near Cape George, Jefferson County, 16 December 2002 (CW, BL).

Xantus's Murrelet (*Synthliboramphus hypoleucus*). Two Xantus's Murrelets of the northern race, *S. h. scrippsi*, were noted approximately 50 kilometers off Westport, Grays Harbor County, on 4 August 2001 (BL). Two more *scrippsi* were at latitude 46.53.60 N, longitude 124.54.80 W off Westport, Grays Harbor County, 5 September 2002 (GSM, BL). These represent the fifth and sixth state records since this species was added to the review list in 1997 (Aanerud and Mattocks 1997). There are more

than 30 reports antecedent to this species joining the review list, almost all from late July to early October pelagic trips (T. Wahl, unpublished data). All Xantus's Murrelets observed during organized pelagic trips that have allowed subspecific identification have been *scrippsi*. However, oceanographic surveys off Washington have produced reports of *hypoleucus* that were almost certainly correct, including two seen 58 kilometrs (36 nautical miles) west of Leadbetter Point, Pacific County, on 6 September 2001 (Mlodinow et al. 2002a).

Horned Puffin (*Fratercula corniculata*). A group of six Horned Puffins in alternate plumaged were in Seattle, King County, on 29 May 2001 (RaH), and one in alternate plumage was off Westport, Grays Harbor County, at latitude 46.53.06N and longitude 124.54.13W on 5 September 2002 (+GSM, BL). These bring the number of records to 17, though a number of older reports are undocumented and have not been reviewed.

Eurasian Collared-Dove (*Streptopelia decaocto*). Washington's second record of Eurasian Collared-Dove was at Wenatchee, Chelan County, from 9 July until 3 September 2002 (DB, PM). Notably, this bird was seen being mounted by a male Ringed Turtle-Dove (*S. risoria*) on 14 July, but no nest or progeny were later noted. The description nicely eliminated Ringed Turtle-Dove and seemed to exclude the possibility of a hybrid. Romagosa and McEneaney (1999) summarized the range expansion of this species in North America.

White-winged Dove (*Zenaida asiatica*). Washington's sixth White-winged Dove was at a feeder near Kittitas, Kittitas County, between 8 and 10 June 2002 (+DE, DB, +SM). All but one of Washington's records were after 1996, and all have been from the period between May and November.

Yellow-billed Cuckoo (*Coccyzus americanus*). Documentation of a Yellow-billed Cuckoo from Kettle Falls, Stevens County, 19 June 1991 (LS) belatedly reached the Committee. This species nested in Washington until the mid-1930s (Layman and Halterman (1987). There are now eight records since 1941, when this species disappeared from Whatcom County (Wahl 1995). All but one of the post-1941 records were 5 June – 3 August.

Costa's Hummingbird (*Calypte costae*). Washington's third Costa's Hummingbird was an adult male at Redmond, King County, 18 – 24 May 2002 (MW, +RS), and the fourth was an adult male at Mount Vernon, Skagit County, 15 – 16 May 2003 (+KW).

Broad-tailed Hummingbird (*Selasphorus platycercus*). Washington's second Broad-tailed Hummingbird was an adult male near Dixie, Walla Walla County, on 7 June 2002 (MD). This record follows shortly on the heels of the first state record, from Asotin during August 2000 (Aanerud 2002).

Yellow-bellied Sapsucker (*Sphyrapicus varius*). Washington's third Yellow-bellied Sapsucker was a juvenile in Kent, King County, between 30 December 2001 and 5 January 2002 (DS, TA). The vast majority of Pacific coast records south of British Columbia are from October through March, with a peak in November and December (Mlodinow 2003).

Black Phoebe (*Sayornis nigricans*). A Black Phoebe was at the Julia Butler Hansen Preserve, near Cathlamet, Wahkiakum County, from October 2001 into February 2002 (LH, +SM). It or another phoebe returned the next autumn and was present from 16 October 2002 – 17 March 2003, and was seen by many but not documented. An adult Black Phoebe was at Ridgefield National Wildlife Refuge, Clark County, from 11 September 2002 into February 2003 (TA). These represent the third and fourth records. A report (including a photograph) from Washougal, Clark County (Tweit and Tice 1998), is pending review. This species' range has been expanding rapidly in western Oregon over the last 20 years, with recent nesting in northwestern Oregon (Marshall et al. 2003).

Vermilion Flycatcher (*Pyrocephalus rubinus*). Washington's fourth Vermilion Flycatcher was an immature male, near Florence, Snohomish County, on 1 November 2002 (GA). Prior records were from late October into March.

Tropical Kingbird (*Tyrannus melancholicus*). Three reports of Tropical Kingbird were accepted, all involving calling birds: one at Ocean Shores, Grays Harbor County, 28 October – 6 November 2001 (KA, +SM); one near Stanwood, Snohomish County, 12 – 24 November 2001 (DD, +PB, +RS, DB); and one near Elma, Grays Harbor County, on 23 November 2002 (BR, GR, KB). There were five previous records of Tropical Kingbird for Washington. The Stanwood bird was only the second record for the Puget Trough. Tropical Kingbird vagrancy in North America has increased substantially over the last decade or two, with most records coming from October and November along the immediate Pacific Coast (Mlodinow 1998).

Tropical/Couch's Kingbird (*Tyrannus melancholicus/couchii*). An unidentified Tropical-type Kingbird was near Edison, Skagit County, between 17 and 29 November 2002 (+JEi). It did not call and could not be identified with certainty. There were seven previous records of Tropical/Couch's Kingbirds for Washington. There are also eight published and unreviewed reports from Washington prior to 2002.

Scissor-tailed Flycatcher (*Tyrannus forficatus*). A Scissor-tailed Flycatcher, apparently in first-spring plumage, was near Rockport, Skagit County, on 31 May 2003 (SA, +GB). Two other reports from 2003 are pending review. Washington's previous Scissor-tailed Flycatcher records were from 1983 and 1985 (Tweit and Paulson 1994).

Brown Thrasher (*Toxostoma rufum*). A Brown Thrasher was in Sequim, Clallam County, on 2 July 2002 (CT). This is Washington's fifth record, all since 1994.

Tennessee Warbler (*Vermivora peregrina*). Washington's fourteenth Tennessee Warbler was at Mount Pleasant, Skamania County, 4 September 2001 (WC). All but three of Washington's previous records are from fall and early winter, with dates spanning 26 August – 5 December, and most having been found 26 August – 17 September.

Chestnut-sided Warbler (*Dendroica pensylvanica*). Two new Chestnut-sided Warbler records were added to the fifteen previous records. A singing first-year male was at Graysmarsh, Clallam County, 22 – 23 June

2002 (SRA, BB), and another singing first-year male was at Lyons Ferry Park, Franklin County, on 1 June 2003 (+BFl, +SM). All but three of the state's records are from June or July.

Magnolia Warbler (*Dendroica magnolia*). Washington's ninth Magnolia Warbler was a basic-plumaged male at Wenatchee, Chelan County, on 2 October 2001 (DB). Six of the previous eight records were from fall, with dates ranging from 6 September to 21 October.

Black-throated Blue Warbler (*Dendroica caerulescens*). Washington's fifth accepted Black-throated Blue Warbler was a male in Brier, Snohomish County, on 2 November 2002 (GD). All records have been during fall/winter, with fall birds having been first noted from 8 October – 8 November.

Blackpoll Warbler (*Dendroica striata*). Washington's twelfth Blackpoll Warbler was at Richland, Benton County, on 11 September 2002 (NL, CS). Seven of Washington's previous records were during late August and early September.

Black-and-white Warbler (*Mniotilta varia*). Washington's twenty-fourth Black-and-white Warbler was an adult male near Carnation, King County, on 22 May 2003 (MW). There are about 15 published Washington reports (Wahl et al. 2005) that have yet to be reviewed. Washington's Black-and-white Warblers are scattered throughout the year and the state, with a small peak in late May to early June.

Lark Bunting (*Calamospiza melanocorys*). Washington's eleventh Lark Bunting was along Dodson Road, Grant County, on 24 May 2002 (LA). Most prior records were from fall, and previous records of northbound migrants were from early June.

Rose-breasted Grosbeak (*Pheucticus ludovicianus*). Four reports of Rose-breasted Grosbeak were accepted, bringing the total to 24 records. A first-spring male in Seattle, King County, 2 – 4 April 2002 (RL, +RS, +IS) provided the state's first record between late December and early May. Additionally, a first-spring male was in Ellensburg, Kittitas County, on 1 June 2002 (+PM); an adult male was in Spokane, Spokane County, 6 – 9 June 2002 (+JA); and an adult male was in Spokane, Spokane County, on 31 May 2002 (JA, MM). Most of Washington's records are of adult males from late May through late June.

Indigo Bunting (*Passerina cyanea*). Three Indigo Bunting reports were accepted: a first year male, West Richland, Benton County, 19 July – 31 August 1999 (BLF, NL, +Tri-Cities Herald); a first year male near Potholes Reservoir, Grant County, 25 – 26 May 2002 (SD, DB, +SM); and an apparent adult male at Battle Ground, Clark County, on 7 June 2003 (NW). Of the eleven previous records, seven were from mid-May to early June.

Painted Bunting (*Passerina ciris*). Washington's first Painted Bunting was an adult male in crisp plumage at a feeder in Seattle, King County, between 10 February and 3 March 2002 (+KA, C. Kahle, TA). The Committee considered the possibility of captive origin, but felt that such was unlikely as this species is rarely kept in captivity away from the Mexican

border. Painted Bunting vagrancy has greatly increased over the last 15 years, including many wintering birds in the northeastern United States. For a detailed discussion of this species' vagrancy in North America and issues relating to cagebirds, see Mlodinow and Hamilton (2005).

Tricolored Blackbird (*Agelaius tricolor*). Tricolored Blackbirds continue to expand their range in Washington. An adult male and two first-year male Tricolored Blackbirds were at Shillapoo Bottoms, Clark County, on 2 February 2002 (+SM). An adult male was near Potholes Reservoir, Grant County, on 20 July 2002 (JW). A male and a female were at Othello, Adams County, on 9 September 2002 (+SM). Two Tricolored Blackbirds were at Shillapoo Bottoms, Clark County, on 30 November 2002 (+SM). A flock of 30-40 was near Texas Lake, Whitman County, on 31 May 2002 (+SM, BT). This species was first noted in Washington when a breeding colony was found near Wilson Creek, Grant County, during July 1998 (Aanerud and Mattocks 2000). Tricolored Blackbirds have been reported there every year since. Multiple reports have also been received from Othello, Adams County, during the non-breeding season, but few have been documented. Additionally, there are now several records from western Washington, all from Shillapoo Bottoms, Clark County, during November – February. Finally, the Texas Lake record was about 60 kilometers from Idaho, where the species has not been recorded. Tricolored Blackbird will likely soon be removed from the review list.

Common Grackle (*Quiscalus quiscula*). The year of 2002 saw a flurry of Common Grackle records, including Washington's first breeding record. A pair was found at Ephrata, Grant County, 3 June 2002 (BT, DB), and was present into July; on 21 June, food was noted being carried into the presumptive nest tree (Mlodinow and Tweit 2002). Other records are of singles at Yakima, Yakima County, 9 March – 10 June 2002 (+DG, +RS, +SM); Kennewick, Benton County, on 19 October 2002 (DR); and at Tatoosh Island, Clallam County, on 13 June 2002 (TW). There were only seven previous Washington records, including two from the Puget Trough and five from the Tri-Cities/Walla Walla County. An older report of a Common Grackle from Tatoosh Island during June is pending review.

Great-tailed Grackle (*Quiscalus mexicanus*). Washington's third Great-tailed Grackle was a male at Othello, Adams County, on 15 July 2002 (BFl). The state's previous records are from Yakima County on 25 May 1987 (Tweit and Paulson 1994), and Snohomish County from 2 September 2000 to 7 January 2001 (Aanerud 2002).

Brambling (*Fringilla montifringilla*). A Brambling from Walla Walla, Walla Walla County, from 20 February to 14 March 1992 was belatedly accepted (+MD). Washington's thirteenth, and eastern Washington's third, Brambling was at Bridgeport, Douglas County, on 23 December 2001 (MD). This was Washington's first since 1996 and only the second since 1993.

Hoary Redpoll (*Carduelis hornemanni*). A number of Hoary Redpolls were found during a massive invasion of Common Redpolls (*C. flammea*) in the winter of 2001 – 2002. The first report, from Lummi Flats, Whatcom County, on 11 November 2001 (HO), provided western Washington's first

record. Following thereafter, singles were at Cle Elum, Kittitas County, in early January 2002 (+CT); Ellensburg, Kittitas County, on 3 January 2002 (SD); Electric City, Grant County, from 5 to 20 January 2002 (+PS, DB, TA); Wenatchee, Chelan County, on 19 January 2002 (DB); Chesaw, Okanogan County, on 26 January 2002 (CW); and Elk, Spokane County, on 26 and 27 January 2002 (MM). These observations bring the state total to 13 records.

UNACCEPTED RECORDS

Manx Shearwater. Two were reported off Teawhit Head, Clallam County, 12 June 2002, by an experienced observer. Unfortunately, the birds were seen briefly, and the Committee felt that similar species, such as Black-vented and Townsend's Shearwaters, could not be definitively eliminated.

Magnificent Frigatebird (*Fregata magnificens*). A bird described by a non-birder 35 kilometers off Neah Bay, Clallam County, 19 July 2001, suggested a frigatebird, but the description was too vague for certain identification even to genus.

Red-shouldered Hawk. Though most Committee members felt the bird was correctly identified, a hawk observed at the Skagit Wildlife Management Area, Skagit County, 27 Sep 2001, by experienced observers was described too briefly for the committee to endorse.

Broad-winged Hawk. A Broad-winged Hawk report from Slate Peak, Okanogan County, 22 September 2001, was not accepted, as it was noted to have a dark undertail and a build stockier than that of a Northern Goshawk (*Accipter gentilis*).

Bar-tailed Godwit. Reports of Bar-tailed Godwits from Tokeland, Pacific County, 16 September 2001, and Leadbetter Point, Pacific County, 16 September 2002, failed to eliminate the possibility of pale Marbled Godwits (*Limosa fedoa*).

Iceland Gull (*Larus glaucoides*). A worn and faded gull was photographed and carefully described at Kennewick, Benton County, on 25 March 2003. Though the description fits Iceland Gull fairly well, the photographs show a bird with a relatively thick bill, short wings, and a washed-out but distinct tail band. One photo suggests the presence of a secondary bar. Thayer's (*L. thayeri*), Glaucous (*L. hyperboreus*), Glaucous-winged *(L. glaucescens*), and Iceland Gull pose significant identification problems in mid-to-late spring as useful field marks are often faded and atypical in appearance at that time.

Long-billed Murrelet (*Brachyramphus perdix*). A Long-billed Murrelet reported off Cypress Island, San Juan County, 11 November 2001, was unanimously not endorsed by the Committee. The primary concern was that the description did not eliminate the possibility of a juvenile Pigeon Guillemot (*Cepphus columba*) or Xantus's Murrelet.

Yellow-bellied Sapsucker. A bird at Hood Park, Walla Walla County, 13 Oct 2001, was apparently an immature almost fully in first basic plum-

age. Though several marks supported Yellow-bellied Sapsucker, the advanced molt was of concern and raised the possibility of a hybrid Red-naped x Yellow-bellied Sapsucker.

Vermilion Flycatcher. A pair was reported from Fort Simcoe, Yakima County, on 5 July 2002. The Committee was concerned that the description did not eliminate House Finch (*Carpodacus mexicanus*).

Yellow-billed Magpie (*Pica nuttalli*). A tantalizing report of this species came from near Pasco, Franklin County, on 15 and 16 June 2002. Ultimately, the report was not accepted because the possibility of a Black-billed Magpie (*P. hudsonica*) with aberrant bare parts could not be eliminated.

Bay-breasted Warbler. A singing male was reported near Granite Falls, Snohomish County, on 27 June 2002. Though the Committee felt this bird was likely correctly identified, the brevity and distance of the view led to the report not being accepted.

Black-and-white Warbler. The plumage and song descriptions of one at Point Grenville, Grays Harbor County, on 7 May 2002, failed to eliminate Black-throated Gray Warbler (*Dendroica nigrescens*).

Mourning Warbler (*Oporornis philadelphia*). The description of a Mourning Warbler in Pend Oreille County, 30 May 2002, lacked sufficient detail to fully eliminate MacGillivray's Warbler (*O. tolmei*).

Baird's Sparrow (*Ammodramus bairdii*). The description of a bird in Wenatchee, Chelan County, 6 September 2002, did not adequately eliminate the possibilities of a Savannah Sparrow (*Passerculus sandwichensis*) or a juvenile Grasshopper Sparrow (*Ammodramus savannarum*).

Yellow Grosbeak (*Pheucticus chrysopeplus*). The description of a bird reported from Bothell, King County, 9 June 2001, did not eliminate Western Tanager (*Piranga ludoviciana*) and was unanimously not accepted by the committee.

Tricolored Blackbird. A report of six Tricolored Blackbirds from Othello, Adams County, 8 December 2001, mentioned prominent buffy edges to the body plumage, which generally indicates Red-winged Blackbird (*Agelaius phoeniceus*). Other marks noted indicated Tricolored Blackbird, and though the Committee suspects the identification was correctly made, it did not endorse the report.

Common Grackle. A bird seen briefly in Othello, Adams County, 3 July 2002, was likely of this species, but the description did not allow for confident identification.

SUPPLEMENTARY LIST

Philadelphia Vireo (*Vireo philadelphicus*). Washington's second Philadelphia Vireo was found singing in Lincoln County, near Ritzville, along Upper Crab Creek, on 7 June 2002 (DBa). Washington's first was seen at Summer Falls, Grant County, on 25 September 1991 (Tweit and Paulson 1994). Notably, the one Oregon record is from Harney County, on 3 June 1991 (Marshall et al. 2003).

Dusky Thrush (*Turdus naumanni*). A Dusky Thrush, beautifully drawn, was at Mount Vernon, Skagit County, on 27 June 2002 (PA). There was one dissenting vote based, in part, on the surprising date, but an Eyebrowed Thrush (*T. obscurus*) photographed in Kern County, California, 28 May 2001 (McCaskie and Garrett 2001), sets some precedent.

Bay-breasted Warbler **(***Dendroica castanea*). A detailed description and drawing of a basic-plumaged adult Bay-breasted Warbler near Moses Lake, Grant County, 21 September 2002 (DS), furnished Washington's first state record. Oregon has ten records, mostly from late May and early June, with only one record after August (Marshall et al. 2003). California records, averaging six to seven per fall, peak in October (Small 1994).

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LITERATURE CITED

Aanerud, K.R. 2002. Fifth report of the Washington Bird Records Committee. Washington Birds 8:1-18.

Aanerud, K. and P.W. Mattocks, Jr. 1997. Third report of the Washington Bird Records Committee. Washington Birds 6:7-31.

Aanerud, K.R. and P.W. Mattocks, Jr. 2000. Fourth report of the Washington Bird Records Committee. Washington Birds 7:7-24.

American Ornithologists' Union. 1998. Check-list of North American birds, seventh edition. Allen Press, Lawrence, Kansas.

Bellrose, F.C. 1976. Ducks, geese, and swans of North America. Stackpole Books, Harrisburg, Pennsylvania.

Brazil, M.A. 1991. The birds of Japan. Smithsonian Institution Press,

Washington, D.C.
Cecile, D.G. 2002. Regional reports: British Columbia - Yukon. North American Birds 56:346-347.
Dunn, J.L., D.L. Dittmann, K.L. Garrett, G. Lasley, M.B. Robbins, C. Sexton, S. Tingley, and T. Tobish. 2002. ABA checklist: birds of the continental United States and Canada, sixth edition. American Birding Association, Colorado Springs, Colorado.
Engelmoer, M. and C.S. Roselaar. 1998. Geographical variation in waders. Klumer Academic Publications, Dordrecht, Germany.
Gilligan, J., M. Smith, D. Rogers, and A. Contreras. 1994. Birds of Oregon: status and distribution. Cinclus Publications, McMinnville, Oregon.
Glover, S.A., D. Roberson, S.B. Terrill, T.P. Ryan, and M.M. Rogers. 2002. Regional reports: middle Pacific Region. North American Birds 56:352-355.
Hayman, P., J. Marchant, and T. Prater. 1986. Shorebirds: an identification guide to waders of the world. Houghton Mifflin Company, Boston, Massachusetts.
Headley, P.C. 1967. Ecology of the Emperor Goose. Alaska Cooperative Wildlife Unit, University of Alaska, Fairbanks, Alaska.
Knapton, R. 2000. Identification of Bewick's Swans. Birders Journal 9:130-133.
Layman, S.A. and M.D. Halterman. 1987. Can the western subspecies of the Yellow-billed Cuckoo be saved from extinction? Western Birds 18:19-25.
Marshall, D.B., M.G. Hunter, and A.L. Contreras. 2003. Birds of Oregon: a general reference. Oregon State University Press, Corvallis, Oregon.
McAllister, K.R. 1995. Washington State recovery plan for the Upland Sandpiper. Washington Department of Fish and Wildlife, Olympia, Washington.
McCaskie, G. and K.L. Garrett. 2001. Regional reports: southern Pacific Coast. North American Birds 55:355-358.
Mlodinow, S.G. 1998. The Tropical Kingbird north of Mexico. Field Notes 52:6-11.
Mlodinow, S.G. 2003. Vagrancy of Yellow-bellied Sapsucker (*Sphyrapicus varius*) from Washington to Baja California, with notes on identification of juveniles. Oregon Birds 29:27-30.
Mlodinow, S.G. 2004a. A Bean Goose (*Anser fabalis*) at Hoquiam, Washington: a first state record. North American Birds 58:298-300.
Mlodinow, S.G. 2004b. Manx Shearwaters in the north Pacific Ocean. Birding 36:608-615.
Mlodinow, S.G. and R.H. Hamilton. 2005. Painted Bunting (*Passerina ciris*) vagrancy in the United States, Canada, and Bermuda. North American Birds 59:172-183.
Mlodinow, S. and B. Tweit. 2001. Regional reports: Oregon-Washington. North American Birds 55:93-97.
Mlodinow, S. and B. Tweit. 2002. Regional Reports: Oregon-Washington. North American Birds 56:476-480.

Mlodinow, S., A. Contreras, and B. Tweit. 2002a. Regional reports: Oregon-Washington. North American Birds 56:96-100.
Mlodinow, S., G. Lillie, and B. Tweit. 2002b. Regional reports: Oregon-Washington. North American Birds 56:348-351.
Mlodinow, S., D. Irons, and B. Tweit. 2003. Regional reports: Oregon-Washington. North American Birds 57:247-251.
Romagosa, C.M. and T. McEneaney. 1999. The Eurasian Collared-Dove in North America and the Caribbean. North American Birds 53:348-353.
Simpson, K. and N. Day. 1999. Field guide to the birds of Australia, sixth edition. Penguin Books Australia Ltd., Ringwood, Australia.
Small, A. 1994. California birds: their status and distribution. Ibis Publishing Company, Vista, California.
Tobish, T. 2002. Regional reports: Alaska. North American Birds 57:102-105.
Tweit, B. and D. R. Paulson. 1994. First report of the Washington Bird Records Committee. Washington Birds 3:11-41.
Tweit, B. and J. Skriletz. 1996. Second report of the Washington Bird Records Committee. Washington Birds 5:7-28.
Tweit, B. and B. Tice. 1998. Regional reports: Oregon-Washington region. Field Notes 52:248-251.
Wahl, T.R. 1995. Birds of Whatcom County. T.R. Wahl, Lynden, Washington.
Wahl, T.R., B. Tweit, and S.G. Mlodinow, eds. 2005. Birds of Washington. Oregon State University Press, Corvallis, Oregon.

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VOCALIZATIONS OF THE GREATER YELLOWLEGS IN WASHINGTON

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The Greater Yellowlegs (*Tringa melanoleuca*) is a commonly encountered migrant and winter resident in western Washington (Buchanan 1988a). Despite its rather common status throughout much of North America, some aspects of its natural history are poorly understood (Elphick and Tibbitts 1998). The vocalizations made by Greater Yellowlegs during the non-breeding season were first described in two papers based on experiences of naturalists on the Atlantic coast of North America (Nichols and Harper 1916, Nichols 1920). Additional accounts of the vocal repertoire of this species were subsequently published (Bent 1927, Stone 1937, Cramp and Simmons 1983, Paulson 1993, Elphick and Tibbitts 1998). Much of the information in the more recent accounts is from the breeding grounds or summarizes the earlier work. The vocal behavior of the Common Greenshank (*T. nebularia*), the Palearctic counterpart of the Greater Yellowlegs, has been described in great detail (Nethersole-Thompson and Nethersole-Thompson 1979).

Over the past 20 years, a period during which I studied the winter abundance and migration timing of the Greater Yellowlegs in south Puget Sound (Buchanan 1988a), I have noted a large number of different vocalizations made by this species. Here I describe the various vocalizations of the Greater Yellowlegs heard in western Washington and discuss their possible functions.

METHODS

The vast majority of vocalizations described below were from birds observed at Eld and Totten inlets, two small inlets in south Puget Sound (approximately 47°N, 123°W). In the 1980s, these two sites supported perhaps the highest densities of wintering and migrant Greater Yellowlegs in the Pacific Northwest (Buchanan 1988a). The fieldwork occurred in all seasons during 1980-1988 and 1998-2002 at Totten Inlet and 1980-1983 at Eld Inlet. Total field effort involved 790 visits to the sites (see Buchanan 1988b). I visited Eld Inlet during all phases of the tide cycle, whereas visits to Totten Inlet occurred during mid-phase or higher tides. I made additional observations of Greater Yellowlegs during 52 visits between 1979 and 2000 to Bowerman Basin, a large tide flat area in eastern Grays Harbor on the coast of Washington (approximately 47°N, 124°W). The study sites are described elsewhere (Herman and Bulger 1981, Brennan et al. 1985, Buchanan 1988a). Because I did not record vocaliza-

tions and produce spectrograms, the descriptions below are my phonetic interpretations of the calls.

RESULTS AND DISCUSSION

I identified 21 different vocalization types or variations during this study. I considered the vocalizations to have one or more of four likely functions: 1) flock contact and/or alarm, 2) courtship, 3) aggression, and 4) in-flock communication. This wealth of calls and call variants exceeds the number of calls reported in a recent review of the literature on Greater Yellowlegs (Elphick and Tibbitts 1998). This is not surprising, however, given the tremendous range of calls reported for the closely related Common Greenshank (Nethersole-Thompson and Nethersole-Thompson 1979), and the lack of in-depth studies of the Greater Yellowlegs (Elphick and Tibbitts 1998), which likely results in an underrepresented catalog of the species' vocalizations. In fact, most of the described vocalizations of this species come from the early accounts (Nichols and Harper 1916, Nichols 1920), and it was noted by Nichols and Harper (1916:249) that "the Greater Yellowlegs is possessed of a varied vocabulary, which seems to have been slighted by most ornithological writers."

Flock Contact and Alarm Calls

About one-third of the vocalizations or vocalization types appeared to have a flock contact function (Table 1). The most common vocalization, and the only one recorded in autumn, winter and spring, was the well known three syllable contact call *dear dear dear*, variously described by others as *teu teu teu*, *wheu wheu wheu*, *pheu pheu pheu*, or *whew whew whew* (for spectrogram, see Elphick and Tibbitts 1998). I occasionally heard this call given with two or four syllables, and although (Nichols 1920) ascribed different meanings to such calls ("recruiting call" and "protest call") I was unable to make these distinctions. Nichols (1920:529) considered the contact call a means of advertisement, "and a change of policy in the individual according to its loudness." Indeed, the contact call and the alarm call appeared to be essentially identical although alarm calls seemed louder. Greater Yellowlegs gave what I considered to be alarm calls when a Merlin (*Falco columbarius*), Peregrine Falcon (*F. peregrinus*) or Bald Eagle (*Haliaeetus leucocephalus*) flew over or hunted nearby. I heard other variations of the contact call during winter and/or autumn (vocalizations 2-6 in Table 1). These calls appeared to serve the same function as the basic three-syllable call.

I heard the contact calls (vocalizations 1-6) in a variety of contexts and flock sizes: by birds that foraged solitarily, by pairs or small groups, by those in loosely associated groups, and by those in definite flocks in open intertidal flats. Birds quite frequently gave these calls as they prepared to depart roost sites. I also heard this call at night by birds that were appar-

Table 1. Descriptions of vocalizations given by Greater Yellowlegs in western Washington.

No.	Description	Season			Context			
		Winter	Spring	Autumn	Contact/Alarm	Courtship	Aggression	In-flock chatter
1	*Dear dear dear*	●	●	●	●			
2	*Di di dear*	●		●	●			
3	*Di di, di di, di di*			●	●			
4	*Keek keer keer*			●	●			
5	a coarse 3-note call	●			●			
6	*Squee dear dear*	●			●			
7	a clear *kee kee kee kee*		●		●	●	●	
8	a raspy *ki ki ki ki ki*		●		●	●	●	
9	*Ki dearie dearie*		●		●	●		
10	*Redear redear redear*		●		●	●		
11	*Dearie odearie odearie*		●	●[a]	●	●		
12	*o-riddy o-riddy o-riddy*		●		●	●		
13	a quick, wheezy *wheedle*		●			●		
14	a high, thin squeal			●			●	
15	a low, harsh squeal		●				●	
16	*Gre gre gre*			●			●	
17	*Quer quer*	●						●
18	a muffled, garbled call	●						●
19	Sandpiper chatter	●	●					●
20	*Hick-ock*	●						●[b]
21	*Ku-dow*	●						●[b]

[a] Heard only twice in this season.
[b] May have expressed suspicion.

ently foraging or otherwise active nocturnally, as the direction of the calls originated from large mud flat areas.

An interesting call, heard on four dates in April 2002 at Totten Inlet, but at no other times during this study, may have had an alarm function. On 13 April, a Greater Yellowlegs gave an incessant, *Accipiter*-like or flicker-like *kee kee kee kee* (vocalization 7 in Table 1). This seemed similar to an alarm call reported from the breeding grounds, described as *kip kip kip kip* by Stuart (1920), and *kelp kelp kelp kelp* by Farley (1931). The calling behavior was particularly interesting because the yellowlegs was alternating very similar calls with a Northern Flicker (*Colaptes auratus*) about 30 meters away on the shore of the inlet. These two birds alternated calls from 09:38 until 10:01, at a rate of about one call per 30 or 40 seconds by each bird. The yellowlegs moved about 150 meters north along the inlet at 09:52, and the flicker followed a moment later. The yellowlegs moved back to its former location at 09:58, and the flicker followed at 09:59. At 1001 the yellowlegs ceased the flicker calls and gave a loud courtship "yodel" (see below). At 10:31 on 15 April a Northern Flicker began calling from the same location on the shore of the inlet. A Greater Yellowlegs about 40 meters away gave the "flicker call" almost immediately, and then these two birds called back and forth and were still calling when I left the site at 10:42. A Greater Yellowlegs gave the flicker call at 08:02 and 09:32 on 21 April. Within a few seconds of the latter call a second Greater Yellowlegs flew in from about 25 meters away. For the next two minutes these two yellowlegs engaged in an aggressive interaction that included crouching, jumping, wing flapping, bill grabbing and "flicker" calling. One of the two birds gave a loud "yodel" at 09:34 and the interaction ended. Finally, a Greater Yellowlegs gave the flicker call at 08:24 on 25 April and then immediately gave a loud "yodel." I suspect that the call had an alarm function due to the persistence of the yellowlegs in calling, and its apparent similarity to a call with an alarm function on the breeding grounds (Stuart 1920, Farley 1931). On the other hand, the courtship "yodel" occurred during, or at the end of, three of the four bouts of "flicker calls," and once in an aggressive interaction with another Greater Yellowlegs, suggesting other possible functions. The purpose of this call will be clarified only with additional field information.

Courtship Calls

Greater Yellowlegs gave some contact calls almost exclusively during spring (vocalizations 8-12 in Table 1). Three of these (vocalizations 9-12 in Table 1) appeared to be variations of the contact call given on the breeding grounds and likely have a function in courtship (Nichols 1920; see Elphick and Tibbitts 1998). This vocalization (and variants), referred to as the "roll" (Nichols and Harper 1916) and the "yodel" (Nichols 1920), was described phonetically as *to`-whee, to`-whee, to`-whee, to`-whee, to`-whee* (Nichols and Harper 1916), and *towhee*, *t`owhee*, *t`owhee*, *t`owhee*, *t`owhee* (Nichols 1920). To my ear, the call sounds like *dearie o-dearie o-dearie o-*

dearie. The song has also been described as *weedle-cory weedle-cory weedle-cory weedle-cory* (Fix and Bezener 2000). On several occasions I heard what I considered variants of this call (vocalizations 9, 10, 12 in Table 1). All the contact/courtship vocalizations consisted of a series of several phrases, rarely including as many as 10-12 phrases. The quick, wheezy *wheedle* heard on 15 March 1983 at Eld Inlet (vocalization 13 in Table 1) may have been a variant of the *wig-ily wig-ily wig-ily* call reported from the breeding grounds by Farley (1931). Farley (1931) heard this call by birds circling over a breeding area but it did not seem to have an alarm function.

I heard yodel calls (vocalizations 9-12 in Table 1) 36 times; with the exception of calls heard on 25 September 1983 and 28 June 1986, at Totten Inlet, all yodel calls were between 19 March and 7 May. Within this period the peak occurrence of yodel calls was between 6 and 25 April (Figure 1), typically the peak period of spring migration by Greater Yellowlegs in southern Puget Sound (Buchanan 1988a). I did not hear yodel calls between 27 March and 5 April. My field effort for that period at Totten Inlet (15 hours and 31 minutes) was equivalent to other spring periods when such calls were heard at that site (17 to 26 March: 18 hours and 36 minutes; 1 to 10 May: 13 hours and 54 minutes). I have no explanation for this temporal gap in the detection of yodel calls.

It is rather unusual for shorebirds to exhibit courtship and other reproductive behavior during migration. However, migrant Knots (*Calidris canutus*) occasionally exhibit behavior associated with courtship (including vocalizations) at staging areas at least 4500 km away from the breeding grounds (Piersma et al. 1990, 1991). Based on such observations, Piersma et al. (1991) concluded that some males develop reproductive

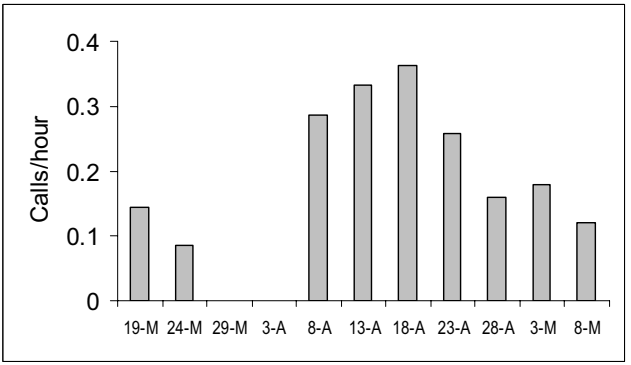

Figure 1. Occurrence rate of Greater Yellowlegs yodel calls during spring migration at Totten Inlet, Washington. The values were calculated based on 132 hours and 51 minutes of field time at the site during the span of time covered by the indicated intervals. No yodel calls were heard between 27 March and 5 April, even though site visit effort in those two periods was similar to that of the first two (17 to 26 March) and final two periods (1 to 10 May). Dates shown are the mid-point in each five-day period.

capability several weeks prior to arrival at the breeding grounds. The greenshank is known to engage in courtship display activities far south of the breeding grounds, and it has been hypothesized that pair bonds are occasionally formed while en route to the breeding grounds (Cramp and Simmons 1983). Some Greater Yellowlegs give courtship calls upon their arrival in Alaska in mid-April (Elphick and Tibbitts 1998). The detection of yodel calls in western Washington indicates that courtship calls are occasionally given south of the species' breeding range, although in this case the distance from the breeding grounds may not be so great, as Greater Yellowlegs regularly nest in central-southern British Columbia, Canada (Campbell et al. 1990).

Aggression Calls

Greater Yellowlegs occasionally exhibit aggression toward conspecifics during the non-breeding period (Recher and Recher 1969). Although I have observed a good number of aggressive encounters between yellowlegs, I rarely heard vocalizations during these interactions. Unless these encounters occur near an observer it is difficult to know what types of vocalizations might be associated with them because the calls are audible at only very short distances. For example, the aggression-related calls I heard (vocalizations 14-16 in Table 1) were given by yellowlegs engaged in aggressive activities <20 meters from where I stood. I heard the calls rather clearly, but at perhaps only twice as far the calls would not likely have been audible. As noted above, however, the flicker call was quite loud and on one occasion was associated with aggressive behavior, suggesting that it may serve both alarm and aggression functions.

In-flock Communication

I heard five types of calls, primarily in winter, which appeared to serve as a form of within-group communication (vocalizations 17-21 in Table 1). The most common of these was the call I describe as "sandpiper chatter." I believe these calls were the same as the *chup* notes described by Nichols (1920). None of these calls was often heard, however, possibly because they were audible only at very short range (I heard them at distances of <20 meters). Nichols (1920) suggested that the in-flock calls expressed companionship or confidence. Although Nichols' perspective is somewhat anthropomorphic, and another explanation may be more suitable, it seems appropriate nonetheless, as the instances when I heard these calls always involved flocks of yellowlegs that were actively foraging and not engaged in vigilant behavior. The sandpiper chatter was also heard twice when a single yellowlegs and a small flock landed amidst other foraging yellowlegs. Nichols (1920) apparently considered this "conversational murmuring" and I believe this was what he also called the "alighting" call.

Two of the more unusual call types (vocalizations 20-21 in Table 1) were heard only once each. I heard the *hick-ock* call on 8 November 1982 at

Kaiser Pond, in west Olympia, and the *ku-dow* call on 10 November 1982 at Eld Inlet. Both calls were audible only at rather close range and were very crow-like. These calls were somewhat similar to descriptions from the Atlantic coast of the United States where Nichols (1920) described a *kyow* call that he believed expressed suspicion; he considered this a common call during spring migration. Additionally, Nichols and Harper (1916:250) reported a "henlike cackle: *kaouw kaouw kaouw kaouw*" which they felt was an expression of suspicion and was apparently commonly heard during migration. I was within 15 meters of the yellowlegs at the time of these calls, and it is easy to imagine that a yellowlegs might be suspicious of a human in such close proximity. However, I regularly observed yellowlegs at such distances at Eld Inlet and had no other records of these calls.

Comments

It is likely that several of the calls described here were merely variations of primary calls. Recording the calls and evaluating spectrograms will be necessary to discriminate among some of the basic vocalizations. Also, spectrograms from the non-breeding season can be compared to those recorded from the breeding grounds (Elphick and Tibbitts 1998) to evaluate vocalizations among the different seasons and life stages. A better understanding of the functions of the calls might be possible by associating the calls with observed behavior or other measures of context.

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LITERATURE CITED

Bent, A.C. 1927. Life histories of North American shore birds. Part 1. U.S. National Museum Bulletin No. 142.

Brennan, L.A., J.B. Buchanan, S.G. Herman, and T.M. Johnson. 1985. Interhabitat movements of wintering Dunlins in western Washington. Murrelet 66:11-16.

Buchanan, J.B. 1988a. Migration and winter populations of Greater Yellowlegs, *Tringa melanoleuca*, in western Washington. Canadian Field-Naturalist 102:611-616.

Buchanan, J.B. 1988b. The abundance and migration of shorebirds at two Puget Sound estuaries. Western Birds 19:69-78.

Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser, and M.C.E. McNall. 1990. The birds of British Columbia. Volume 2. Nonpasserines: diurnal birds of prey through woodpeckers. University of British Columbia Press, Vancouver, British Columbia, Canada.

Cramp, S. and K.E.L. Simmons (editors). 1983. The birds of the western Palearctic. Volume 3. Oxford University Press, Oxford, England.

Elphick, C.S. and T.L. Tibbitts. 1998. Greater Yellowlegs (*Tringa melanoleuca*). The Birds of North America 355:1-24.

Farley, F.L. 1931. Nesting of the Greater Yellow-legs (*Totanus melanoleucus*) in Alberta. Auk 48:261-263.

Fix, D. and A. Bezener. 2000. Birds of northern California. Lone Pine Publishing, Renton, Washington.

Herman, S.G. and J.B. Bulger. 1981. The distribution and abundance of shorebirds during the 1981 spring migration at Grays Harbor, Washington. Contract report DACW67-81-M-0936. U.S. Army Corps of Engineers, Seattle, Washington.

Nethersole-Thompson, D. and M. Nethersole-Thompson. 1979. Greenshanks. Buteo Books, Vermillion, South Dakota.

Nichols, J.T. 1920. Limicoline voices. Auk 37:519-540.

Nichols, J.T. and F. Harper. 1916. Field notes on some Long Island shore birds. Auk 33:237-255.

Paulson, D. 1993. Shorebirds of the Pacific Northwest. University of Washington Press, Seattle, Washington.

Piersma, T., L. Zwarts, and J.H. Bruggemann. 1990. Behavioural aspects of the departure of waders before long-distance flights: flocking, vocalizations, flight paths and diurnal timing. Ardea 78:157-184.

Piersma, T., I. Tulp, Y. Verkuil, P. Wiersma, and A. Lindström. 1991. Arctic sounds on temperate shores: the occurrence of song and ground display in Knots *Calidris canutus* at spring staging sites. Ornis Scandinavica 22:404-407.

Recher, H.F. and J.A. Recher. 1969. Some aspects of the ecology of migrant shorebirds. II. Aggression. Wilson Bulletin 81:140-154.

Stuart, G.H., III. 1920. Nesting of the Greater Yellow-legs in Newfoundland. Auk 37:292.

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RED-NECKED GREBE AND RED-BREASTED MERGANSER FORAGING INTERACTION AT A WINTER SITE IN WASHINGTON

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Kleptoparasitism, or prey piracy, is commonly reported in seabird families (Furness 1987). Whereas some species may be specialized for kleptoparasitism, opportunism is more typical and obligate kleptoparasitism is extremely rare (Furness 1987). Kleptoparasitic behavior may occur because of a specific set of ecological conditions, such as concentrations of hosts, large food sources or high-quality food, a predictable behavior, or visible food (Brockmann and Barnard 1979). In this paper, I describe the stealing of fish from Red-necked Grebes (*Podiceps grisegena*) by male Red-breasted Mergansers (*Mergus serrator*).

While timing the dives of Red-necked Grebes foraging in Puget Sound west of the Edmonds fishing pier (Snohomish County, Washington), I observed the theft of prey from individual grebes by Red-breasted Mergansers. The pier lies to the south of a broad, curving bay, where water depths in which the grebes forage average from ten to twenty meters. Typically, the mergansers forage in the more shallow water within the bay (S. McDougall, personal observation).

On 12 December 1997, as a Red-necked Grebe surfaced with prey that appeared to be a crab, a male Red-breasted Merganser rushed at the grebe, flapping its wings as it moved quickly across the surface of the water. In response to the rapidly approaching merganser, the grebe dived under the water, holding onto its prey. The merganser submerged nearly simultaneously, slightly behind and a short distance from the grebe. Because any interaction between these two birds took place beneath the surface, I assumed that the merganser wrested the prey from the grebe or possibly caused the grebe to drop its catch, for the merganser surfaced with a crab and the grebe held nothing. The grebe continued to forage in the same area and twice apparently lost prey to the kleptoparasitic merganser. After one incident, a Glaucous-winged Gull (*Larus glaucescens*) pursued the merganser but was unsuccessful in the chase.

Another observation of prey piracy by a Red-breasted Merganser occurred on 9 January 1998. This time, several Red-necked Grebes were diving west of the pier, while a male merganser appeared to be watching as the grebes surfaced. The merganser was not foraging in the deep water. Each time a grebe surfaced with prey, the merganser would flap quickly along the surface, or fly 50 meters or more and dive in close proximity behind the grebe which each of four times reacted immediately with its own dive. In all but one case where the merganser flew a considerable distance, the apparent theft was successful, and always occurred beneath the surface of the water.

In the 9 January 1998 observations, the grebes' prey appeared to be reddish-colored fish, 15 – 20 cm in length, possibly gunnels (family Pholidae). The merganser could probably see the prey in the grebe's bill as it surfaced, for at this point the pursuit immediately began.

Observations on 20 January 1998, in an apparently similar set of circumstances with grebes and a male merganser in close proximity, did not lead to pursuit, either because the merganser did not see the grebe surface with its prey or chose not to give chase. On the same date, I observed a female Red-breasted Merganser move towards a Red-necked Grebe with prey but did not give chase. I also observed successful piracy by a merganser, after which the host grebe turned and made a futile peck at the departing pirate.

Because Red-necked Grebes are larger than Red-breasted Mergansers it may seem surprising that the merganser was successful in these encounters. There are several factors that may explain the outcome of these encounters. First, the Red-breasted Merganser is among the fastest of the ducks (Titman 1999). This may not have influenced the success of underwater theft attempts, but a rapid approach may have improved the likelihood of successful theft when the grebes surfaced some distance away. Second, the Red-necked Grebe is not a strong flier, and the grebes appeared to be slightly encumbered when surfacing with prey. Third, Red-necked Grebes forage over a wide range of water depths, from near shoreline to over 20 meters (S. McDougall, personal observation), and may have had greater access to prey not normally (or perhaps less) available to the merganser. Red-breasted Mergansers typically forage in shallower waters in the Edmonds pier area than those used by Red-necked Grebes (S. McDougall, personal observation). This may have prompted some of the interactions. Finally, it is possible that the visibility of relatively large prey items held by the grebe motivated the piracy.

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LITERATURE CITED

Brockmann, H.J. and C.J. Barnard. 1979. Kleptoparasitism in birds. Animal Behavior 27: 487-514.

Furness, R.W. 1987. Kleptoparasitism in seabirds. Cambridge University Press, Cambridge, United Kingdom.

Titman, R.D. 1999. Red-breasted Merganser (*Mergus serrator*). The Birds of North America 443:1-24.

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MALLARDS (*Anas platyrhynchos*) SCAVENGING A GLAUCOUS-WINGED GULL (*Larus glaucascens*) CARCASS IN WESTERN WASHINGTON

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The Mallard (*Anas platyrhynchos*) is considered an omnivorous and opportunistic feeder throughout its range over the North American continent (Drilling et al. 2002). The breadth of this diet includes invertebrates, plant material and foods provided by humans such as bread (Drilling et al. 2002). In a comprehensive summary Drilling et al. (2002) made no reference to scavenging of bird carcasses as a feeding strategy used by Mallards. In this paper I describe an instance of scavenging by Mallards on the carcass of a Glaucous-winged Gull (*Larus glaucascens*).

On 16 January 2004 while searching through a large assemblage of gulls at the Cedar River estuary, King County, Washington, I noticed several pairs of Mallards swimming below the observation walkway. Present at this location were large numbers of dead gulls of all age classes. I counted 16 dead gulls both on the exposed areas of the estuary and along the rocky shoreline. Other waterfowl present included Bufflehead (*Bucephala albeola*), Common Goldeneye (*Bucephala clangula*), Barrow's Goldeneye (*Bucephala islandica*), and a lone Snow Goose (*Chen caerulescens*). Directly below the observation deck were two dead gulls trapped in the rip-rap, yet floating at the waterline. The two gulls appeared to have been dead for several days. While attempting to determine the age of the dead gulls I noticed that one had been lightly scavenged in the sternum area. The intact gull resembled a third-winter Glaucous-winged Gull and the partially scavenged gull looked like a second-winter Glaucous-winged Gull.

As I studied the gull carcasses, a female Mallard moved into the area and swam directly to the partially-scavenged gull. Within a few seconds the Mallard began feeding on the soft tissue of the mid-belly and lower breast. The Mallard pushed its bill into the upper breast and pulled off lumps of flesh and consumed them. The Mallard was soon joined by a second Mallard, this one a male, that began scavenging from the mid-belly of the gull. The male plucked some feathers and exposed a greater area from which to feed. The male soon expanded the open area to include the belly and lower left flank of the gull. I photographed this behavior and watched the Mallards feed on the exposed muscle for another 10 minutes. Similar scavenging involving a pair of Mallards and the same carcass was again observed at this site on the evening of 17 January 2004. The scavenged gull carcass was not present at the site at 11:30 on 20 January 2004.

Mallard scavenging carcass of Glaucous-winged Gull, mouth of Cedar River (photograph by Mike Denny).

To my knowledge, this behavior has not previously been reported in Mallards. Because Mallards are considered generalist and opportunistic feeders (Drilling et al. 2002), perhaps it should not be surprising that they occasionally feed from carcasses. The large number of dead gulls present at the Cedar River estuary presented a substantial supply of food for any species inclined to scavenge. It seems probable that carcasses that have undergone a certain amount of decay (enough to allow a species like a Mallard to effectively extract flesh) would be targeted for this apparently unusual behavior.

ACKNOWLEDGMENTS

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LITERATURE CITED

Drilling, N., R. Titman, and F. McKinney. 2002. Mallard (*Anas platyrhynchos*). The Birds of North America 658:1-44.

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NEW ELEVATION RECORD FOR SPOTTED SANDPIPER BREEDING IN WASHINGTON

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Spotted Sandpipers (*Actitis macularia*) nest in a wide variety of habitats such as shorelines, grassland and forest streams. Elevation of nest sites range from sea level to 4,700 meters (Bent 1929). In Washington, the species is found about alpine lakes not far from timberline. Perhaps due to less intensive search effort at high elevations, compared to lower elevations, confirmed nesting from alpine and subalpine locations in Washington State is minimal. To our knowledge, a nest reported by Jewett et al. (1953) at 1753 meters on the shore of Mystic Lake in Mount Rainier National Park was the highest confirmed nest in Washington.

While visiting the Horseshoe Basin area of the eastern Pasayten Wilderness, Okanogan County, Washington, we found an incubating Spotted Sandpiper on a nest containing 4 eggs (Figure 1) early in the evening of 7 July 2003. The elevation of the site was 2164 meters. The nest was located on a hummock in the middle of a small, shallow subalpine stream about one meter wide that flowed through a wet meadow with scattered willows (*Salix* species) and sedges (*Carex* species). The stream contained many sandbars and grassy hummocks such as the one the nest was located on (Figure 2). The sandpiper incubated the eggs and also foraged along the stream during brief incubation breaks throughout our 4-day visit.

This record represents an increase of 412 meters in the species' breeding altitude in Washington. Our record also exceeded high elevation nest records in Oregon and British Columbia. In British Columbia, the highest nest was at 1800 meters (Campbell et al. 1990). In Oregon, there are few nest records from high elevations (Marshall et al. 2003). A nest was found at 1524 meters in the Blue Mountains, Umatilla County, on 11 July 1924 (Jewett 1929). The species regularly nested at Wizard Island in Crater Lake (Farner 1952), an elevation of about

Figure 1. Spotted Sandpiper nestcup with 4 eggs (photograph by Charlie Wright).

Figure 2. Spotted Sandpiper nest habitat in Horseshoe Basin (photograph by Charlie Wright). Nest is on hummock in middle foreground.

1883 meters. We believe the species is likely an uncommon and local breeder from 1830 to about 2290 meters in appropriate habitat. In most areas of the Cascade Mountains subalpine lakes or streams with vegetation suitable for nesting do not occur above about 2290 meters.

ACKNOWLEDGMENTS

We thank Alan Contreras for his help in researching the elevation of this species in Oregon. Joe Buchanan reviewed the draft manuscript.

LITERATURE CITED

Bent, A.C. 1929. Life histories of North American shore birds. Part 2. U.S. National Museum Bulletin 146. Smithsonian Institution, Washington, D.C.

Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser, and M.C.E. McNail. 1990. The birds of British Columbia. Volume 2. University of British Columbia Press, Vancouver, British Columbia, Canada.

Farner, D.S. 1952. Birds of Crater Lake National Park. University of Kansas Press, Lawrence, Kansas.

Jewett, S.G. 1929. Limicolae of Oregon. Auk 46:219-220.

Jewett, S.G., W.P. Taylor, W.T. Shaw, and J.W. Aldrich. 1953. Birds of Washington State. University of Washington Press, Seattle, Washington.

Marshall, D.B., M.G. Hunter, and A.L. Contreras (editors). 2003. Birds of Oregon: a general reference. Oregon State University Press, Corvallis, Oregon.

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GYRFALCON REFUSES TO SHARE MEAL

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The diet and hunting behavior of the Gyrfalcon (*Falco rusticolus*) are well known on the breeding grounds, and to a lesser extent in areas used during winter (Clum and Cade 1994). Gyrfalcons steal prey from other raptors, and juveniles apparently are more likely to do this than other falcon species (Clum and Cade 1994). Interactions with other raptors have been documented during winter, and much of this behavior in a study in South Dakota involved defense of food (Sanchez 1993); apparent attempted piracy has been noted in western Washington (J. Buchanan, personal communication). In this paper I describe an interaction involving a Gyrfalcon and two other raptor species that appeared to constitute defense of prey by the Gyrfalcon.

While bird watching on Fir Island, Skagit County, Washington, on 26 November 2003, I observed a Gyrfalcon that defended its prey from being taken by other raptors. Shortly before 13:00 I saw two raptors in a short grass agricultural field along Wiley Road, south of Fir Island Road. I watched from about 70 meters as a Gyrfalcon in juvenile plumage guarded a Glaucous-winged Gull (*Larus glaucescens*) carcass from a nearby Red-tailed Hawk (*Buteo jamaicensis*) in adult plumage. Neither raptor moved much until the Gyrfalcon rose up and made a shallow stoop at the hawk. At that time the hawk flew off about 100 meters to the west and landed in a tree near another Red-tailed Hawk. The Gyrfalcon made a couple of stoops at the hawks at this perch location before it returned to the gull carcass.

Upon returning to the gull carcass the Gyrfalcon began to pluck and consume its prey. Because it first plucked feathers, rather than immediately removing flesh, I assumed the carcass had been intact until this moment. After several moments of feeding, a Red-tailed Hawk (a third individual, this one in dark morph plumage) appeared and the Gyrfalcon discontinued its feeding. The Gyrfalcon quickly rose above the hawk and made several shallow stoops. While engaged in this activity, a pair of adult Bald Eagles (*Haliaeetus leucocephalus*) appeared and flew toward the gull carcass, which at this time was not closely guarded. The Gyrfalcon turned its attention from the hawk and aggressively pursued the pair of eagles, which gave up surprisingly quickly. During that particular defense of the prey, the dark-morph Red-tailed Hawk flew to the gull carcass and landed. The Gyrfalcon quickly returned, and after landing walked in the direction of the hawk in a hunched-over position with body feathers fluffed (apparently the threat display as described in Clum and Cade 1994). The hawk flew off. During most of these interactions the Gyrfalcon issued a loud, guttural cackling. About 30 minutes after I first saw the Gyrfalcon it had eaten enough that I was able to see a bulge in its upper breast. At that

time the Gyrfalcon was approached by a Red-tailed Hawk in juvenile plumage (this was a fourth hawk). This hawk landed and approached the carcass at which point the Gyrfalcon flew away. The Gyrfalcon quickly returned and hit the hawk head-on with full force, the impact and resulting tumble knocking the hawk about 3 meters from its position at the carcass. The juvenile seemed stunned and almost immediately left the area. The Gyrfalcon fed undisturbed for the next hour until about 14:30. The falcon's crop was a massive bulge at that time. One of the adult Red-tailed Hawks made an attempt to scavenge the gull carcass but was driven off by a shallow stoop from the Gyrfalcon. The falcon fed for a few more minutes and then flew away to the north, apparently satiated.

Gyrfalcons are rare winter residents in Washington (Opperman 2003), and most birds in winter south of Canada are females (Wheeler 2003). This falcon was noticeably smaller than every Red-tailed Hawk with which it interacted. Although this might suggest the Gyrfalcon I saw was a male, the mass of some juvenile female Gyrfalcons (1,000 – 2,100 grams; Clum and Cade 1994) can be less than that of Red-tailed Hawks of either sex (1,028 and 1,224 grams for males and females, respectively; Johnsgard 1990). Needless to say, the Gyrfalcon was either a male or a small female.

The persistence of the Gyrfalcon's defense of the food item is not surprising given the Gyrfalcon's size and aggressive nature. Gyrfalcons aggressively attack, and apparently may kill, other raptors that invade their breeding territories (Clum and Cade 1994). In fact, Clum and Cade (1994) state that Gyrfalcons on breeding territories initiate and win all encounters involving other predatory birds perceived as threats. Gyrfalcons also chase and attack other raptors in the non-breeding season (Sanchez 1993), and their behavior toward other raptors in winter is reported to be similar to that in the breeding season (Clum and Cade 1994).

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LITERATURE CITED

Clum, N.J. and T.J. Cade. 1994. Gyrfalcon (*Falco rusticolus*). The Birds of North America 114:1-28.

Johnsgard, P.A. 1990. Hawks, eagles and falcons of North America. Smithsonian Institution Press, Washington, D.C.

Opperman, H. 2003. A birder's guide to Washington. American Birding Association, Colorado Springs, Colorado.

Sanchez, G.H. 1993. The ecology of wintering Gyrfalcons *Falco rusticolus* in central South Dakota. Master's thesis, Boise State University, Boise, Idaho.

Wheeler, B.K. 2003. Raptors of western North America. Princeton University Press, Princeton, New Jersey.

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GRAY FLYCATCHERS NESTING IN THE SHRUB-STEPPE OF EASTERN KITTITAS COUNTY

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The Gray Flycatcher (*Empidonax wrightii*) is found nesting in shrub-steppe areas over much of its range (Sterling 1999), often in association with pinon pine (*Pinus* sp.), juniper (*Juniperus* species) or ponderosa pine (*Pinus ponderosa*). In Washington, breeding was first documented from the Wenas Creek drainage of Yakima County in open stands of ponderosa pine forest (Yaich and Larrison 1973). Lavers (1975) further noted this species nesting in stands of ponderosa pine with an understory of pine grass (*Calamagrostis* species) rather than stands of big sagebrush (*Artemisia tridentata*). There is no published evidence of Gray Flycatchers using shrub-steppe areas in Washington, despite this being the common habitat for this species over much of its range. During spring in 2002 and 2003 I observed male Gray Flycatchers on territory in the shrub-steppe of eastern Kittitas County. Below I provide details of the occurrence of Gray Flycatchers on my study area and describe the habitat used by these birds.

My study area was a shrub-steppe area approximately 27 km east of Ellensburg, Washington (Figure 1). All areas searched for Gray Flycatchers were located north of the Vantage Highway and south of Whiskey Dick Mountain and covered an area of 12.8 km^2 (2072 hectares). Elevation of

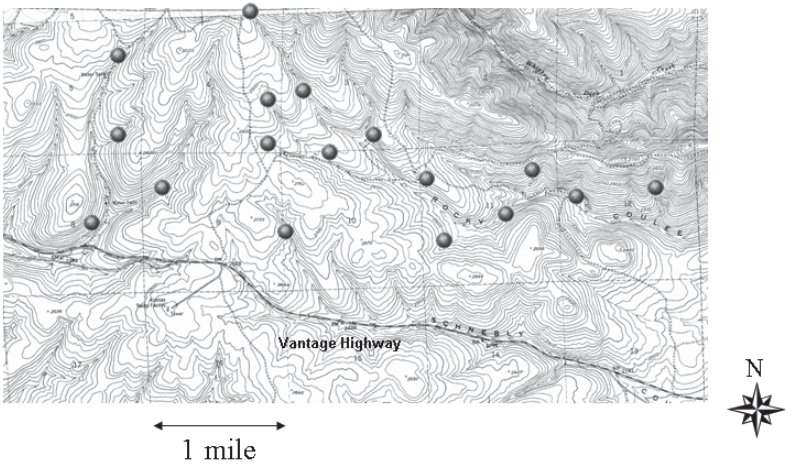

Figure 1. Location of Gray Flycatchers along the Vantage Highway in eastern Kittitas County, Washington. Dots represent location of territorial males.

the study site ranges from just over 600 meters to just over 1000 meters. The site was characterized by low relief, but had many ridgelines and associated valleys and draws. Sagebrush dominated the shrub layer and various perennial grasses dominated the forb layer. Big sagebrush/bluebunch wheatgrass (*Pseudoregneria spicata*) habitat types usually occurred in areas with deep loam soil, such as below the ridgelines and in the valleys. Lithosol communities composed of stiff sagebrush (*Artemisia rigidia*) tended to occur above the big sagebrush zones and were usually found on ridgelines (Daubenmire 1970). Average annual temperature of the area (measured at Ellensburg) was 8.4 °C, with average daily temperatures in July reaching 28.9 °C. The historical average annual precipitation is 230 mm, with much of that coming in the form of snow (Franklin and Dyrness 1973).

I made cursory observations in 2002 during travels through the area. In the spring of 2003 a more complete effort was made to examine the extent of flycatchers inhabiting the study area. This effort entailed visiting all potentially suitable Gray Flycatcher habitat within the study area and being aware of possible flycatcher presence. This effort, however, was done incidental to other research within the area (Downes 2004). Ridgelines were also examined, yet little possible habitat existed in these areas.

I first observed singing males on 28 April 2002 and 21 April 2003. In 2002 I saw 6 males in my limited time in the area. In 2003, 17 different territorial birds were located. Most birds persisted on territory for at least one month. I located a nest in bitterbrush about 1meter above ground on 9 June 2003. The nest contained an adult that appeared, by its posture, to be incubating eggs or brooding young. I was unable to determine the contents of the nest. Four other birds were seen carrying food, presumably to nestlings or recently fledged young.

Gray Flycatchers were found in the big sagebrush zones, with varying amounts of bitterbrush (*Purshia tridentata*). Flycatchers were only found in valleys and shallow depressions (Figure 2), and were not found using any of the lithosol areas. Big sagebrush height is often greater in valleys and depressions due to the increased moisture in these areas (Daubenmire 1970). Moreover, bitterbrush on the study site was significantly taller than big sagebrush (Downes 2004). Flycatchers may have chosen the valleys and shallow depressions for the greater height of shrubs compared to other areas. Evidence in support of this hypothesis was that birds sang from perches in bitterbrush when available rather than big sagebrush and the only nest I located was found in bitterbrush. Additional information is needed to clarify Gray Flycatcher use of habitat.

The density of males was approximately one to two males per kilometer in valleys that were usually 100 to 200 meters wide. Based on my observations of habitat that the birds were using, I believe only 30-40% of the study area provided suitable habitat. Based on spacing in this study area, birds could have had territory sizes of 5-10 hectares. Males were not tracked, so no information on exact territory sizes can be determined. Territory size needs to be examined for this habitat in Washington.

Gray Flycatchers are fairly common in habitats similar to this study throughout much of their range (Sterling 1999). Speculation of why this species has not been detected in shrub-steppe areas of Washington could include range expansion. The species could have colonized the ponderosa pine zone first (Yaich and Larrison 1973; Lavers 1975) and only recently moved into the shrub-steppe habitat. Surveys through valleys in the shrub-steppe of Washington should be conducted to see if this site is an anomaly or if Gray Flycatchers have gone undetected in portions of the shrub-steppe of the Columbia Basin in Washington.

Figure 2. Shrub-steppe valley where Gray Flycatchers were typically found in eastern Kittitas County, Washington (photograph by Scott Downes).

ACKNOWLEDGEMENTS

I would like to thank Phil Mattocks for accompanying me into the field to observe Gray Flycatchers in this area. I would also like to thank Aaron Holmes and Matthew Vander Haegen for their helpful comments that improved the manuscript.

LITERATURE CITED

Daubenmire, R. 1970. Steppe vegetation of Washington. Washington Agricultural Experimental Station. Bulletin 62.

Downes, S. 2004. Reproductive ecology of Sage Thrasher (*Oreoscoptes montanus*) in a disturbed landscape. Master's thesis. Central Washington University, Ellensburg, Washington.

Franklin, J.F. and C.T. Dyrness. 1973. Natural vegetation of Oregon and Washington. United States Department of Agriculture. General Technical Report PNW-8.

Lavers, N. 1975. The status of the Gray Flycatcher in Washington state. American Birds 6: 25-27.

Sterling, J.C. 1999. Gray Flycatcher (*Empidonax wrightii*). The Birds of North America 458:1-16.

Yaich, J.A. and E. J. Larrison. 1973. Nesting record and behavioral observations on the Gray Flycatcher. Murrelet 54: 14-16.

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BOOK REVIEW

Birds of Oregon: a general reference. David B. Marshall, Matthew G. Hunter, and Alan L. Contreras, editors. 2003. Oregon State University Press, Corvallis, Oregon. Hardback. 768 pages. ISBN 0-87071-497-X.

My initial impression of *Birds of Oregon: a general reference* was based on its size and weight: here was a tome full of the essential details on the birds of an incredibly diverse state. Upon further perusal, I think the book lives up well to its name and will be an invaluable reference for ornithologists and serious birders in the Pacific Northwest region for many years to come.

Birds of Oregon begins by succinctly summarizing changes in the avifauna of Oregon since 1935, the date at which the last detailed treatment of the birds of the state left off (Gabrielson and Jewett 1940). The chapter dealing with habitats is organized by ecoregions and thereby gives a nice snapshot of the current state of habitat, in a gross sense. Each ecoregion is characterized in terms of its climate, topography, human impacts, land ownership, habitats, and bird communities. The descriptions of the habitats themselves are simplistic, sometimes repetitive and occasionally slightly misleading. I think it would have been beneficial to have a bit more thorough and synthetic description of vegetation: birds seem to be discussed in more detail in the habitats chapter than vegetation.

The vast bulk of the book is composed of species accounts written by a total of 100 authors in addition to the three editors. The accounts for regularly occurring species are well organized into sections on general distribution, Oregon distribution, habitat and diet, seasonal activity and behavior, detection, and population status and conservation. Each account begins with a paragraph that notes a few interesting or important facts about the species and a short description of its appearance. Subspecies are treated using the fifth edition of the AOU checklist (1957) as a starting point. Subspecific treatments differ somewhat depending on the species and author, as would be expected. When the subspecific treatment differs from frequently cited or published treatments, the reader would benefit from an explanation of the differences: in some accounts this is done, in others it appears to be missing. For example, all Gray Jays (*Perisoreus canadensis*) from the Cascades west are considered the same subspecies without any acknowledgment that birds in the Coast Range have often been separated at the subspecific level from those in the Cascades. Accidentals and vagrants are appropriately treated with a single paragraph describing general distribution and the occurrence of the species in Oregon.

The descriptions of Oregon distribution are detailed and appear to be relatively accurate based on the current state of knowledge. Abundance is characterized within the range of each species based on a standard scale for the whole book. Range maps are only shown for breeding species, and not for every species: some very widespread species (e.g. Barn Swallow

[*Hirundo rustica*], House Wren [*Troglodytes aedon*]) and some other very local species (e.g. American Pipit [*Anthus spinoletta*]) do not have range maps. The range maps depict only the breeding status according to the Oregon Breeding Bird Atlas project (Adamus et al. 2001), with a few modifications. The maps divide the state into hexagons that are shown as one of three shades (or blank) to indicate breeding status of confirmed, probable, or possible, based on actual observations (as opposed to habitat models). The editors astutely point out that these three status designations may mean very different things depending on how easily observed a particular species is. This mapping approach is adequate for the breeding species that it covers. What the book clearly lacks, from a distribution perspective, is maps of migratory and winter ranges, though the information is available for the most part in the less accessible form of detailed text. I noticed at least one account that mentioned only the abundance of the species during migration, but made no mention of where in the state its migratory range was in relation to its breeding range (they are obviously not always the same, am I to assume they are if not mentioned?).

The 'habitat and diet' and 'seasonal activity and behavior' sections of the accounts generally consist of detailed compilations of existing published information, supplemented in some cases by personal experience of the author or personal communications from other observers. I found these sections extremely useful while I was recently putting together a slide show on bird habitat and bird-plant interactions. Their function as a reference for Washington quickly summarizing what is known in the Pacific Northwest (and if there is little local information, sometimes beyond the northwest) from a vast sweep of literature cannot be overstated. This information is similar in nature to what can be found in the Birds of North America accounts, but honed down to Oregon and, in many cases, the broader Pacific Northwest. Bird habitat use is much easier to synthesize and digest on this regional scale than on the continental scale.

While these ecologically oriented sections of the species accounts are loaded with valuable information, they do have some inconsistencies and drawbacks worth noting. One disadvantage to these sections is that some of the accounts are heavy on personal observations and communications, or appear to be inordinately influenced by the personal experience or biases of the individual authors. In addition, because published information on habitat use is sometimes very local in nature (much less than statewide), there is value in recognizing this potential bias in available information as opposed to just reporting it. This is where the art of synthesis, as opposed to compilation, comes in, and the degree of synthesis versus compilation understandably varies among the accounts and authors, as does the degree to which the authors went beyond the borders of Oregon to gather information on particular aspects of each species. An example of compilation without synthesis is the detailed reporting of the relative structural characteristics favored by Townsend's Warblers (*Dendroica townsendi*) versus Hermit Warblers (*Denroica occidentalis*) in a small area of the Cascades, but without also reporting that in nearby Washington,

data indicate almost no difference in breeding habitat preferences of these two closely related and interbreeding species. Occasionally, key references have not been consulted (or at least not listed) that would in part or in whole contradict a statement that is attributed to a referenced source: such contradictions are especially likely in the area of habitat use because of local differences in how individual species use habitat. Because of these inconsistencies and lack of synthesis, it may be difficult in some cases for the reader to discern what is and is not known about a species in regard to habitat use, and what degree of confidence exists in particular statements attributed to references. I would advise the reader to take care not to blindly accept every statement as fact, but be willing to go to original sources for the more full context as needed. These drawbacks appear to be relatively minor in the grand scheme and are easily outweighed by the value of the information contained in the sections and the relatively comprehensive list of relevant references from which the material is drawn.

Seasonal occurrence charts for each species would have made a valuable addition to the book. Unfortunately, such seasonal equivalents of a map are absent from the book. As with the maps of winter and migratory ranges, the information is largely present in the text, but would have been made more accessible and useful by the addition of seasonal occurrence charts

The detection section provides brief notes on how easy or difficult it is to detect or identify the species, both by sight and sound. For example, the great difficulty of distinguishing Hermit Warbler and Townsend's Warbler by sound is noted, although, from the Washington perspective at least, perhaps not emphasized quite strongly enough.

The last section of the accounts, on population status and conservation, is generally relatively succinct, but with adequate detail to give the reader the essential core of the situation in most cases. I was pleased to note that Breeding Bird Survey and Christmas Bird Count data have been consulted, at least in some accounts. For example, the decline in western Oregon populations of White-breasted Nuthatch (*Sitta carolinensis*) was noted. However, in some other accounts, they appear not to have been considered. For example, although the BBS shows a significant decline in numbers of Bushtit (*Psaltriparus minimus*) over the last 20 years in both Oregon and the Southern Pacific Rainforest region (of which western Oregon is a part), the account mentions only that the breeding range is expanding and numbers appear to be increasing in many areas. Understandably, the emphasis in this section tends to be on those species that are clearly uncommon to rare or restricted in their geographic range or habitat, unlike the Bushtit, a common species with a range of habitats.

Overall, I would highly recommend this book to anyone in Washington who works with or studies birds in the wild and anyone who watches birds more than casually and wants to learn more details about their distribution and abundance, habitat use, behavior, or conservation status. If one is looking to begin a literature search by species in the Pacific Northwest, this book is a great place to start. *Birds of Oregon* lives up to its objectives

of documenting the status and distribution of Oregon's birds at the beginning of the twenty-first century, compiling what is known about their habitat requirements including food, and stimulating research and continued investigation by showing what is not known. – CHRIS B. CHAPPELL, 120 State Avenue NE, PMB 1465, Olympia, Washington 98501, chris.dharmadancer@gmail.com.

LITERATURE CITED

Adamus, P.R., K. Larsen, G. Gillson, and C.R. Miller. 2001. Oregon breeding bird atlas. Oregon Field Ornithologists [www.oregonbirds.org], Eugene, Oregon.

American Ornithologists' Union. 1957. Check-list of North American birds. Fifth edition. American Ornithologists' Union, Washington, D.C.

Gabrielson, I.N. and S.G. Jewett. 1940. Birds of Oregon. Oregon State College, Corvallis, Oregon.

Washington Birds 9:78-79 (2006)

MESSAGE FROM THE EDITOR

This volume of *Washington Birds* represents something of a transition for the editorial staff, and this I would like to acknowledge before moving on to other journal news. Michael Donahue has resigned from his position as Co-editor of the journal. Michael served as an Associate Editor for Volume 7 and Co-editor for Volume 8. He also helped process some of the manuscripts found in the present volume. I wish to thank Michael for his diligent and professional work on all aspects of manuscript management and journal production over the several years of his service.

Most members of the Washington Ornithological Society are aware that journal production has lagged behind a target schedule of one journal volume per year. This has been an issue throughout the organization's history, as journals were produced on an irregular schedule (i.e., about one volume every two years). Over the last several years the delayed schedule for journal publication has been a topic of discussion by the Board. The Board has approved an accelerated schedule of publication, with a goal of issuing multiple volumes annually whenever possible in an attempt to get back on track.

The task of "catching up" will require both time and an increase in the number of manuscripts submitted for publication. The papers you read in this volume represent the vast majority of manuscripts submitted over a period of about three years. My request of the membership (or other interested parties) is this: if you have made interesting observations of birds or collected information of value to the ornithological community, please consider preparing a manuscript and submitting it for publication in *Washington Birds*.

What types of articles are appropriate for publication in *Washington Birds*? The answer to this question is a reflection of the broad interests of the Washington Ornithological Society and the vast range of topics of possible investigation and reporting. Manuscripts suitable for publication in *Washington Birds* may address the general subjects outlined below. If readers are uncertain about the suitability of a particular manuscript concept, please contact me.

Detailed accounts of the birds of a particular location.—The acceptable geographic scope is quite broad and might include counties, national parks, national wildlife refuges, state wildlife areas, national forests, state parks, research natural areas, natural area preserves, city or county parks, and so forth. The depth of the presentation is optional, and may range from descriptive to quantitative accounts of species occurrence.

Ecological studies.—This category includes just about any field study of the ecology or behavior of birds in Washington. Examples of suitable subjects include projects relating to habitat use, migration timing, nesting behavior, population status, and other aspects of behavior.

Distribution records.—These papers are detailed accounts of either 1) rare birds in the state that warrant greater discussion than is found in the reports of the Washington Bird Records Committee, or 2) unique range extensions or occurrences.

Historical accounts.—Ornithological exploration and research is part of the history of our state. Historical accounts are scholarly contributions that examine some aspect of this history. Biographies of prominent ornithologists or an examination of an expedition are examples of suitable subjects. A series of papers on the history of ornithology in Washington was published in *The Murrelet* between 1933 and 1938. A continuation of that series would be interesting.

Status updates.—Papers that review and synthesize information on a particular species would fall under this category.

Summaries of long-term monitoring programs.—Christmas Bird Counts and Breeding Bird Surveys are examples of the types of information that could be summarized for a species (or group of species) or a geographic area of interest.

Museum-based investigations.—This general topic is broad, and might include studies of plumage variation, molt, an unappreciated aspect of species identification, age or sex determination, or an assessment of subspecies occurrence.

Book reviews.—Reviews of new books relevant to Washington are occasionally published in the journal. Book reviews must be thorough and critical. Authors interested in writing a book review must contact the editor prior to submitting the review.

Finally, I would like to mention that the format of *Washington Birds* is slowly evolving. We made slight changes in certain conventions and format specifications in volumes 8 and 9. Although these may not be obvious to many readers, I raise the issue because authors preparing manuscripts for the journal should consult papers in volume 9 for guidance on format and conventions used in the journal. A set of guidelines for manuscript preparation will be included in a future volume of the journal. Careful attention to format and conventions used in the journal makes my job much easier and is greatly appreciated.

Although this volume of *Washington Birds* was much delayed, I hope you will enjoy the papers it contains.

Joseph B. Buchanan
Editor