

THE SOUTHWARD SHORE-BIRD FLIGHT ON THE NEW
JERSEY COAST IN 1928.

BY CHARLES A. URNER.

THE southward shore-bird migration of 1928 as witnessed from various points along the coast of New Jersey was remarkable in the diversity of species represented, the duration of the flight and the changes in the numerical strength of several species recorded. The flight was made under very nearly normal conditions, for the federal law against shore-bird shooting was for the first time quite generally observed in this area. There was no tendency therefore for the birds to be driven along faster than they would move normally, and feeding conditions en route, because of plentiful rainfall and other factors, were such that there was no apparent necessity for the birds to depart until actuated by other normal migratory impulses.

It is, of course, risky to draw definite conclusions from observations of shore-bird movements over a relatively restricted area, since several factors may influence the number of individuals passing or stopping to feed, giving an appearance of increase or decrease which may not be in accordance with the facts. Weather conditions during the flight undoubtedly influence the numbers of several species of migrating shore-birds passing near enough to the coast (longitudinally and "altitudinally") to be observed; and feeding conditions influence the numbers tarrying upon the marshes and flats in any locality. It is possible also that the route of migration of some shore-birds is subject to considerable variation from year to year, as with the Black Tern (*Chlidonias nigra surinamensis*). To detect this variation would require a comparison of statistics of migrations far more extended than those here available. However, the data here assembled may at least offer a starting point for a more detailed study of shore-bird migration and numerical strength in later years.

The following records are in part from the writer's own observations and in part from the observations of others affiliated with the Linnaean Society of New York and the Delaware Valley Orni-

thological Club. Especial mention should be made of the contributions of J. S. Edwards of Montclair, Warren F. Eaton of Upper Montclair, John F. Kuerzi of New York, Lester L. Walsh of Ridgewood, N. J., R. Peterson of New York and Julian K. Potter of Camden, N. J., John T. Emlen, Jr., and William H. Yoder of Philadelphia.

The localities from which records were secured extend from the Newark Salt Marsh south to Cape May, though the great majority were between Newark and Brigantine Beach, a distance of about ninety-five miles. Shore-birding on the Newark Meadows was especially productive in 1928 because of the filling operations in progress and the excellent feeding conditions prevailing. This locality was covered on twenty-five dates from July 11 to September 29 and less frequently later in the season.

Proceeding south, the next locality worked was the Manasquan River Inlet where some nineteen trips were made. The Barnegat Inlet flats were covered eight times; the Barnegat Marshes between Barnegat and Manahawkin, eight times; the flats at New Inlet, south of Beach Haven about fifteen times and the Brigantine and Absecon Marshes sixteen times or more. There were also scattered trips to intermediate points south to Cape May.

The trips, not including a number of casual observations on scattered dates, were grouped approximately as follows: two in late June; twenty-two in July; twenty in August; thirty in September; twenty in October; eight in November; fourteen in December; eleven in January when we may consider that the migration ceased. They were chiefly on Wednesdays and week ends and there were no extended gaps in the line of dates. Numbers of each species seen on each date and in each locality were recorded as exactly as possible.

It was found that the high point in total individuals of all species collectively occurred in the period July 21 to August 10, while the greatest number of species recorded was in September. The following table shows the numerical rise and fall of the movement:

TABLE I

Period	No. of species seen	Av'g. No. per trip	Totals of individuals
July 1-20.....	19	299	3.892
July 21-Aug. 10.....	18	2.005	27.877
Aug. 11-31.....	26	380	7.974
September.....	29	258	7.744
October.....	19	107	2.138
November.....	7	20	162
Later.....	10	25	615

The total number of species recorded positively was thirty-one and there were three other probabilities not included because not definitely or conclusively established. This total does not include the Woodcock which was of course present in suitable cover along the edges of the coastal marshes.

In many species it was noted that the season's flight occurred in definite waves, sometimes widely separated. There frequently was a large main movement and either earlier smaller flights or later recurrences on a smaller scale, due possibly to differences in time when the birds left the same breeding ground, differences in dates of leaving different breeding grounds or the filtering south from favorite feeding places along the line of flight as the urge to continue the migration was re-created by changing weather conditions, etc. In a number of species observed from the seashore the main flights coincided with a steady south breeze, but they were not always so associated, and considerable movements of several species were observed when the wind was very light from west or south.

The figures of numbers of each species seen (total of all trips) are not of course a true index of the relative numbers of each that were passing, since large flocks remaining to feed are counted several times and species rarely stopping over thus suffer in the comparison.

I have attempted to rank the strength of the thirty-one species listed by taking an average of (1) their ranking in "number of times seen"; (2) their ranking in "largest numbers seen in one day" and (3) their ranking in "total number seen on all trips."

These data, with the ranking of each species according to the above average, are given in Table II.

TABLE II.—RANKING OF SHORE-BIRDS ON JERSEY COAST AND SALT MARSH IN 1928. FALL FLIGHT.

	Rank	Times seen	Largest No. in 1 day	Total No. all trips
Semipalmated Sandpiper.....	1	67	6,000	30,774
Sanderling.....	2	54	500	3,651
Lesser Yellow-legs.....	3	52	450	3,707
Semipalmated Plover.....	4	56	300	2,343
Least Sandpiper.....	5	47	500	1,579
Black-bellied Plover.....	6	62	150	1,504
Dowitcher.....	7	38	325	1,624
Greater Yellow-legs.....	8	49	175	804
Killdeer.....	9	61	100	628
Red-backed Sandpiper.....	10	23	155	721
Hudsonian Curlew.....	11	20	166	605
Turnstone.....	12	45	75	598
Knot.....	13	23	150	465
Pectoral Sandpiper.....	14	42	75	535
Spotted Sandpiper.....	15	44	12	152
Golden Plover.....	16	10	93	134
Willet.....	17	15	30	142
Piping Plover.....	18	20	20	113
White-rumped Sandpiper.....	19	16	25	87
Upland Plover.....	20	8	13	48
Northern Phalarope.....	21	2	50	51
Stilt Sandpiper.....	22	6	14	31
Western Sandpiper.....	23	12	10	29
Wilson's Snipe.....	24	8	5	16
Purple Sandpiper.....	25	1	20	20
Marbled Godwit.....	26	5	3	11
Buff-breasted Sandpiper.....	27	3	6	8
Hudsonian Godwit.....	28	4	2	8
Baird's Sandpiper.....	29	5	2	6
Solitary Sandpiper.....	30	4	1	4
Red Phalarope.....	31	1	4	4

A study of this table will reveal some apparent misplacements under the system used. However, it should be remembered that the records are for the open salt marsh and seashore only. This explains the absence of the Woodcock and the poor showing of Wilson's Snipe and Solitary Sandpiper, both of which I have always found uncommon and rare respectively on salt marsh and sea shore. The basis of the ranking of each species is seen from the records in columns 3, 4 and 5 of the table.

There can be no disputing the right of the Semipalmated Sandpiper to first place. Of total counts of all species of over 50,000 individuals (some repetitions included) the number of Semipalmated exceeded 30,000 or about 61%. From this total it is a long drop to the group of Sanderling, Lesser Yellow-legs and Semipalmated Plover, which during the season under review were on approximately equal terms. The combined total of these three species falls a little short of 10,000 or slightly less than 20% of the whole. The next group in numerical strength includes Least Sandpiper, Black-bellied Plover and Dowitcher, which were approximately equal in numbers and totaled a little more than 4,500 or about 9% of the whole. The Greater Yellow-legs comes next, in an intermediate class, comprising a little more than 1½% of all birds seen. There is next a group of six species with fairly uniform totals—Killdeer, Red-backed Sandpiper, Hudsonian Curlew, Turnstone, Knot and Pectoral Sandpiper. The combined total of these six is a little over 3,000 or about 6½% of the whole. The remaining species taper off, comprising altogether less than 2% of the total number seen.

The movement of each species by three week periods up to September 1 and by monthly periods thereafter as indicated by average numbers seen per trip within these periods is shown in table III.

The duration of the southbound flight extended from June 27, when Least Sandpipers were first reported, to January 13 when six species (Knot, Semipalmated Sandpiper, Sanderling, Red-backed Sandpiper, Black-bellied Plover and Turnstone) were recorded, a span of six months and seventeen days.

NATURE OF THE LOCALITIES COVERED.

The localities visited with more or less regularity comprised all types of coastal country touched by salt water with which shore birds are usually associated.

Newark Meadows—This is an area about seven miles from Manhattan Island. It is shaped like a half moon, bordering Newark Bay for about five miles and having a maximum width of about two and a half miles. At low tide a great expanse of the muddy bottom of the bay is uncovered. Part of the meadow

TABLE III.—AVERAGE NUMBER OF EACH SPECIES SEEN PER TRIP. BY PERIODS.

	July 1-20	July 21- Aug. 10	Aug. 11 to 31	Sept.	Oct.	Nov.	Later
Red Phalarope . . . . .						.5	
Northern Phalarope . . . . .			.1	1.7			
Wilson's Snipe . . . . .			.1	.2	.4	.1	.1
Dowitcher	28.	67.4	5.2	6.8	.2		
Stilt Sandpiper . . . . .	.2		.2	.8			
Knot	11.5	5.7	2.5	5.1	.4		.1
Purple Sandpiper . . . . .							.8
Pectoral Sandpiper . . . . .	.3	1.1	5.7	11.4	2.7		
White-rumped Sandpiper . . . . .			.8	2.2	.2		
Baird's Sandpiper . . . . .				.2			
Least Sandpiper	86.5	4.9	10.1	5.3	.2		
Red-backed Sandpiper . . . . .	.2		.1	1.1	8.2	8.5	18.1
Semipalmated Sandpiper	83.5	1,655.7	187.4	77.3	12.6		.1
Western Sandpiper . . . . .		.4	.2	.6	.1		
Sanderling	4.2	72.5	44.	37.1	21.1	3.5	3.8
Marbled Godwit . . . . .			.3	.2			
Hudsonian Godwit . . . . .			.1	.1	.1		
Buff-breasted Sandpiper . . . . .				.3			
Greater Yellow-legs . . . . .	.6	5.4	18.3	10.9	.4	.1	.1
Lesser Yellow-legs	58.3	102.6	38.3	23.4	.3		
Solitary Sandpiper . . . . .	.1		.1	.1			
Willet . . . . .		.1	2.3	3.	.1		
Upland Plover . . . . .	.1	1.1	1.3	.2			
Spotted Sandpiper	3.7	2.	1.4	1.1			
Hudsonian Curlew	15.1	21.2	7.	2.1			
Black-bellied Plover . . . . .	.2	3.	7.2	12.8	42.6	5.1	.9
Golden Plover . . . . .			.1	4.3	.2		
Killdeer	3.	2.8	2.1	13.1	3.9	2.4	.7
Semipalmated Plover . . . . .	.5	43.1	33.2	27.8	12.7		
Piping Plover	3.3	2.	1.7	.8			
Ruddy Turnstone . . . . .	.3	13.6	10.4	8.4	.8		.1
Totals	299.6	2,004.6	380.2	258.4	107.2	20.2	24.8

Amounts less than .1 included as .1.

is being filled in by the usual "Sand-sucker" hydraulic method, and shore-birds which prefer muddy shallows found feeding conditions ideal during the entire summer and fall of 1928. On the areas already filled were several shallow fresh water rain ponds and about these large numbers of species preferring or requiring some fresh water would congregate. Newark Bay is approximately twelve miles west of the line of the New Jersey shore, but it was, in 1928, visited by a considerable variety of species associated with the coastal beaches and sand bars and previously rarely recorded there, notably Sanderling and Turn-

stone. This might indicate a larger, broader flight of these species with a wider fringe, for while feeding conditions on Newark Meadows were unusually excellent in 1928, they were previously good and at times especially so.

Manasquan "Inlet"—The natural outlet of the Manasquan River, just north of Barnegat Bay is now closed. But it is in the path of a large flight of shore birds which either passes at sea near enough to be observed from shore, or follows a line just inside the beach over the coastal marshes and ponds. I have noticed that the flight over the "inshore" route followed by such birds as the Dowitcher, Least Sandpiper and Hudsonian Curlew, is more frequently used when there is a strong south wind or southerly storm, while the ocean route is the more popular in clear, calmer weather. But this is more a tendency than the rule. Incidentally I believe that during periods of favorable weather and light winds the main flight of such birds as Curlew, Turnstone, Black-bellied Plover and Knot passes so far off shore as to skip entirely that portion of the New Jersey coast with which I am familiar. This is indicated, at least so far as three of the above are concerned, by Mr. Kuerzi's counts at Cobb's Island, Va., (Auk, Vol. XLX, No. 1).

Barnegat Inlet—The region known as "North Point Flats" across the inlet from Barnegat Light, is a reasonably productive locality for those species preferring coastal sand flats, and yields a fair number of other species.

Barnegat Marshes—A great expanse of virgin and well-watered salt marsh lies between Barnegat and Manahawkin, on the westerly side of Barnegat Bay. Its numerous ponds and creeks are usually too deep for waders, but as the meadows are mowed Pectoral Sandpipers and Lesser Yellow-legs congregate at times in numbers. And over the marsh during the flight there is, on days with fresh southerly winds, a heavy movement of such species as the Hudsonian Curlew, Dowitcher and Yellow-legs.

Beach Haven (New Inlet)—The south end of Long Beach, N. J., at the north end of which is Barnegat Light, has recently been improved as a feeding ground by sand flat formation, and it has been more generally used by shore-birds in spite of its great and growing popularity as a fishing resort. At times I have seen

large flocks of Dowitchers and other species feeding there unmolested, though a veritable cordon of fishermen lined the shore.

Sheepshead Meadow and Little Island Beach.—These localities the next most favorable shore-bird localities to the south, were unfortunately visited but once during the period under review because of their inaccessibility. Had they been covered regularly the counts of some species, notably Knot, Turnstone and Black-bellied Plover, would have been larger, for they are for such species even more attractive than the following localities:

Brigantine and Absecon Marshes.—This area, just north of Atlantic City, is today a very attractive place for shore-birds. Curlew stop to feed regularly on the Absecon Marshes, and the ponds on the marshes back of the Brigantine dunes are excellent for variety, especially in late summer. On the southerly half of the island are some fresh water shallow rain ponds which are very productive especially at high tide. The new golf course is also proving an attraction.

Of the country south of Atlantic City, probably superior to that described, for several species, I am not sufficiently familiar to comment.

It should be understood that were one to make an effort to cover in one day as many of the above localities as possible much larger collective daily totals could be rolled up. But it has appeared best to limit the totals seen to single localities since comparable data in later years are more readily accumulated. It, moreover, requires the use of a boat and considerable time to attempt to cover all the above localities in one day.

RECORDS FOR EACH SPECIES.

Phalaropus fulicarius. RED PHALAROPE.—Several birds reported as "in all probability the Red Phalarope," were seen off the New Jersey shore about opposite the mouth of the Manasquan River on November 27 by four representatives of American Museum of Natural History (Auk, Vol. XLVI, No. 1, p. 103).

Lobipes lobatus. NORTHERN PHALAROPE.—This species is of regular occurrence off the Barnegat shore, but is rarely seen from the beach. This explains the paucity of records—two—August 12 and September 15.

Philohela minor. WOODCOCK.—This species, not included in the previous compilation, was found in suitable cover, both in the sprouts along the south end of Newark Meadows and on the west side of Barnegat Bay.

Gallinago delicata. WILSON'S SNIBE.—Records fragmentary because the best fresh water meadows in the locality were not visited. On Newark Meadows extreme dates September 3 to December 2 with maximum numbers September 3 (4) and October 21 (5).

Limnodromus griseus griseus. DOWITCHER.—The increase in the recorded numbers of this species was among the notable features of the 1928 flight. The principal waves seen at Manasquan Inlet, were July 14 and 18. After the first wave many were found feeding in favorable localities for some time, but there was a period of relative scarcity and no important movement observed from August 12 to 20. A secondary flight started shortly after the latter date. The daily maxima on the first and second principal movements in each locality with dates, follow:

	1st movement		2nd movement	
	Max.	Date	Max.	Date
Newark Meadows.....	18	July 18	8	Aug. 29
Manasquan R.....	187	" 14	3	Sept. 8
Barnegat Inlet.....	80	" 21	8	" 8
Beach Haven.....	325	" 29	8	Aug. 23
Brigantine.....	250	" 22	115	Sept. 2
Averages.....	172	July 21	28	Sept. 2

The extreme dates were June 29 to Oct. 12.

Limnodromus griseus scolopaceus. LONG-BILLED DOWITCHER.—I have not included this subspecies in the previous compilations, though a bird very probably of this form was observed among Dowitchers at Brigantine in the late summer. It was slightly larger with a longer bill and seemed slightly darker in color.

Micropalama himantopus. STILT SANDPIPER.—This species was rarer in 1928 than in 1927. Recorded for the year only from the Newark Meadows where three birds in breeding plumage were seen July 18. No other record until August 29 when the species reappeared and remained until September 30. Maximum 14 on September 9.

Calidris canutus. KNOT.—Had Little Island Beach been visited regularly I believe the Knot would have shown much better in the numerical counts. It was not recorded on the Newark Meadows but was regular at Barnegat Inlet, Beach Haven and Brigantine, being commonest at Beach Haven. There seem to have been two main movements with the maximum of the first 150 at Beach Haven on July 14 and of the second 75 on North Point flats September 8. Extreme dates June 29 to October 4 with three at Beach Haven January 13, 1929.

Arquatella maritima maritima. PURPLE SANDPIPER.—Only 1928 record twenty at Cape May, December 23. (Bird Lore, XXXI, No. 1, p. 33.)

Pisobia maculata. PECTORAL SANDPIPER.—Best localities Newark Meadows, Barnegat Marshes and Brigantine. Barnegat Marsh counts below 1927 but Newark Meadow counts higher. A small early wave, but principal flight September, some remaining into October. Principal localities maxima and dates: Newark Meadows, 75 September 12; Barnegat Marshes 50 August 25; Brigantine 50 September 15. Extreme dates July 15 to October 28.

Pisobia fuscicollis. WHITE-RUMPED SANDPIPER.—Slight increase in recent years. Observed in four localities; most records Newark Meadows and Brigantine. Two late summer flights. Newark Meadows maximum 14 on August 29 and Brigantine 12 September 2, being followed by reduced numbers, then a jump to 25 on Newark Meadows September 23. Extreme dates August 11 to October 14.

Pisobia bairdi. BAIRD'S SANDPIPER.—More frequently identified but still rare. Extreme dates September 1 to 29 with maximum 2 on September 1. Seen only on Newark Meadows and Brigantine.

Pisobia minutilla. LEAST SANDPIPER.—In favorable localities this species is increasing. Especially common on Newark Meadows. Two principal movements, the first the larger. Newark Meadows peaks July 18 (500) and August 29 (100). Extreme dates June 27 to October 13.

Pelidna alpina sakhalina. RED-BACKED SANDPIPER.—A scattered few in July and August. The principal movement started in late September and the peak of numbers seen was unusually late, probably because several large flocks spent the early winter on the Jersey shore due to mild weather. Judging from Newark Bay counts the main flight occurred between September 30 and November 4. High count in that locality, 23 on October 28. The largest number (155) was recorded at Beach Haven December 9; 100 were still there January 13 and 125 at Corson's Inlet on the same date. Extreme dates July 8 to January 13.

Ereunetes pusillus. SEMIPALMATED SANDPIPER.—By far the largest counts were on the Newark Meadows with Barnegat Inlet second. The species was generally distributed and is undoubtedly increasing. The main flight and occurrence fell between July 19 and August 11 after which a sharp drop in numbers occurred with some recurrence in late August and early September. On the Newark Meadows the peak was reached August 1 (6,000), the following low August 19 (15) and the late peak August 26 (300). Considering all sections by ten day periods we get the following total numbers seen, adding all trips:

July 1-10 = 1	Sept. 1-10 = 1,320
“ 11-20 = 1,084	“ 11-20 = 450
“ 21-31 = 10,680	“ 21-30 = 550
Aug. 1-10 = 12,500	Oct. 1-10 = 80
“ 11-20 = 2,765	“ 11-20 = 172
“ 21-31 = 1,170	“ 21-31 = 0

Extreme dates July 1 to October 14 with 2 on January 13, a most unusual date.

Ereunetes mauri. WESTERN SANDPIPER.—Difficulties of satisfactory field identification with many individuals reduce the number of records. The main flight, according to the figures at hand, passed in September with a positive maximum of 10 on September 16 and extreme dates July 22 to October 12. It has seemed to the writer that when mixed flocks of Semipalmated and Western Sandpipers are feeding in shallow ponds the Western favors deeper water—possibly an explanation of the development of the longer bill—or vice versa.

Crocethia alba. SANDERLING.—Not enough time was spent walking the beaches to get a perfect picture of the movements of the Sanderling. My figures indicate a large flight July 21–31 followed by a recession and then a large movement from August 11 to September 10. On the Newark Meadows, where the bird was previously rarely seen, nine were observed July 22, then a gap to August 15, after which it was present to October 28 with a maximum of 17 on September 3.

The daily maximum for the several localities and dates of the early and late movements follow:

	Early Movement		Late Movement	
	High	Date	High	Date
Newark Meadows.....	9	July 22	17	Sept. 3
Manasquan R.....	15	" 29	75	" 15
Barnegat Inlet.....	400	" 21	500	" 8
Beach Haven.....	500	" 29	200	Aug. 23
Brigantine.....	15	" 22	150	Sept. 16
Averages.....	188	July 25	188	Sept. 7

Extreme dates July 1 to January 13.

Limosa fedoa. MARBLED GODWIT.—This, locally, very rare species was first found by Mr. Edwards on the Newark Meadows August 22 and two were found there by Edwards and others August 29, 31 and September 1. The writer with Mr. J. M. Johnson enjoyed a close study of three birds on the fresh water pond near the Brigantine golf course September 2. They were feeding within a few feet of the car in which we sat, running about on the partly submerged sidewalks, and we had opportunity to observe their method of drinking, curving the lowered neck apparently enough to allow the water to run into the throat. We could also observe their ability to flex the tips of their long pink-based bills.

Limosa haemastica. HUDSONIAN GODWIT.—This bird, formerly so rare, was seen on four dates on the Newark Meadows as follows: August 31—2 (Ralph Friedman); September 29—2 (Warren F. Eaton); September 30—2 (Edwards & Urner); October 13—2 (Edwards & Clausen). It is probable, because of observed differences in relative size of the birds seen together, that these records represented at least six individuals.

Tryngites subruficollis. BUFF-BREASTED SANDPIPER.—There are three records for 1928. Flock of six seen by Mr. Potter at Brigantine September 9 (Auk Vol. XLVI, No. 1, p. 109). The same day Mr. Edwards found one on the Newark Meadows and the writer found one on Brigantine September 16. It will be noted that the Newark and Brigantine dates correspond, as they did with the appearance of the Marbled Godwit, indicating a definite scattered flight of both species along the Atlantic Coast.

Totanus melanoleucus. GREATER YELLOW-LEGS.—Larger numbers seen on the Newark Meadows than in any fall flight in my experience there, dating back intermittently to 1895. There was a scattered early movement from mid-July on, but a big jump August 29 to September 1 and then a sharp drop. Barnegat guides of my acquaintance reported a large flight over the Barnegat Marshes September 1-4. No record of numbers but hundreds of birds seen in scattered flocks passing south. The record by ten day periods (total numbers seen) for all localities, follows:

July 1-10 = 0	Sept. 1-10 = 243 +
“ 11-20 = 8	“ 11-20 = 52
“ 21-31 = 24	“ 21-30 = 32
Aug. 1-10 = 51	Oct. 1-10 = 0
“ 11-20 = 131	“ 11-20 = 7
“ 21-31 = 253	“ 21-31 = 1

The figure for September 1-10 does not include the unrecorded numbers, seen by guides, passing Barnegat September 1-4.

The extreme dates of occurrence are July 12 to December 6.

Totanus flavipes. LESSER YELLOW-LEGS.—This species is increasing as a summer bird on the Newark Meadows, but this is probably due, in part at least, to less favorable conditions elsewhere in the New York City region. Thus Hunts Point, in the Bronx, where many previously summered, has been destroyed as a feeding ground. Counts at Jersey shore points, other than the Newark Meadows, showed no great change in 1928. Of the other areas visited the bird is commonest on the Barnegat Marshes and Brigantine. There was evidence of several waves. On the Newark Meadows the first arrived early in July and there were a number of peaks with drops between, the dates of the high counts being July 12 (250); August 1 (450); August 29 (300); September 9 (175); September 23 (40). The most notable drop was August 22 (15), which divides the season into two principal movements, the first or July wave being the larger. Over the Barnegat marshes birds were passing south intermittently all day, on August 25, in small scattered flocks.

The record by ten day periods (total numbers seen) follows:

June 29 = 1	Sept. 1-10 = 529
July 1-10 = 20*	“ 11-20 = 81
“ 11-20 = 738	“ 21-30 = 92
“ 21-31 = 779	Oct. 1-10 = 0
Aug. 1-10 = 658	“ 11-20 = 6
“ 11-20 = 284	“ 21-31 = 0
“ 21-31 = 520	

Extreme dates June 29 to October 14.

Tringa solitaria solitaria. SOLITARY SANDPIPER.—So rare on salt coastal marshes that records have no significance. Extreme dates July 14 to September 23; day's maximum, one.

Catoptrophorus semipalmatus semipalmatus. WILLET.—I know of no recent near approach to the 1928 records for the localities visited. Several birds seen were migrating, flying south over the marshes west of Barnegat Bay. Recorded from six localities. The peak of numbers was reached September 1-10. Brigantine attracted the largest number, with 30 on August 9. On August 2, 10 were seen at Beach Haven and 27 at Brigantine—total for the day 37. Extreme dates August 5 to October 4.

Bartramia longicauda. UPLAND PLOVER.—In recent years regular in mid-summer on the dryer diked sections of the Newark Meadows. It was reported nowhere else in the region in 1928, though I have frequently heard it passing down the shore at night in late August. Maximum 13, August 22. Extreme dates July 11 to September 2.

Actitis macularia. SPOTTED SANDPIPER.—Since this bird breeds here, the migratory movement is not as easily recognized. The dates of principal flights are not ascertainable from the records. Last seen September 23.

Numenius hudsonicus. HUDSONIAN CURLEW.—The 1928 flight as seen from the New Jersey shore was more protracted than in 1927 and the single day maximum was lower. The reduced number actually seen compared with 1927 was probably without significance; the numbers passing the New Jersey shore probably maintain the increases of recent years. There was a considerable flight (166) seen from Manasquan Inlet July 18; a definite, steady but scattered flight was observed by guides over Barnegat Bay from August 1 to 7 with at least 150 on August 5; a full 100 were seen to pass Barnegat Marshes August 11. Numbers were observed at Brigantine feeding on the marshes (47 July 22 and 50 September 2). The species is rare on the Newark Meadows and evidently seldom wanders inland in this vicinity. Extreme dates were July 4 to September 16.

Squatarola squatarola. BLACK-BELLIED PLOVER.—There seem to have been two principal movements after a dribbling flight of July and

* This number would have been larger had the Newark Meadows been visited in this period.

early August. There was a definite increase in numbers in late August and early September, but probably the main 1928 southern flight occurred in early October. The species was very generally distributed though commonest inside the outer beaches at Barnegat Inlet, Beach Haven and neighboring flats, and the marshes south to Brigantine. The peak dates at the various localities follow:

	Peak	Date
Newark Meadows.....	40	Sept. 30
Manasquan Inlet.....	20	Oct. 14
Barnegat Inlet.....	200	Oct. 4
Beach Haven.....	150	Oct. 4
Brigantine.....	75	Aug. 26
Ludlom Beach.....	125	Oct. 14
	—	—
Average.....	102	Sept. 29

It is probable that the main flight was missed at Brigantine and the Absecon meadows. Extreme dates were June 27 (possibly north bound) to January 13.

Pluvialis dominica dominica. GOLDEN PLOVER.—The Newark Meadows still stand preëminent as a resting and feeding grounds for the Golden Plover in this region. Its regular occurrence there, and rarity elsewhere indicate not only favorable food conditions, but the probability that this stretch of marsh has been an established stopping point with the species for centuries. Hunters still live in Elizabeth who recall the days when "Goldenbacks" were gathered here by the bushel basket for market. The 1928 flight established a new high record following the bad slump in numbers a few years back. The records were from August 31 to October 28 with a maximum of 93 on September 30.

Oxyechus vociferus. KILLDEER.—The fact that the bird breeds here masks the migratory movement somewhat. However the totals and averages indicate that the main flight in 1928 occurred during September, the high count being a flock of 100 at Cape May Court House September 30. The peak on the Newark Meadows was 35 September 5; at Manasquan 18 on November 10; on Barnegat Marshes 10 on August 11; at Brigantine 30 on September 16. There is no uniformity here, but the frequent Newark Meadows trips clearly indicated the principal flight in September. Possibly the species wintered this year for Walsh and Johnson found birds at Brigantine February 10.

Charadrius semipalmatus. SEMIPALMATED PLOVER.—This bird did not reach the high records of recent years. The ten day counts indicate a considerable movement, after a scattered early July start, from July 21 forward, with a slight recession in mid-August, but some large counts from August 21 to September 11, followed by another drop and a slight increase October 1-10. The peaks by localities, with dates follow:

	Peak	Date
Newark Meadows.....	150	July 23
Manasquan Inlet.....	50	Sept. 15
Barnegat Inlet.....	300	Sept. 8
Beach Haven.....	225	Oct. 3
Brigantine.....	200	Aug. 5
Average.....	189	Aug. 31

Extreme dates July 1 to October 28.

Charadrius melodus. PIPING PLOVER.—Counts not indicative of migration since the bird breeds. At Manasquan Inlet, where there are no breeding pairs, high counts were August 18–19 (15 on 18th). At Seaside Park 20 on July 15; at Brigantine 15 on September 9. Latest date September 15.

Arenaria interpres morinella. RUDDY TURNSTONE.—I was rather surprised that the numbers seen were not larger. However, the species was generally distributed and present with unusual frequency on the Newark Meadows, where it was formerly very rare. But there were no high counts. The high records by sections with dates follow:

	Peak	Date
Newark Meadows.....	7	Sept. 5
Manasquan Inlet.....	12	Sept. 15
Barnegat Inlet.....	75	July 11.
Beach Haven.....	50	Aug. 5
Brigantine.....	45	Sept. 16

The averages per trip by three week and month periods in Table III indicate the principal movement to have been July 21 to August 31. The ten day total counts of individuals give a somewhat different picture:

June 29 = 0	Sept. 1-10 = 147
July 1-10 = 3	“ 11-20 = 103
“ 11-20 = 0	“ 21-30 = 2
“ 21-31 = 49	Oct. 1-10 = 7
Aug. 1-10 = 60	“ 11-20 = 7
“ 11-20 = 130	“ 21-31 = 1
“ 21-31 = 88	

Extreme dates were June 29 to October 24 and an unexpected single bird in good condition January 13.

Haematopus palliatus. OYSTERCATCHER.—While I have not included this bird in the tabulation earlier in this article, two individuals were reported seen near Barnegat Inlet late in the summer by Oscar T. Eayre of Barnegat, an exceptionally competent observer of water birds. He knows the birds as “Oyster-crackers.”

Elizabeth, N. J.