# Nestling Diets of Red-Winged and Yellow-Headed Blackbirds on Playa Lakes of West Texas

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Red-winged blackbirds (*Agelaius phoeniceus*) and yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) are abundant breeding birds on the playa lakes of the Panhandle of Texas. Earlier studies have described the foods of nestling icterids in areas supporting wetlands undisturbed by agriculture (Willson 1966, Robertson 1973, Orians and Horn 1969), but comparable data are lacking from agricultural areas. Accordingly, we report the food habits of nestling red-winged and yellow-headed blackbirds on playa lakes encircled by agricultural lands and the amount of dietary overlap between the two species.

## STUDY AREAS AND METHODS

We examined nestling diets during the summers of 1979 and 1980 near Hart, Castro Co., Texas. A regional description of the area and the wildlife associated with playa lakes appears elsewhere (Bolen et al. 1979). Three playas were selected; each contained water in both years of the study. Playa 1 (23 ha) was largely overgrown (>70%) with cattails (*Typha* spp.) and with lesser amounts of bulrush (*Scirpus* spp.). This playa was the only study playa used for nesting by yellow-headed blackbirds. Playa 2 (15 ha) was surrounded by cornfields that extended to the shoreline. Shoreline vegetation was characterized by aster (*Aster* sp.), lamb's-quarters (*Chenopodium* sp.), smartweed (*Polygonum* sp.), dock (*Rumex* sp.), and willow (*Salix* sp.). Playa 3 (14 ha) supported a dense growth of dock and barnyard grass (*Echinochloa crusgalli*). Nestling diets of red-winged blackbirds were compared among the lakes; they did not differ significantly ($P>0.05$) and therefore were combined for treatment here. Nesting substrate and success are examined elsewhere (Fischer and Bolen in review). Emergent vegetation was present on each of the 3 playas, although only lake 1 was densely covered with this lifeform.

We collected food samples from nestlings between 2 and 8 days old. The pipe-cleaner ligature method of Orians (1966) was used to remove the food items. Sam-

ples were collected throughout the day and stored in 75% isopropyl alcohol; items in the samples were identified to order or family, counted, and measured volumetrically. We compared dietary overlap using Schoener's (1968) index of overlap: $D = 1 - \frac{1}{2} (x_i, 1 - y_i, 1$, where $x_i, 1$, and $y_i, 1$ are the frequencies of the $i^{th}$ type of food for species X (red-winged blackbird) and Y (yellow-headed blackbird). We compared the number and amount (volume) of major prey types consumed by the two species using Chi-square analysis (Snedecor and Cochran 1976).

## RESULTS AND DISCUSSION

We collected 121 items (N = 58 nestlings, 23 nests) from red-winged blackbirds, and 66 items (N = 32 nestlings, 14 nests) from yellow-headed blackbirds (Table 1). Each species fed its young a diversity of primarily terrestrial arthropods. Volumetrically, orthopterans (mostly adult short-horned grasshoppers) were the most important prey of each species, followed by lepidopterans, especially larvae. Aggregate volume of these two groups formed 76% and 68% of the diets of red-winged and yellow-headed blackbirds, respectively. Of the major taxa fed to nestling blackbirds, yellowheads fed their young significantly ($P<0.05$) more (numerically and volumetrically) dipterans, and significantly ($P<0.05$) less coleopterans than redwings.

Table 1: Diets of nestling red-wing (R-WB) and yellow-headed blackbirds (Y-HB)

| | R-WB | | Y-HB | |
|---|---|---|---|---|
| Taxon | Frequency % | Volume % | Frequency % | Volume % |
| Orthoptera | | | | |
| Acrididae | | | | |
| adult | 18 | 33 | 14 | 38 |
| nymph | 8 | 13 | 1 | 1 |
| Gryllidae | 1 | 3 | 0 | 0 |
| Lepidoptera | | | | |
| larvae | 13 | 20 | 14 | 28 |
| pupae | 1 | 2 | 1 | 0 |
| adult | 5 | 5 | 3 | 1 |
| Coleoptera | 17 | 17 | 9 | 4 |
| Diptera | 2 | 1 | 24 | 10 |
| Odonata | 3 | 2 | 6 | 4 |
| Other Insecta | 13 | 2 | 10 | 11 |
| Arachnida | 17 | 2 | 13 | 2 |
| Gastropoda | 2 | 0 | 5 | 1 |
| Total | 100 | 100 | 100 | 100 |
| Total number items collected | 121 | — | 66 | — |

Our results for red-winged blackbirds are similar to those reported from Utah (Fautin 1941) where orthopterans (grasshoppers) and coleopterans (terrestrial beetles) were the primary components, by frequency, of nestling diets. In Washington, redwings were fed a similar amount of lepidopterans (30% by frequency), fewer orthopterans (2%), and larger quantities of odonates (37%) (Orians and Horn 1969). Marsh-nesting redwings in Connecticut likewise consumed many odonates (37% of diet by frequency) (Robertson 1973).

Diets of yellow-headed blackbird nestlings on the playas, as measured by volume, differed substantially from that reported elsewhere. Orthopterans formed only 1% (Orians and Horn 1969) or 2% (Willson 1966) of the diet in Washington. In these studies, the most important prey fed to nestling yellowheads was odonates (56%, Orians and Horn 1969; 64%, Willson 1966) whereas they were a relatively unimportant prey (4% volume) on the playas.

The greater volume and frequency of primarily terrestrial prey fed to nestlings on the playa lakes probably resulted from adults foraging in the surrounding croplands. Each day throughout the study we observed adult blackbirds of both species flying back and forth from the cropland to the playas to feed their young. Likewise, Weins (1965), Snelling (1968), and Robertson (1973) reported that redwings obtained the bulk of their foods in the habitats bordering nesting marshes.

The nestling diets of each species overlapped broadly with index values of 0.68 for total amounts (volume) of prey and 0.62 for the frequency of prey. These values are somewhat lower than that reported by Orians and Horn (1969) for redwings and yellowheads in Washington (0.79).

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