

TUNDRA PEREGRINE FALCON (*Falco peregrinus tundrius*) OCCURRENCE IN WASHINGTON

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Three subspecies of Peregrine Falcon (*Falco peregrinus*) occur in North America (White and Boyce 1988, White et al. 2002). Both the Tundra Peregrine Falcon (*F. p. tundrius*) and the American Peregrine Falcon (*F. p. anatum*) are distinguished from Peale's Peregrine Falcon (*F. p. pealei*) by the very large size and dark, heavily pigmented plumage of the Peale's subspecies. The tundra falcon is distinguished from the *anatum* by its generally smaller size, and in all plumages, pale brown (juvenile) or pale blue (adult) coloration, lighter-colored head (often with a wide white band of feathers on the forehead), extensive white auricular, thinner malar-stripe and less patterned underparts, especially in the center of the belly (White 1968a, 1968b; White et al. 2002). In the field, tundra peregrines appear long-winged and slender in build (Earnheart-Gold and Pyle 2001). This subspecies nests in western and northern Alaska, northern Canada, and parts of Greenland (White and Boyce 1988), and is highly migratory (White et al. 2002), wintering south from Baja, Mexico and the U.S. gulf and southern Atlantic coasts, to central Chile, Argentina and Uruguay (Palmer 1988, Wheeler 2003).

Central (taiga habitat) and northern (tundra habitat) Alaska are sources of some migrant peregrines encountered in Washington (Anderson et al. 1988, Hayes and Buchanan 2002), and these areas were long considered the breeding grounds of *anatum* and *tundrius* falcons, respectively (White and Boyce 1988). There is uncertainty whether present-day Alaskan *tundrius* and *anatum* falcons can be distinguished in the hand (T. Swem, personal communication). Brown et al. (2007) concluded, based on an analysis of certain genetic loci, that *F. p. tundrius* is genetically indistinguishable from *F. p. anatum*; however, proof of this assertion requires an analysis of much of the respective genomes. Where the two subspecies occur in close proximity in parts of Alaska, in all likelihood intergrades occur. Because of the difficulty in clearly defining these two subspecies, for the purposes of this paper, we focus on the occurrence of "tundrius-type

falcons" (hereafter, tundra falcons) as suggested by plumage characteristics and, in some cases, measurements.

There are few published records of tundra falcons in Washington (e.g., Hayes and Buchanan 2002). Based on band returns ($n = 19$) of migrant Peregrine Falcons along the Pacific coast from 1958 to 1985, Anderson et al. (1988) concluded that few tundra falcons migrated along the Pacific coast of North America. Only 10 of 201 (5%) peregrines observed during fall migration at Southeast Farallon Island, California, in the 1990s were tundra falcons (Earnheart-Gold and Pyle 2001). Similarly, we are aware of only two published winter records of tundra falcons north of the regular winter range anywhere in North America: one from Kentucky (Wheeler 2003) and the one we describe below for Washington (referenced by Wheeler 2003). Here we provide information on the occurrence of tundra falcons observed or captured in western Washington, including one that over-wintered in multiple years, to our knowledge the first such documented occurrence at that latitude.

In two separate projects, one beginning in 1979 and the other in 1995, through May 2007 we have conducted extensive surveys of the outer coastal beaches of Washington (Figure 1). We conducted surveys at Ocean Shores (471; 63.6%), Grayland (86; 11.6%) and Long Beach (184; 24.8%) for a total of 741 surveys. Most surveys covered the entire beach. These surveys were conducted in all seasons: 30.9% ($n = 229$) in fall (September–November), 30.5% ($n = 226$) in winter (December–February), 27.6% ($n = 204$) in spring (March–May) and 11.1% ($n = 82$) in summer (June–August).

RECORDS OF TUNDRA FALCONS

Tundra falcons were rarely encountered in any season during our study. Using plumage characteristics and body measurements, only 2.7% (3 of 109) of the Peregrine Falcons we captured and banded along the outer coast between 1995 and May 2007 were identified as tundra falcons: a female (black/blue color band embossed with the alphanumeric code "7/Y"), originally banded on 23 September 2000 in its first year (Figure 2), an adult female ("9/6") on 27 April 1999 (Figure 3), and a hatch-year male ("D/3") on 17 November 2005 (Figure 3), all at Long Beach. We believe the latter bird almost certainly was the same individual observed at that site on 18 October and 16 November 2005. Although the body measurements of these falcons were indicative of *F. p. tundrius* (i.e., they were all small falcons), there is substantial overlap in the values of *F. p. tundrius* and *F. p. anatum* (e.g., White et al. 2002), making it difficult to use the measurements we recorded to identify the birds to subspecies. In addition to these records there are five Washington recoveries of Alaska-banded tundra falcons, plus five other observations of falcons seen but not captured during our surveys, two museum specimens, and two other sighting reports that were not part of our coastal surveys that we classified as tundra falcons (Table 1).

There is limited information on the timing of migration of tundra falcons in western North America. Autumn migrants arrive on the southern coast of Texas in late September in some years, but more typically in the first two weeks in October (Hunt 1966). The occasional arrival of falcons in very early September was believed to involve nonbreeders or

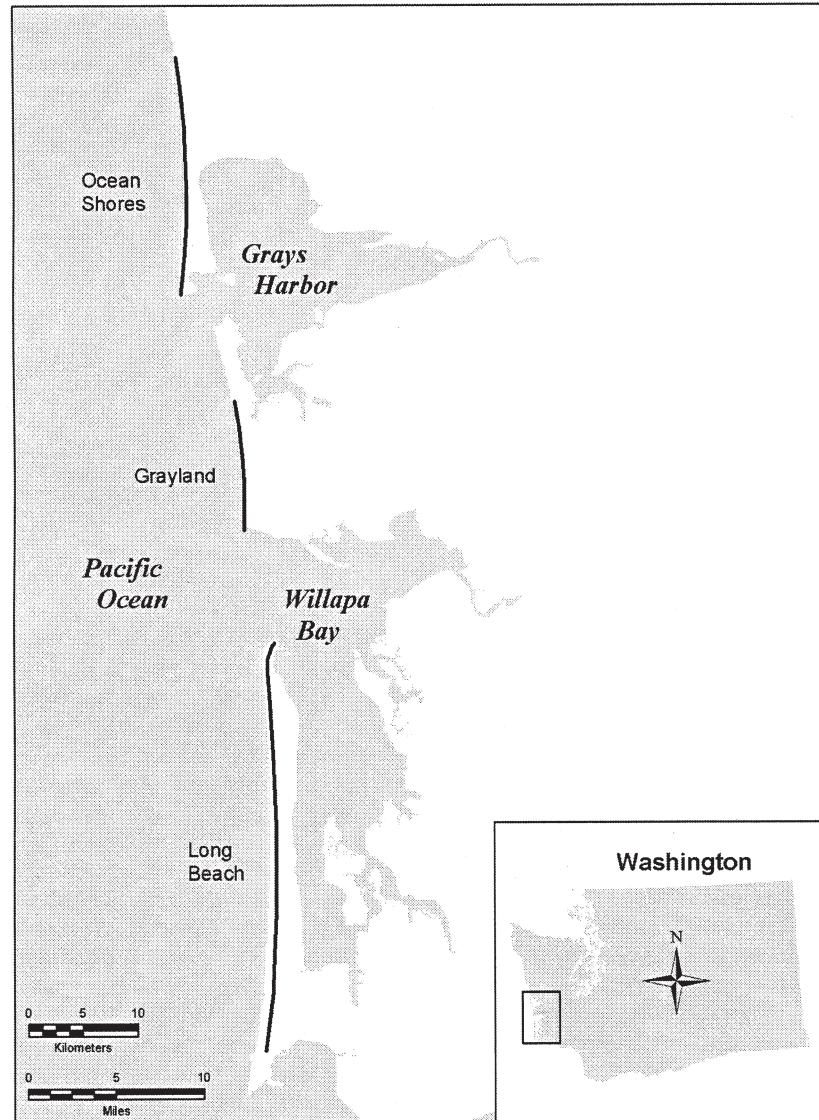


Figure 1. Raptor survey transects on three coastal beaches—Ocean Shores, Grayland and Long Beach—in western Washington.



Figure 2. Tundra Peregrine Falcon, banded with black/blue color band 7/Y, at Long Beach, Pacific County, Washington. The photographs on the left side of each pair were taken on 9 November 2000 (T. Fleming) when the falcon was in juvenile plumage; those on the right were taken on 24 February 2002 (D. Varland) when the falcon was in adult plumage. This falcon was first captured on 23 September 2000.



Figure 3. Tundra Peregrines captured and color banded at Long Beach, Pacific County, Washington. The top photo shows a female in adult plumage (27 April 1999, color band 9/6; photograph by D. Varland). The bottom photo shows a male in juvenile plumage (17 November 2005, color band D/3; photograph by T. Fleming).

Table 1. Tundra peregrines encountered in Washington, 1913-2007. The data include museum specimens (records 1-2), falcons banded as nestlings in tundra habitat in Alaska (records 3-7), falcons trapped and banded in Washington (records 8-10), and visual observations (records 11-17). Records 8 through 17 were from this study.

Record No.	Type	Age	Sex	Date	Location	County
1	specimen	1st yr	F	8 Nov 1913	Nisqually Flats	Thurston
2	specimen	1st yr	F	9 Oct 1995	Whidbey Island	Island
3	nestling	1st yr	M	15 Oct 1959	near Humptulips	Grays Harbor
4	nestling	1st yr	M	28 Oct 1982	near Rochester	Thurston
5	nestling	1st yr	U	19 Nov 1999	near Bremerton	Kitsap
6	nestling	1st yr	U	4 Jun 1990	near Hansville	Kitsap
7	nestling	1st yr	U	8 Oct 1995	near Oak Harbor	Island
8	trapped	adult	F	27 Apr 1999	Long Beach	Pacific
9	trapped	1st yr	F	23 Sep 2000	Long Beach	Pacific
10	trapped	1st yr	M	17 Nov 2005	Long Beach	Pacific
11	visual	adult	U	26 Apr 1982	Totten Inlet	Mason
12	visual	adult	U	18 Apr 2000	Long Beach	Pacific
13	visual	adult	U	10 Sep 2002	Ocean Shores	Grays Harbor
14	visual	adult	U	14 May 2003	Grayland	Grays Harbor
15	visual	1st yr	F	28 Sep 2003	Long Beach	Pacific
16	visual	adult	U	11 Oct 2003	Long Beach	Pacific
17	visual	1st yr	M	2 Dec 2005	Ocean Shores	Grays Harbor

Record 1: Specimen no. UCLA 7906; from Hayes and Buchanan (2002). **2:** Specimen no. UWMGB 62063; from Hayes and Buchanan (2002). **3:** Banded (527-99606) on 1 August 1959 on the Colville River (northern Alaska) by Tom Cade; from U.S. Fish & Wildlife Service Bird Banding Lab and Anderson et al. (1988). **4:** Banded (987-30584) on 28 July 1982 on the Colville River by Ted Swem; from U.S. Fish & Wildlife Service Bird Banding Lab and Anderson et al. (1988). **5:** Banded (987-70561) on 21 July 1986 on the Colville River by Ted Swem; from U.S. Fish & Wildlife Service Bird Banding Lab and Hayes and Buchanan (2002). **6:** Banded (1807-02205) on 24 July 1989 near Teller, Alaska, by Ted Swem; from U.S. Fish & Wildlife Service Bird Banding Lab and Hayes and Buchanan (2002). **7:** Banded (1807-43428) on 18 July 1995 on the Colville River by Ted Swem; from U.S. Fish & Wildlife Service Bird Banding Lab and Hayes and Buchanan (2002). **8:** Banded (816-52702; black/blue 9/6) on 27 April 1999; no re-sightings. **9:** Banded (1807-63275; black/blue 7/Y) on 23 September 2000; re-sighted on numerous occasions (see Table 2). **10:** Banded (2206-05108; black/blue D/3) on 17 November 2005; no re-sightings. **11:** Non-survey observation by JBB. **12-17:** Survey observations.

those with failed nests (Hunt 1966). Observations of tundra falcons at Southeast Farallon Island, California, were made from 26 September to 17 November between 1981 and 1999; the mean arrival date in the years 1990 to 1999 ($n = 10$ falcons) was 19 October (Earnheart-Gold and Pyle 2001). The occurrence dates of tundra falcon autumn migrants in Washington ranged from 10 September to 22 November, with a median date of 13 October (Figure 4), matching closely with these other studies, both of which occurred substantially farther south than ours. We suggest that the adult falcon we observed on 10 September was a non-breeder or had failed its nest attempt and made an early departure from the breeding area.

Our records from spring support the position of Herman and Bulger (1981) that small numbers of tundra falcons migrate along the Washington coast in spring. The dates of our spring migrant records (Table 1, Figure 4) appear typical of Peregrine Falcons that breed in higher-latitudes (White et al. 2002). Although the records from May and early June may seem late, some Peregrine Falcons that breed in higher latitudes are still migrating at the latitude of Washington during mid- to late-May (White et al. 2002; information from Falcon Research Group website). The June falcon was found dead and we do not know how long it had been dead when recovered.

WINTER OCCURRENCE OF TUNDRA FALCONS IN WASHINGTON

On 23 September 2000, D. Varland, S. Tomlinson, T. McBride and J. Herman captured and banded a hatch-year female tundra falcon (Figure 2) on the Long Beach Peninsula. This bird, color banded "7/Y", was subsequently observed in nine of 51 surveys, all at Long Beach, until she was

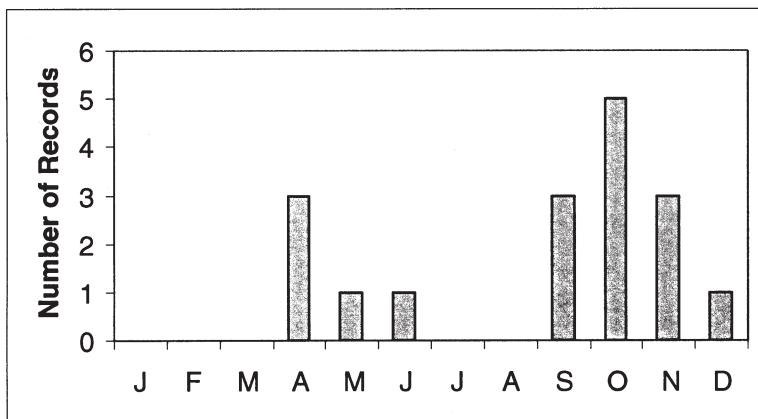


Figure 4. Initial occurrence by month of individual tundra falcons in Washington based on 17 records derived from personal observation, capture and banding, and information presented in Hayes and Buchanan (2002).

Table 2. Details of observations of "7/Y", a tundra falcon that was captured and banded on 23 September 2000, and subsequently spent at least portions of two winters on the Long Beach Peninsula, Washington.

Year	Season*			Age	Mean distance (km) between capture and re-sighting locations (N; range)
	Fall	Winter	Spring		
2000-01	23 Sep, 9 Nov	10 Feb	11, 12 Mar	< 1	0.8 (4; 0.0 – 1.8)
2001-02		2, 24 Feb	11, 17 Mar	1	1.9 (4; 0.8 – 3.2)
2002-03			3 Mar	2	1.4 (1; NA)

* Fall = Sep – Nov; Winter = Dec – Feb; Spring = Mar – May.

last observed in 2003 (Table 2). We saw her on three winter/early spring surveys during 2000-2001 and on four winter/early spring surveys during 2001-2002. After 17 March 2002, she was not seen again until early March of 2003, indicating undetected presence or use of a different area that winter. All nine re-sightings of 7/Y were within 3.2 km of her initial capture and banding location (Table 2).

The outer coastal beaches of Washington support high densities of shorebirds (Buchanan 1992) and other falcon prey during winter. Peregrine 7/Y was engaged in feeding behavior on five of the 10 surveys in which she was encountered: hunting shorebirds ($n = 2$), feeding on unidentified small birds ($n = 2$) and flying with prey ($n = 1$). Although the mere presence of abundant prey does not explain the winter distribution of this subspecies, it may help to explain the choice made by 7/Y to discontinue her migration so far north of the normal winter range for tundra falcons. It is noteworthy that 7/Y returned in the winter of 2001-2002 as a yearling. Other Peregrine Falcons banded on the study area have exhibited inter-year site fidelity (D. Varland, unpublished data). We suspect 7/Y spent the winter of 2002-2003 somewhere in the vicinity because the observation on 3 March was too early for the return of migrant tundra falcons at this latitude (Palmer 1988). To our knowledge, this is one of a few, if not the only, winter record of a tundra falcon from this far north on the Pacific coast and is the first documented, multi-year, over-wintering occurrence of a tundra falcon in Washington State. The presence of other tundra falcons in coastal Washington in late autumn and early winter (e.g., an observation, possibly of D/3, was made on 2 December 2005 at Ocean Shores) suggests the possibility of additional tundra falcons spending the winter in this area.

SUMMARY

Our observations and banding data, in addition to previous information, indicate that tundra falcons migrate through western Washington,

although in numbers far lower than *F. p. pealei* or *F. p. anatum*. We assembled 17 records of tundra falcons from fall, winter and spring between 1913 and 2007, nine of which were from our coastal study area from 1995 to May 2007. Only three of 109 Peregrine Falcons that we banded in this period were tundra falcons. The period of autumn occurrence (migration) that we recorded – generally late September through mid-November – is similar to that reported from Texas (Hunt 1966) and California (Earnheart-Gold and Pyle 2001). Spring migrants of this subspecies occur substantially less frequently in the region than autumn migrants. A single falcon spent two, and probably three winters in coastal Washington, far north of the documented winter range of the subspecies. These winter records are the first for tundra falcons from Washington and perhaps are the northernmost winter records for such falcons in continental North America.

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