

15, and tarsus 30 mm. The specimen is in the Cameron University collection (CUMZ 465).

The red quail was in a covey with 6 or 7 normally-colored Bobwhites in a sumac (*Rhus* sp.) thicket along a railroad right-of-way. Permian Red-bed soils here were deeply eroded, exposing numerous gypsum outcroppings, and covered by overgrazed midgrasses (primarily Little Bluestem, *Andropogon scoparius*), scattered mesquites (*Prosopis juliflora*), and redcedar (*Juniperus virginiana*). Plum (*Prunus* sp.) and sumac were common in low areas.

George Wint, long-time director of the state game farm, was unaware of any released red quail in Oklahoma during the past (pers. comm.), and the landowner likewise knew of no such releases on or near his property.

During the third week of November 1973 a covey of 6 Bobwhites containing 2 red birds appeared in the W. B. Wise yard in Norman (Cleveland Co.). They remained in the area throughout winter and were last seen about 15 April 1974. Color photos on file in the Cameron Museum clearly show their chestnut color, white crop patches, and black legs and bills.

Crosses with captive red Bobwhites near Thomasville, Georgia from 1934-1936 indicated that the red color is incompletely dominant and not sex-linked (Cole et al., Auk 66:28-35, 1949).

Buckle (Am. Field 107:444, 1927) described a pair of red quail collected near Grand Junction, Tennessee from a covey of 15 or 20 containing 7 red birds (Stoddard, The Bobwhite Quail, Chas. Scribner's Sons, N.Y., 1931:86), and Aldrich (Auk 65:493-508, 1946) summarized early red Bobwhite records in the U.S. In all cases, however, specimens were either of the northeastern race (*C. v. marilandicus*) or the eastern race (*C. v. mexicanus*); measurements and geographic location suggest that the Oklahoma birds are assignable to *C. v. taylori*, the Great Plains race from which erythrism has apparently not been reported (Aldrich, op. cit.).—JACK D. TYLER, Dept. of Biology, Cameron Univ., Lawton, OK 73501. Accepted 3 Aug. 1976.

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Asynchrony of hatching in Red-winged Blackbirds and survival of late and early hatching birds.—Lack (Ibis 89:302-352, 1947) argued that the asynchrony of hatching observed in various birds of prey could reduce the loss of nestlings during a food shortage. The last born young are put at a competitive disadvantage that insures their demise and leaves the remaining young with sufficient food for development. That these birds of prey begin incubation before the clutch is complete and that the last born young do starve except when food is plentiful support this hypothesis. Lack suggested that such a brood reduction after hatching would be primarily of value to species with long fledging periods that are not subject to high rates of nest predation. Runting and brood reduction have however been observed in numerous, small passerines including the Red-winged Blackbird (*Agelaius phoeniceus*) (Holcomb and Twiest, Bird-Banding 42:1-17, 1971), and so too incubation before the completion of the clutch (Holcomb, *Wilson Bull.* 87:450-460, 1974). Data I collected during the spring of 1976 from a population of marsh nesting Red-winged Blackbirds in the LaRue Swamp, Union County, Illinois further document the relationship between hatching rank and nestling survival.

TABLE 1

NESTLING MORTALITY OF FIRST-, SECOND-, AND THIRD-DAY HATCHLINGS IN 41 SUCCESSFUL RED-WINGED BLACKBIRD NESTS

Nestlings	Total	Starved	Vanished	Combined lost
First-day	77	0	2 (2.6%)	2 (2.6%)
Second-day	53	11 (20.8%)	5 (9.4%)	16 (30.2%)
Third-day	8	3 (37.5%)	1 (12.5%)	4 (50.0%)
Second- & third-day	61	14 (23.0%)	6 (9.8%)	20 (32.8%)
All	138	14 (10.1%)	8 (5.8%)	22 (15.9%)

Nests which I discovered before any of the eggs had hatched were visited daily. Hatchlings were marked for individual identification, and the nestlings were examined and weighed daily. If some but not all of the eggs hatched between daily visits, those that hatched in the first 24 h period were categorized as "first day hatchlings," those that hatched in the next 24 h were categorized as "second-day hatchlings" and any that hatched in the third 24 h were categorized as "third-day hatchlings." Nestlings which failed to fledge were placed into 2 categories: "starved" and "vanished." Starved individuals disappeared or were found dead in the nest after failing to gain 4 g in 2 days. They typically exhibited a continuous begging behavior when handled and were 2 or more g lighter than other chicks in the same nest. Nestlings that disappeared while maintaining a normal growth of 3 to 4 g per day were listed as vanished. Six of 8 vanished birds were smaller than their siblings.

Of nests examined daily for hatching, 65 were successful. In 41 of these, there were second-day hatchlings. In 8 there were also third-day hatchlings. The fate of the

TABLE 2

COMPARISON OF GROWTH OF FIRST- WITH SECOND- AND THIRD-DAY HATCHING NESTLINGS

Day	First-day hatchlings		Second- and third-day hatchlings		Probability
	Mean weight (g)	N	Mean weight (g)	N	
0	3.47	76	3.58	61	.5354
1	5.65	52	4.77	59	.0001*
2	9.05	75	7.29	57	.0001*
3	12.93	75	10.57	55	.0001*
4	17.02	74	14.32	50	.0001*
5	21.04	76	18.13	47	.0003*
6	25.89	67	21.89	44	.0001*
7	28.67	59	25.39	40	.008 *
8	30.70	60	27.09	39	.008 *
9	31.94	46	29.86	21	.2713

* Indicates significance at the $p = 0.05$ level as determined by the Mann-Whitney U-Test.

nestlings from these 41 nests, according to whether they were first-, second-, or third-day hatchlings is illustrated in Table 1. Of 77 first-day hatchlings, 2 vanished, a total loss of 2.6%. Of 61 second- and third-day hatchlings, 14 starved and 6 vanished for a total loss of 32.8%. This loss of nestlings occurred throughout the brooding period. A nestling with a few hours head start enjoys a size advantage over later hatching birds. Four birds that were discovered hatching and re-examined 5 h after hatching had gained 1.5 g from a hatching weight of 3.0 g. The mean weights of second- and third-day hatching nestlings were smaller than those of first-day hatching nestlings throughout the nestling period (Table 2), though by day 9 the weights of surviving first-, second-, and third-day nestlings were not significantly different.—CHARLES STREHL, *Dept. of Zoology, Univ. of North Carolina, Chapel Hill 27514. Accepted 8 Aug. 1977.*

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Weather-related mortality of blackbirds and Starlings in a Kentucky roosting congregation.—Associated with an over-night storm in Illinois, Odum and Pitelka (Auk 56:451–455, 1939) found approximately 4.0% mortality among blackbirds and Starlings (*Sturnus vulgaris*) in a roosting congregation containing 25,000 birds. The rate of mortality was much higher among Common Grackles (*Quiscalus quiscula*) and Brown-headed Cowbirds (*Molothrus ater*) than among Starlings. Also, MacReynolds (Auk 34:338–340, 1917) found 30 dead Common Grackles at a roosting site in Pennsylvania after a heavy snow storm, and Forbush (Birds of Massachusetts and other New England States, Part 2, Mass. Dept. Agr., Boston, Mass. 1927:409) found about 500 dead Starlings at a roosting site in Massachusetts after a winter storm. On the morning of 12 January 1977, I visited the roosting site near Russellville, Kentucky, of a congregation of blackbirds and Starlings and found 38 dead birds on top of the snow. In walking over the same route the following day, 26 more dead birds were found.

The dead birds were found in walking about 380 m through the roosting site each day, with the size of the sample limited by the difficulty in walking through the vines and underbrush. I was 2–5 m from the 64 birds when first spotting them, with an average of 3.6 m. Thus, I covered a strip about 7.2 m wide and in walking 380 m covered an area of about 0.3 ha. The roosting congregation covered about 1.6 ha, and a total of about 374 birds thus probably died on the 2 nights. The total congregation contained an estimated 45,000 birds, and the mortality rate for the 2 nights was approximately 0.8%.

The congregation contained about 0.8% Starlings, but 84.4% of the birds found dead were Starlings, with the rate of mortality 106 times the proportion in the congregation. About 0.9% of the congregation was Red-winged Blackbirds (*Agelaius phoeniceus*), with 6.3% of the birds found dead being of this species and the rate of mortality 7 times the proportion represented in the congregation. About 98% of the birds in the roosting congregation were Common Grackles, but only 9.4% of the dead birds were grackles. Thus, unlike the situation reported by Odum and Pitelka (op. cit.) where the rate of mortality was much higher among Common Grackles than Starlings, the rate of mortality I observed was about 9 times higher among Starlings than Common Grackles. Approximately 14,500 Common Grackles left the roosting site on a line headed southward in the evening of 8 January, suggesting that many of the birds responded to environmental stress by southward movement (Stewart, Bird-Banding, in press). The congregation contained about 0.3% Brown-headed Cowbirds, with none found dead.