
Memorial to a Black Turnstone: An exemplar of breeding and wintering site fidelity

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Most of us who have banded long-distance migrants are aware, through recaptures of individuals, of the high degree of site fidelity exhibited by many bird species. It is not uncommon for a bander to have a marked bird remain in the vicinity of its banding site throughout a season and then to recapture or sight the bird there during the following season, or occasionally for several successive seasons. However, these "special" birds are rarely encountered away from the banding site and, if they are, it is usually because they have died and the band has been reported. Rarely do we get multiple recaptures or resightings of an individual bird that allow us to compare site fidelity at the two ends of its migration route or to determine the timing of movements between these points. Here we describe an instance of a uniquely marked Black Turnstone (*Arenaria melanocephala*) that was studied on both its breeding and wintering grounds for 5 consecutive years. We believe this represents one of the most detailed accounts of this nature for a North American bird.

The central figure of this report, "Yellow-left," was trapped on 9 June 1978 on its nest in a coastal meadow of the Yukon-Kuskokwim River Delta, Alaska (61° 15' N, 165° 35' W). It was one of the first of 74 adult Black Turnstones that RG and CH captured at this site (Figure 1) and marked with a U.S. Fish and Wildlife Service metal band and unique combination of colored leg bands during a 5-year study (1978-1982) of the species' breeding ecology. We confirmed that Yellow-left was a male by observing his behavior during courtship and copulation.

In late July 1978 at Crystal Cove State Park near Laguna Beach, California (33° 31' N, 117° 50' W), LS saw a Black Turnstone with yellow bands on its left leg. After receiving repeated reports of the bird along this beach during fall, we knew that a unique opportunity was at hand. The three of us soon became thoroughly involved with the movements of the bird, to the extent that during the next 5 years we exchanged correspondence on over

Figure 1. Black Turnstone ("Yellow-left") banded on the breeding grounds in spring 1978. The vegetation on the expansive coastal meadows of the Yukon-Kuskokwim Delta, Alaska, is predominantly sedges, and the ponds are shallow, less than 50 cm deep.





Figure 2. Winter home of Black Turnstone "Yellow-left" in Crystal Cove State Park, Laguna Beach, California. The portion of beach favored by Yellow-left is a mixed substrate of sand and rocks. Yellow-left and other turnstones fed among the rocks and the algae cast upon the beach.

40 occasions, and RG and CH traveled to Laguna Beach to see Yellow-left on his wintering grounds. Between July and April each year, LS looked for Yellow-left along the 3-km stretch of beach about once a week, for a total of 204 days during the 5 winters of 1978-1982. During the summers of 1978-1980, RG and CH were present on the breeding grounds throughout the period when turnstones were there, and collected information daily on each marked bird that had returned. In 1981 and 1982 RG and CH arrived 2-3 weeks after the arrival of the turnstones and remained through the first week of July; however, in 1982 other investigators were present during early spring and obtained information on arrival of turnstones.

Site fidelity

Probably the most important thing learned from Yellow-left's history was the degree of fidelity he showed to both his breeding and wintering areas. On the breeding grounds he defended the same area (ca. 1.2 ha) for 3 years (1978-1980), although each year he used a different nest site within the territory. In 1981 he returned to the territory, but he either did not nest or had lost his nest before our arrival on 25 May and did not re-nest as he had done in 1980. The fidelity shown by Yellow-left to this nesting area was typical of that found for other turnstones we studied. Of the 53 birds that were banded

on the 20-ha study area and that returned at least once during the 5 years we were there, 43 (81%) nested in the same territory occupied the year they were banded and, like Yellow-left, they all shifted nest sites within the territory each year.

On the wintering grounds Yellow-left was also faithful to a particular area. Between summer 1978 and spring 1982, LS found Yellow-left on 71 occasions, always along the same 0.8-km segment of a mixed rock and sand beach that stretched about 3 km between two rocky headlands (Figure 2). Usually between 20 and 35 Black Turnstones were present along the entire beach but Yellow-left was regularly found with 10 to 15 of them in his preferred area. On several occasions in mid-winter each year LS searched the beach but did not find Yellow-left. During many of those searches, however, the tide was low and turnstones were dispersed over exposed intertidal areas to feed. Yellow-left may simply have been missed, or he may have moved off the area. Other shorebirds that are known to be faithful to wintering areas, such as Sanderlings (*Calidris alba*), do occasionally move to other areas for brief periods (Peter Connors, pers. comm.). Twice during mid-winter no turnstones were found over the 3-km stretch of Laguna Beach. On both days it was very windy, but on the following days the winds had calmed and the usual complement of birds was again present.

Besides Yellow-left, another marked adult turnstone ("Orange-right; Blue-left") seemed faithful to a particular wintering site. This bird was seen once in October 1979 and twice early the following winter on the breakwater of Monterey Harbor, California (36° 38'N, 121° 56'W). The bird was banded in 1979, returned to nest in the same territory in 1980, but was not seen on either the breeding or wintering grounds after winter 1980.

Timing of movements

The other important information we found by studying Yellow-left concerned the chronology of his migration each spring and fall. Generally, he was more consistent in his timing of arrival on the breeding and wintering grounds than in his timing of departure from those areas each year (Table 1). In both 1979 and 1980 Yellow-left returned to his nesting area on 10 May, during the period in which most of the other marked turnstones also arrived. In 1978, before Yellow-left was banded, we estimate that he arrived between 10 and 13 May, judging from the time his mate laid eggs and the time of peak arrival of turnstones on the study area.

Although the dates of his arrival were similar during these three nesting seasons, Yellow-left departed from the breeding grounds on widely varying dates, probably because of the varied reproductive success he and his mate experienced each year. In 1978 Yellow-left was not seen on the study area after 11 June, the date on which he and his mate, "Yellow-right," lost their clutch to an unknown predator. In 1979 Yellow-left and a new mate, "White/Yellow-right," lost three eggs of their clutch to a predator during mid-incubation, but the fourth egg hatched and the chick was tended for 10 days before it disappeared on 23 June. Again, Yellow-left quickly departed.

During 1980 Yellow-left remated with White/Yellow-right, but they abandoned their first clutch after one egg was taken by a predator and then renested, only to lose their second clutch 10 days later. Yellow-left remained on his territory for 6 days after this and was last seen that season on 29 June. In 1981 he apparently did not nest, although he defended his territory and advertised for a mate until his departure on 21 June. If Yellow-left had been successful during any of those 4 years in raising one or more chicks to fledging, he would have had to remain on the study area until about mid-July in 1978 and 1979, and as late as early August in 1980. Why Yellow-left and other turnstones that failed to raise young departed the breeding grounds well before those that were successful is not clear. Black Turnstones may leave early because of differences in availability of foods on the breeding and wintering grounds or because of the energetic demands of prebasic molt, which almost invariably begins after the turnstones leave the breeding grounds.

Although Yellow-left departed from his nesting area on very different dates each summer, he arrived at his wintering site on almost exactly the same date each year (Table 1). The time elapsed during his southward migration varied from about 27 to 40 days and averaged about 32 days during the 3 years in which we could accurately determine arrival dates. Generally he arrived about 2 weeks before the main population of Black Turnstones wintering along Laguna Beach, but this may simply be the result of his repeated reproductive failures and early departures from breeding grounds.

Our information on the timing of his migration each spring is less exact but still enlightening. The time of Yellow-left's departure from the wintering grounds was highly inconsistent from year to year. In 1979 we could

Table 1. Chronology of movements to and from the breeding and wintering grounds by a banded Black Turnstone ("Yellow-left").

| Year | Migration north | | Migration south | |
|------|-----------------------|--------------------------|-----------------|----------------------|
| | Departed ¹ | Arrived | Departed | Arrived ² |
| 1978 | Not banded | 10 - 13 May ³ | 11 June | 29 July |
| 1979 | 25 March - 21 April | 10 May | 27 June | 22 - 28 July |
| 1980 | 13 - 25 April | 10 May | 29 June | 20 July - 1 August |
| 1981 | 22 March - 3 April | Unknown ⁴ | 21 June | 31 July |
| 1982 | 10 - 24 April | Not seen | Not seen | Not seen |

¹ The first date represents the last day Yellow-left was seen that season; the second date is the next day on which LS was able to look for Yellow-left.

² In 1978 LS censused the beach on only one day in July; therefore, Yellow-left arrived on or before this date. In 1981 Yellow-left was looked for daily but not seen during the week preceding 31 July.

³ Not banded until 9 June 1978. Arrival date estimated by using information from 1979 and 1980 and back-dating from date of clutch completion in 1978.

⁴ RG and CH did not arrive on the study area until 25 May. Yellow-left was seen that summer but did not nest, so even his approximate date of arrival could not be determined.

not determine with any precision when Yellow-left departed, but in both 1980 and 1982 Yellow-left began his sojourn north in middle to late April whereas in 1981 he left in late March (Table 1). Many studies of migration have suggested that various environmental factors influence the timing of movements of birds (see Richardson 1978 for review). Although most investigations found that spring migration was correlated with following winds en route, at least one study (Nisbet and Drury 1968) concluded that spring migration was significantly correlated with favorable weather conditions at the birds' destination the next day. Both the arrival of spring weather and the onset of nesting by turnstones on the Yukon-Kuskokwim Delta was retarded in 1980 and 1982 compared with 1981, lending credence to the idea that Yellow-left may have been cueing his departure on some weather variables that could be used to predict the conditions at his destination. Because many of the weather systems that influence climatic conditions in southwestern Alaska eventually move to the Pacific Coast of the contiguous states, perhaps weather conditions along the coast between California and Alaska are good predictors of conditions on the breeding grounds.

Migration of most shorebirds in spring appears to proceed more rapidly than that in fall along both coasts of North America (Recher 1966). During spring 1980, for which we have the most precise data, Yellow-left took only 15-27 days to travel about 5,500 km (3,400 mi) north to his breeding grounds. But in 1981 he took at least 28-40 days to reach the Delta since turnstones have not been recorded there earlier than 1 May. These periods compare with the 25-31, 21-33, and 40 days he required to travel south in 1979, 1980, and 1981 respectively. It appears, then, that migration in spring for an individual shorebird may at times be more rapid than its fall migration, but such is not always true.

Conclusion

Our association with Yellow-left has apparently ended. He failed to arrive on his breeding territory in spring

1982 and has not been seen on his wintering area despite repeated searches there during fall 1982 and winter 1983. During these past 5 years he was highly faithful in summer to a small parcel of ground on the flat, marshy expanse of the Yukon-Kuskokwim Delta, and in winter to a short stretch of mixed rock and sand beach in southern California, 5,500 km distant via the coast. During that period he mated with two different females but left no progeny. There is a slim chance that Yellow-left still lives and has lost his colored bands. As much as we would like to believe this, his history of breeding site tenacity and the fact that no Black Turnstone occupied his nesting territory in 1982 make even this unlikely. We will miss him.

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