

Shorebird Overview

Forty-four shorebird species have been reported in Indiana. Of these some 37 occur more or less regularly and five are Occasional or Accidental; one (Long-billed Curlew) has not been recorded in more than 100 years, and another (Eskimo Curlew), is likely extinct. Tabulated shorebird abundances (see tables below), reveal that Indiana's three most common shorebirds are Pectoral Sandpiper, American Golden-Plover, and Killdeer. Together these three species comprise more than 60 percent of all shorebirds recorded in the state.

SHOREBIRD ABUNDANCE TABLE I
Arranged in AOU Order

	Abundance Index	20-year mean	Rank		Abundance Index	20-year mean	Rank
Black-bellied Plover	502.5	90.5	17/17	Red Knot	57.9	8.9	29/30
American Golden-Plover	20659.2	2507	2/3	Sanderling	4101.9	866.1	6/6
Snowy Plover	1.1	0.2	38/38	Semipalmated Sandpiper	2770.4	454.5	9/9
Wilson's Plover	0.2	0.05	41/40	Western Sandpiper	69.0	7.2	27/31
Semipalmated Plover	2141.6	326.8	10/11	Least Sandpiper	5293.1	1069	5/5
Piping Plover	46.3	4.2	32/33	White-rumped Sandpiper	210.2	29.4	21/22
Killdeer	14308.2	3190	3/2	Baird's Sandpiper	164.3	27.2	23/23
Mountain Plover	0.2	0.05	42/41	Pectoral Sandpiper	25990.2	4179	1/1
Black-necked Stilt	17.4	4.8	35/32	Sharp-tailed Sandpiper	0.4	0.1	40/39
American Avocet	117.7	23.2	26/24	Purple Sandpiper	16.3	2.1	36/36
Greater Yellowlegs	1662.6	330	11/10	Dunlin	3702.9	804.1	7/7
Lesser Yellowlegs	7805.5	1431	4/4	Curlew Sandpiper	0.2	0	44/44
Solitary Sandpiper	1434.8	265.1	13/13	Stilt Sandpiper	561.8	91.6	16/16
Willet	646.4	142	15/15	Buff-breasted Sandpiper	174.7	31.7	22/21
Spotted Sandpiper	1510.9	271.8	12/12	Ruff	3.8	0.6	37/37
Upland Sandpiper	460.6	53.7	18/20	Short-billed Dowitcher	834.3	150.3	14/14
Eskimo Curlew	0.5	0	39/42	Long-billed Dowitcher	119.8	15.2	25/26
Whimbrel	51.6	11	30/29	Wilson's Snipe	3366.3	682.6	8/8
Long-billed Curlew	0.2	0	43/43	American Woodcock	413.1	61.5	20/19
Hudsonian Godwit	47.2	11.6	31/28	Wilson's Phalarope	159.3	20.7	24/25
Marbled Godwit	62.4	13.8	28/27	Red-necked Phalarope	25.5	3.3	34/34
Ruddy Turnstone	458.0	71.5	19/18	Red Phalarope	29.3	2.3	33/35
Abundance Index: = (100,000xnumber of individuals)÷Total of all individuals (i.e., 1000 times %)							
20-year mean: = total number observed (1986-2005) ÷20							
Rank: = Rank order based on: all-time total numbers/20-year means (1986-2005)							

The Black-necked Stilt is invading Indiana; consequently, its ranking (currently 35/32) will almost certainly rise rapidly over the next decade.

A measure of population stability is provided by comparing the rank order of all-time totals (left-hand numbers in Rank column) with rankings over the last 20 years (right-hand numbers in Rank column). If a population is stable these two rankings should be similar.

With three exceptions (disregarding the extinct Eskimo Curlew) these rankings are indeed quite similar, suggesting that for most shorebirds historical numbers are similar to modern results.

SHOREBIRD ABUNDANCE TABLE II							
Arranged by All-Time Abundance							
	Abundance Index	20-year mean	Rank		Abundance Index	20-year mean	Rank
Pectoral Sandpiper	25990.2	4179	1/1	Baird's Sandpiper	164.3	27.2	23/23
American Golden-Plover	20659.2	2507	2/3	Wilson's Phalarope	159.3	20.7	24/25
Killdeer	14308.2	3190	3/2	Long-billed Dowitcher	119.8	15.2	25/26
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Least Sandpiper	5293.1	1069	5/5	Western Sandpiper	69	7.2	27/31
Sanderling	4101.9	866.1	6/6	Marbled Godwit	62.4	13.8	28/27
Dunlin	3702.9	804.1	7/7	Red Knot	57.9	8.9	29/30
Wilson's Snipe	3366.3	682.6	8/8	Whimbrel	51.6	11	30/29
Semipalmated Sandpiper	2770.4	454.5	9/9	Hudsonian Godwit	47.2	11.6	31/28
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Greater Yellowlegs	1662.6	330	11/10	Red Phalarope	29.3	2.3	33/35
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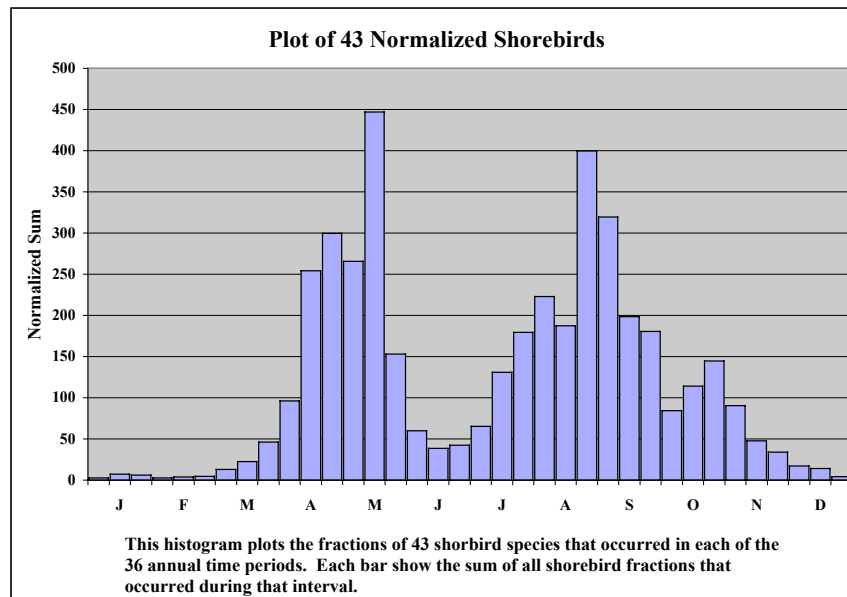
The three exceptions involve Western Sandpiper, Hudsonian Godwit, and Long-billed Dowitcher. In each case the difference between the two rankings may reflect population declines; however, other possibilities appear more likely.

Several large daily Western Sandpiper counts in the older data suggest that divergence in the rankings of this species should be attributed to identification problems. In the case of Hudsonian Godwits a better understanding of the fall flight patterns surely explains the current higher ranking. Since the 1999 discovery that migrating flocks irregularly pass along Lake Michigan's shores in fall, Hudsonian Godwit numbers have increased dramatically. Better identification information likely accounts for the higher 20-year ranking of the Long-billed Dowitcher.

Shorebird Migration

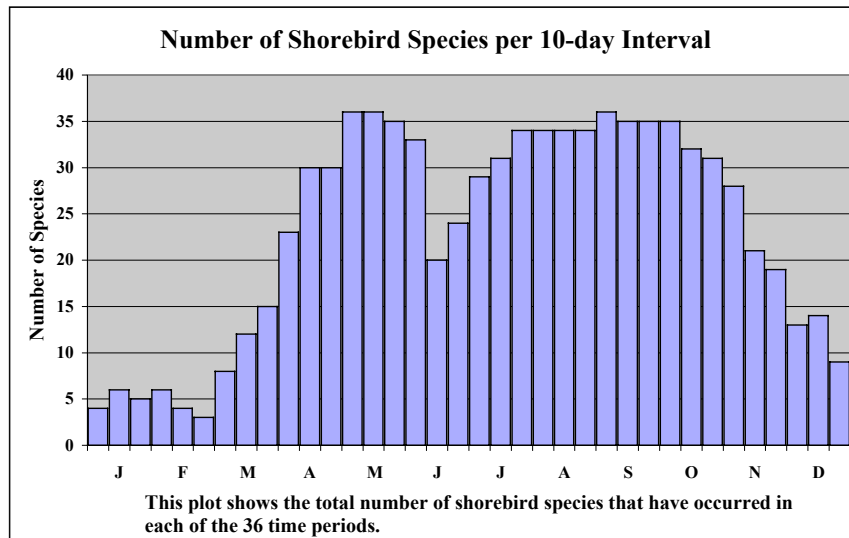
As a group shorebirds are quite complex and diverse. This complexity renders it extremely difficult to make generalizations about the shorebird migration. One approach involves calculating the fraction of individuals of each species that occurs in each of the

36 time periods employed for the migration histograms. This calculation was performed on 43 shorebird species and the results combined to produce the following migration histogram.



The normalized histogram reveals a wide peak from mid-April through mid-May with a spike on the latter date. Fall migration is more complex with significant activity from mid-July through September and an especially strong movement in late August and early September. A secondary and weaker peak that occurs in October likely reflects the late autumn flights of Killdeer, Dunlin, and Long-billed Dowitcher.

Another approach involves simply plotting the number of shorebird species recorded during each of the 36 time units. This plot is shown below, and roughly replicates the spring and fall activity periods illustrated above; however, the small secondary fall peak has disappeared.



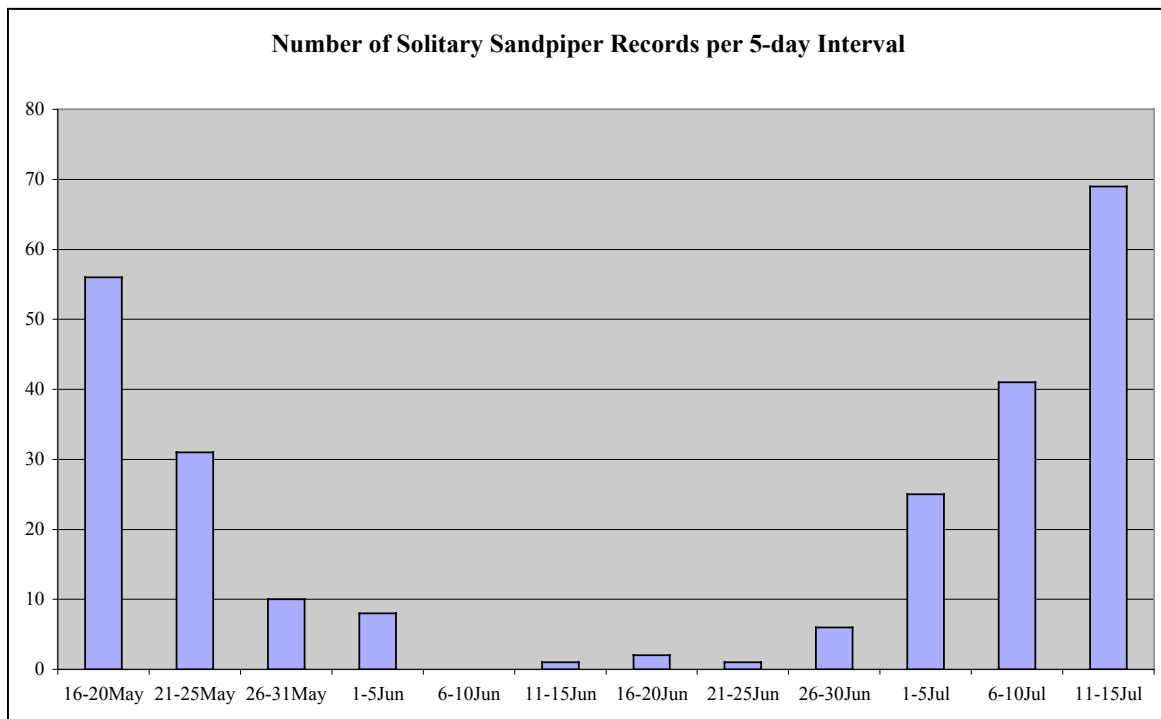
This plot reveals that approximately 35 shorebird species have been recorded during each 10-day interval in May and early June, and from late July through early October. As these periods are consistent in both plots, they are clearly intervals of maximum shorebird migratory activity.

Distinguishing Spring from Fall Migrants

In dealing with the Solitary Sandpiper Butler (1898) wrote, “Throughout the northern part of the State some are summer residents, and breed.” The erroneous conclusion that this sandpiper was a summer resident resulted from the exceptionally short interval between the termination of spring migration and commencement of the autumn flight. Determining the boundary between spring and fall migrations is difficult for many shorebirds, as the interval between flights is often deceptively short.

This problem is illustrated in the plot below, which graphs the number of existing Solitary Sandpiper records per five-day interval from 16 May through 15 July. The plot shows no records between 5 and 11 June. The actual records bounding this brief hiatus are 5 June 2002 and 12 June 2004, yielding a break of one week. This short interruption in reports is taken at the boundary between the spring and fall flight. A similar analysis was employed to define migration periods for all common shorebird migrants.

It is quite likely that as future observations are added to the database, breaks of the type illustrated for the Solitary Sandpiper will shrink and ultimately disappear. Contributing to this disappearance is the presence of wandering non-breeders and birds with failed nesting efforts. However, despite the absence of a clean break, slopes of the descending spring and ascending autumn bars should provide evidence of the boundary’s general location.



References Cited

Butler, A. W. (1898) The Birds of Indiana, Indiana Department of Geology and Natural Resources Annual Report, 22:575-1187.