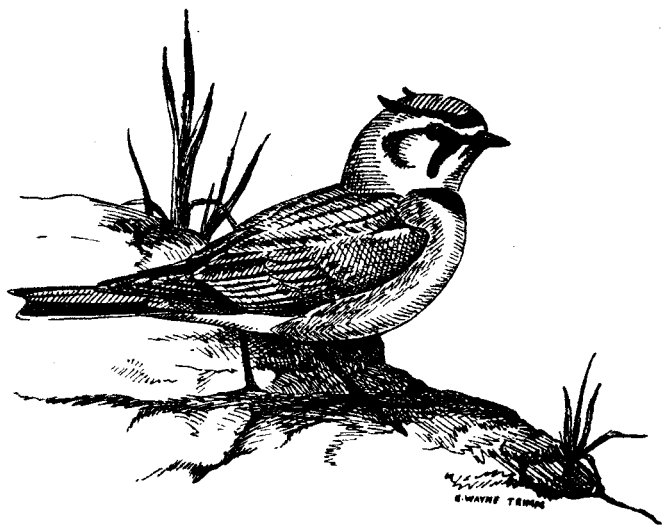
Kansas Ornithological Society

BULLETIN

PUBLISHED QUARTERLY

Vol. VI | June, 1955 | No. 2



Observations on Purple Martins

By Roger Olmstead

For six seasons, 1949-1954, Purple Martins, **Progne subis subis** Linnaeus, were studied at a colony in Lawrence, Kansas (Lat. 38°58'N; Long 95°14' W.). This paper presents the results of observations on the nesting cycle, populations and interspecific relationships with House Sparrows, **Passer domesticus domesticus** Linnaeus. Individual birds were identified by bands and by differences in plumage.

Spring Migration. Arrival dates of martins show a correlation with the mean temperature at the time of arrival. Above average temperature occurred during the second week of March, 1953 and the martins arrived on March 14. In 1950 and 1951, below normal temperatures prevailed throughout the second and third weeks of March and the birds did not appear until March 22, 1950 and March 26, 1951. On March 8, 1949 one pair of martins was seen. On that day, the mean temperature was 16°F. above normal. Thereafter, for about 2 weeks, below normal temperatures prevailed and no further martins arrived until March 26, 1949.

Territory and pair formation. The minimum territory of a male martin consists of one room and its ledge, although some males defend adjacent rooms or a separate roosting compartment. The male selects the nesting territory soon after arrival. Allen and Nice (1952) write, "As new birds arrive at the colonies they attempt to enter rooms that other males have taken for their own. The result is that battles are numerous and violent. . . . The fighting begins when the first males settle down in the colony and continues as long as new birds are arriving." The females seemingly choose a nesting site, thereby obtaining a mate.

Nesting Activities. Nest building begins three to four weeks after the birds arrive at the colony. In 1950, females gathered nesting material from April 16 to May 12. Martins prefer to gather nesting material from the open ground in places such as garden plots, alleyways and about incinerators. Many miscellaneous and heterogeneous items are found in their nests. The amount of material used varies from barely enough to cover the floor of the room to enough to fill the compartment level with the entrance. To the rear or to one side a depression is made in the material for the eggs. At least during incubation, the male covers the eggs with green leaves.

Two nests with well feathered young were found on June 21, 1952, indicating the date of egg-laying near May 8. Known dates of egg laying were from May 22 to June 21, 1954 and 1953 respectively. Most eggs were laid during the last ten days of May and the first week in June. While capturing and banding Martins at night on May 22, 1954, nine pairs were trapped in separate rooms. Of the females banded three had well developed brood patches. One nest contained a single egg.

The size of complete clutches varied from one to five eggs, the latter number being most common. Late clutches were smaller than those laid earlier in the season. There is but one brood per season. The females incubate both day and night. The role of the male is to defend the nesting site. Allen and Nice (op.cit.) state, "She spends some 70 percent of the daylight hours on the nest in normal weather, about 80 percent in colder weather. Incubation lasts 15-16 days."

Disposal of egg shells varies with individual birds, some half-shells and infertile eggs being found in a few nests each fall.

Either or both sexes may brood the nestlings, at night, although the female generally assumes this role.

Premigratory Sexual Behavior. After the young are fledged, adult males engaged in short decisive fights and sing short bursts of song from the ledge of the box. A few mated pairs linger near the nests, but females and young are in the minority. Olmstead (1954) reported Starlings, **Sturnus vulgaris** Linnaeus, adding feathers to the nest cavity in the autumn, and cites Morley (1943) as attributing survival value to such autumnal sexual displays.

Bandings. Seventy-six adults were banded; of these 17 were retrapped. Thirteen of these 17 were retrapped the first year, none the second year, one the third year and three the fourth year. Male No. 21-136709 returned to the same compartment in two successive years, 1953 and 1954. Birds recaptured after the season they were banded had obtained new mates each year, since both members of a mated pair have not been known to return in any one season. Male No. 48-195305 had three different mates in three seasons. Fifty-nine nestling Martins were banded with no recoveries or returns.

Interrelationships Between House Sparrows and Martins. As the breeding population of Martins fluctuated from year to year, the population of House Sparrows fluctuated with it. The correlation was quite marked as indicated by the figures in Table I.

		MARTINS			SPARROWS	
Year	Total Rooms Available to Colony	Pairs	Percent of total r'ms with eggs and young	Percent of total rooms controlled by	Pairs	Percent of total rooms occupied by
1949	16	8	50.0	81.3	3	18.7
1950	16	10	62.5	68.7	5	31.3
1951	24	14	58.2	79.2	5	20.8
1952	24	7	29.1	95.9	1	4.1
1953	24	12	50.0	87.5	3	12.5
1954	24	12	50.0	79.2	5	20.8
Average		10.5	50.0	81.8	3.7	18.2

Table I. Breeding Pairs and Percent of Total Rooms Controlled by Purple Martins and House Sparrows.

These data indicate that the population of these two competitive species tend to fluctuate together, not inversely as might be expected. When the populations were low, the Martins apparently extended their territories to include a larger percentage of the unoccupied boxes.

In 1951, the year of highest population, some Martins were actually expelled from the colony through territorial behavior of the group. On April 25, 1951 at 6:05 p.m., I counted 44 adults gathering to roost. Long after dark, movement of birds being pursued and evicted from compartments was detected. While the 14 pairs of Martins and 5 pairs of House Sparrows that year was the highest population observed in this box, a slightly higher percentage of rooms was occupied in a smaller box under observation.

Population and Reproductive Success. While comparative year-to-year data concerning reproductive success were not obtained, it was evident that reproductive success was poor when population was most dense. In 1950, the box was most nearly filled to capacity, 62.5 percent of the compartments had active Martin nests and 31.3 percent had House Sparrow nests. The one compartment without a nest was used by Martins as a roost. Coincident with this crowding, male House Sparrows usurped nests and destroyed eggs of Martins. In the last week in May, eight eggs were dropped off the ledges.

The following incident occurred during a period of inattentiveness with adult Martins absent from 5:14 p.m. to 5:20 p.m., May 29, 1950. Two pairs of House Sparrows alighted on the box roof. They apeared to be highly excited and/or heavily parasitized. At 5:17 p.m. a male House Sparrow, closely followed by another, carried a Martin egg to the ground. The first returned to the box and carried a second egg to a sidewalk 25 feet from the box. The egg was punctured but the liquid contents were not eaten.

Further evidence of crowding is found in the fact that on June 14, 1950 an adult female Martin with nestlings was trapped in a compartment occupied by a House Sparrow nest.

In 1951, when the second most dense population was present, over 50 percent of the nestlings perished in or near the box. Allen and Nice (Op. cit.) state, "Nestling success during three years at the George Reserve was poor, only 38.5 per cent of the eggs developing into fledged young."

Literature Cited

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NEWS

Kincaid Area Sunday, December 26, 1954 while birding we saw two **White-winged Crossbills** on one of the by-roads of Anderson County, 7 miles north and ½ mile east of Kincaid. They were feeding at the side of the road. We had a good clear look at them, both with glasses and they were so close we could watch them without glasses. They popped and cracked hard weed seeds and the fragments flew in all directions. The female appeared as pretty as the male, an olive blended with yellow, black wings with white wing bars. The male was a rosy red with some grey and with white wing bars. Mr. and Mrs. J. Wallace Caslin, Kincaid, Kansas, December 28, 1954.

Garden City Area A concentration of Bald Eagles has chosen some tall cottonwoods along the Arkansas River seven miles southeast of Garden City as a roost this year. On December 31, 1954, twenty-seven eagles were occupying it. Twenty-one were adult Bald Eagles, five were either immature balds or goldens. Only one golden could be identified with certainty. The large roost that reached 30 birds last year east of Lakin has been practically deserted. It produced but a single bird in our Christmas count. Lake McKinney, the probable attraction in that area, is dry. The new attraction in Finney County is probably the over-abundance of jackrabbits. Three Bald Eagles, two adults and one immature, fed on a road-killed jackrabbit about 200 yards south of our house on January 2. Two rough-legs and Marsh Hawk waitied their turn to feed after the eagles.

The mountain bluebirds that moved into this area earlier this fall have moved out and only singles and doubles have been seen for the past 2-3 weeks. The White-necked Ravens had a very successful year and can be found in large numbers in their usual wintering areas some fifteen miles north of Garden City. Dr. Tordoff, his crew and I found probably 200 or more ravens in this area on December 18th. Magpies too are abundant this year. One rancher near Garden City was getting considerable damage to freshly dehorned cattle and so has built a trap and is trapping them in large numbers. Marvin Schwilling, Garden City, Kansas.

Why not send the editor news of your summer birding now? The September issue will go to press soon.