

# MOVEMENTS AND MORTALITY OF JUVENILE WHITE PELICANS FROM NORTH DAKOTA

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Nearly 8000 White Pelicans (*Pelecanus erythrorhynchos*) breed at Chase Lake National Wildlife Refuge, North Dakota (Lies and Behle, Condor 68:279-293, 1966; Sloan, Inl. Bird-Banding News 45:83-96, 1973), more than at any other locality in North America.

During 1972, we began banding young and studying juvenile mortality in order to define factors influencing the stability of the Chase Lake population. This paper reports on the movements and mortality of juvenile Chase Lake pelicans during their first fall migration.

## METHODS

Band recovery data were made available by the Bird Banding Laboratory, Patuxent, Maryland. Only nestlings banded at Chase Lake National Wildlife Refuge (NWR) were considered in this analysis. Since 1928, pelicans have been banded at the refuge by Dr. Norman F. Sloan and co-workers from Michigan Technological University, Dr. and Mrs. Gammell of Kenmare, North Dakota, and personnel of the Arrowwood NWR, North Dakota.

Information supplemental to band recovery data was gathered by dyeing 193 nestlings in 1972 and 1973. We applied yellow picric acid dye, in a saturated alcohol solution, to the upper wings of young having fully developed covert feathers. Marking the coverts proved best because they are easily visible when the birds are on the water or standing on shore. Requests for sighting information on these marked birds were sent to state and federal conservation agencies.

## LOCATION OF DISPERSAL

Recoveries of 306 pelicans banded as nestlings at the refuge were reported, out of approximately 10,000 young banded during the period 1928 to 1973 (Fig. 1). The period of juvenile dispersal extended from August through the following January. Generally, juveniles moved from central North Dakota (location of the Chase Lake Refuge) south to the Gulf Coast, and subsequently east to Florida and south into Mexico and Central America. A concentration of recoveries occurred in the area between central Minnesota and the Missouri River in North and South Dakota. From this region south to the Gulf Coast recoveries were more widely scattered in a 800 km wide corridor lying west of the Mississippi River. Northward movement during this dispersal period was not indicated in the band recoveries.

Along the Gulf Coast pelicans still tended to remain west of the Mississippi River. Only 15 bands were recovered east of the Mississippi, while 38 were

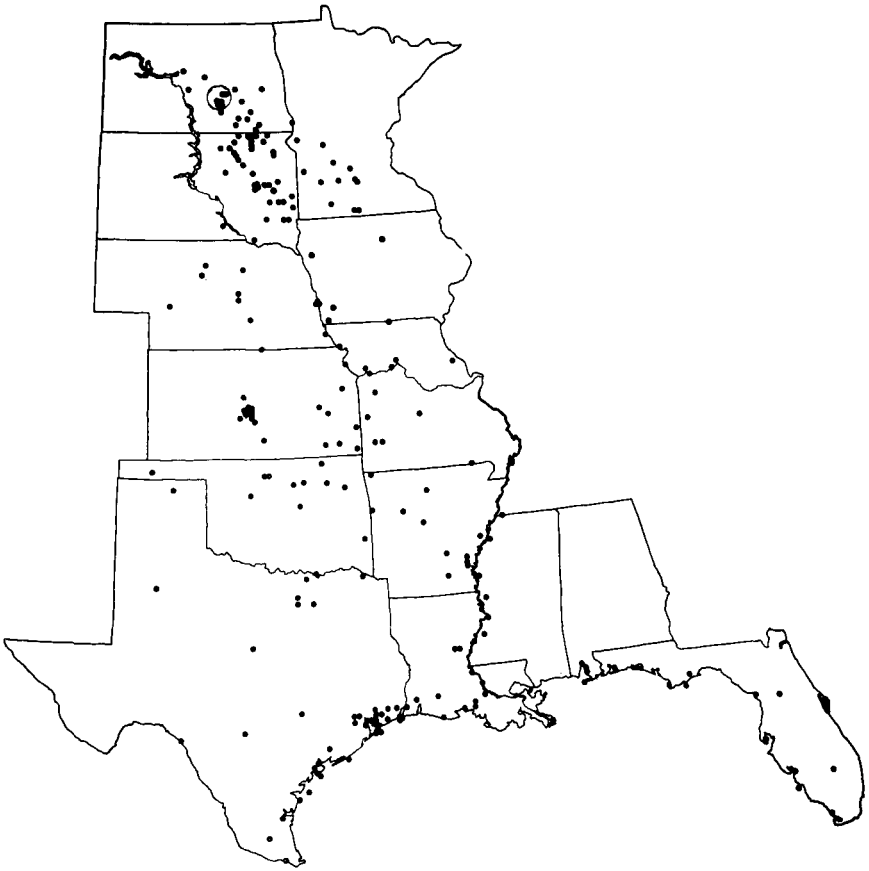


FIG. 1. Each dot represents the U.S. recovery location of a Chase Lake White Pelican during its first fall migration.

recovered along the Texas and Louisiana coasts and 78 were recovered from 15 Mexican states, Salvador, and Nicaragua. The Mexican recoveries were concentrated in the eastern Gulf Coast states of Tamaulipas and Vera Cruz.

#### TIMING OF DISPERSAL

The first color-marked young reported away from Chase Lake was on 27 August 1973, at Tewaukon NWR in southeastern North Dakota (Table 1). Reports in North and South Dakota occurred primarily in September; the latest for South Dakota was 18 October. On 21 September 1972, some color-marked young were still present at Chase Lake, but on the same date a marked bird was reported from Nebraska. Most healthy young leave North

TABLE 1

## OBSERVATIONS OF COLOR-MARKED WHITE PELICANS OUTSIDE CHASE LAKE NATIONAL WILDLIFE REFUGE IN 1972 AND 1973

Date	Number of Marked Young	Location	Estimated Number of White Pelicans in Area
27 Aug. '73	1	Tewaukin NWR, ND	500
24-31 Aug. '73	2	Tewaukin NWR, ND	100
30 Aug. '73	2	near Woodworth, ND	10
31 Aug. '73	10	near Woodworth, ND	30
6 Sept. '73	1	Squaw Creek NWR, MO	62
6 Sept. '73	1	Chokio Game Mgt. Area, MN	80
7 Sept. '73	1	Wessington Springs, SD	—
8 Sept. '73	5	Cheyenne Bottoms WMA <sup>1</sup> , KS	—
12 Sept. '73	1	Lake Andes NWR, SD	2500
12 Sept. '73	2	Lake Byron, Beadle Co., SD	375-400
15 Sept. '73	4	Cheyenne Bottoms WMA, KS	10,000-12,000
16 Sept. '73	1	Crescent Lake NWR, NB	100
17 Sept. '72	1	Brant Lake, Lake Co., SD	Flock
18 Sept. '73	3	Cheyenne Bottoms WMA, KS	6000-8000
19 Sept. '72	1	Philbrick Lake, Brown Co., NB	46
2-3 Oct. '73	2	Marion Res., near Hillsboro, KS	—
21-24 Sept. '72	1	Philbrick Lake, Brown Co., NB	1
21 Sept. '72	1	Long Lake, Brown Co., NB	Flock
24 Sept. '72	1	Cheyenne Bottoms WMA, KS	Many
26 Sept. '72	1	Cheyenne Bottoms WMA, KS	Flock
26 Sept. '72	2	Crystal Lake, near Plankinton, SD	500
26 Sept. '72	1	Chelsea, SD	1
4 Oct. '72	1	Blue Dog Lake, near Waubay, SD	—
6 Oct. '73	1	Harlan County Res., near Alma, NB	—
6 Oct. '72	1	Crescent Lake NWR, NB	7
8 Oct. '72	1	Harvard Marsh Lagoon, near Hastings, NB	1
9 Oct. '73	10	Rockefeller Refuge, LA	8000
10-18 Oct. '72	1	Lake Madison, near Madison, SD	1
11 Oct. '72	1	Pratt County Lake, KS	1
11 Oct. '72	1	Biloxi Bay, Ocean Springs, MS	30
12 Oct. '72	1	Quivera NWR, KS	1100
12 Oct. '72	1	Squaw Creek NWR, MO	60
15 Oct. '72	1	Cheyenne Bottoms WMA, KS	10
15 Oct. '72	1	Cheyenne Bottoms WMA, KS	400
16 Oct. '72	1	Quivera NWR, KS	1000
18 Oct. '72	1	Neosho WMA, KS	4
18 Oct. '72	1	Salt Plains NWR, OK	100
20 Oct. '72	1	Cheyenne Bottoms WMA, KS	—
20 Oct. '73	1	Fish Lake, Deuel Co., SD	1
22 Oct. '72	1	Cheyenne Bottoms WMA, KS	—

<sup>1</sup> WMA = Wildlife Management Area.

TABLE 1 (continued)

Date	Number of Marked Young	Location	Estimated Number of White Pelicans in Area
24 Oct. '72	1	Kirwin NWR, KS	1
24 Oct. '73	2	Rockefeller Refuge, LA	300-500
26 Oct. '72	1	Kirwin NWR, KS	18
27 Oct. '72	1	Quivera NWR, KS	200
9 Nov. '73	3	Ouachita River near Monroe, LA	100
16 Nov. '73	1	Sequoyah NWR, OK	48
20 Nov. '72	1	Salt Plains NWR, OK	17
16 Jan. '73	5	Laguna Atascosa and Santa Ana NWR's, TX	80

Dakota by mid-September. Sightings in Kansas occurred from 8 September through 22 October. Peak numbers of 10,000 to 12,000 birds were reported at Cheyenne Bottoms on 15 September 1973. By late October, the bulk of the population had left Kansas. The latest observation of a young bird north of the Gulf Coast occurred 20 November 1972, at Great Salt Plains Reservoir, Oklahoma.

The behavior of marked young was noted by several observers. They were usually observed in flocks ranging in size from four to 8000 birds. Juveniles occurring singly were frequently reported by observers as appearing sick. One observer thought a marked bird was ostracized by the flock, but another reported a marked young leading a flock of pelicans in "V" formation. No dyed pelicans were reported in the spring; the dye must have worn off or the coverts were molted over the winter.

#### MORTALITY

Shooting was the cause of death for 27.8% of banded birds reported (Table 2). This included 13.1% of all U.S. recoveries and 71.1% of Mexican and Central American recoveries. Kansas and Iowa were the only two states in the U.S. where more birds were reported as "shot" than "found dead." In North Dakota no birds were reported "shot." Birds "found dead" account for 46.7% of the total recoveries. Other causes of death frequently reported were injury, 4.6%; disease, 4.6%; and entanglement in fishing gear, traps, or snares, 2.0%.

#### CONCLUSIONS

During the fall migration, White Pelicans make major use of federal and state management areas. Tewaukon NWR in North Dakota, Lake Andes

TABLE 2

NATURE OF RECOVERIES BY STATE OF CHASE LAKE WHITE PELICANS Banded as NESTLINGS, 1928-1972

State	Found Dead	Shot	Caught Due to Injury	Caught Due to Disease	Caught In Trap, etc.	Flight Accident	Caught By Hand	Band or No. Only	Misc.	Total
Texas	26	6	2	2	3	1		2		42
S. Dakota	23	3	4	4			1		1	36
Vera Cruz	3	20					2	2		27
N. Dakota	16		1	2			3		1	23
Kansas	8	9				1	1	2	1	22
Missouri	9	2	3	1	1			1		17
Louisiana	10	1	1	1	1			1	1	16
Tamaulipas	2	11			1			2		16
Oklahoma	7	2				1	1	3		14
Minnesota	10	2	1							13
Florida	9			1				1		11
Nebraska	5	1	1				2	1	1	11
Arkansas	5	1						1	2	9
Chiapas		5					1			6
Iowa	1	3					2			6
Oaxaca		5								5
Alabama	2		1	1						4
S. L. Potosi	1	2						1		4
Campeche		3								3
Mississippi	3									3
Coahuila		1						1		2
Guerrero	1	1								2
Jalisco		1							1	2
Salvador	1	1								2
Tabasco		1		1						2
Tuxtilla		1						1		2
Chihuahua		1								1
Mexico		1								1
Michoacan								1		1
Nayarit		1								1
Nicaragua								1		1
Tennessee	1									1
Total	143	85	14	13	6	3	13	21	8	306
Percent	46.7	27.8	4.6	4.2	2.0	1.0	4.2	6.9	2.6	100

NWR in South Dakota, Quivera NWR, Cheyenne Bottoms Wildlife Management Area in Kansas, and Rockefeller Refuge in Louisiana have been concentration points in recent years for the Chase Lake flock. These areas provide feeding and loafing areas for a large percentage of the central North American population, currently estimated at 34,000 birds (Sloan, *Int. Bird-Banding News* 45:83-96, 1973).

Shooting is the largest single known cause of mortality. The White Pelican was included under the Migratory Bird Treaty in 1972; thus only recently has it been given protection. First-year Chase Lake pelicans move

to the Gulf Coast during the period from late August through most of November. They are exposed to fall waterfowl hunters during much of this movement. The refuge manager at LaCreek NWR reported that some pelicans are shot every year when mistaken for Snow Geese, *Chen caerulescens*. This problem will remain until hunters learn to distinguish the two species.

Shooting losses appear much greater in Mexico and Central America than in the U.S. Diem and Condon (Yellowstone Library and Museum Association Bulletin, 1967) suggested that persons shooting pelicans in Mexico turn in bands readily expecting a reward and that Mexican figures for birds shot may be a better indication of numbers of pelicans shot in the U.S. than band returns indicate. In the U.S. persons often report banded birds they have shot as found dead or not at all because they fear being penalized for shooting such a bird.

#### ACKNOWLEDGMENTS

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#### NEW LIFE MEMBER



Mr. Robert E. Ball is now a life member of the Wilson Ornithological Society. Mr. Ball is Secretary and Assistant Vice President of the First Federal Savings and Loan in Canton, Ohio. He has had a life long interest in bird study with special interest in migration and bird songs. He has published a number of popular articles including two in The Home Garden magazine. Mr. Ball is a life member of the AOU, a charter member of Hawk Mountain Sanctuary Association, a long time member of Cornell Laboratory of Ornithology, the Federation of Ontario Naturalists and the Federation of New York State Bird Clubs, Inc. Besides bird study, Mr. Ball is interested in photography and horticulture, and he has the unusual hobby of collecting wind-up toys.