

Wilson Bull., 98(3), 1986, pp. 485–486

Drinking by Northern Bobwhites in Texas.—In the Southeast (Stoddard 1931) and western Oklahoma (Davison 1949), Northern Bobwhites (*Colinus virginianus*) apparently obtain sufficient moisture from preformed water and dew and rarely drink free water. In Texas, however, 468 bobwhites have been observed drinking at an earthen reservoir between 7:00 and 9:00 on a single day during drought (Lehmann 1984). We studied the drinking behavior of bobwhites at two sites in southern Texas to clarify questions about their use of surface water.

Study sites and methods.—Data were collected in Texas on the Welder Wildlife Refuge, San Patricio County, and the Encino Division of the King Ranch, Brooks County, from April 1984 through March 1985. At each site, a blind was established within 10 m of an earthen reservoir. Observation periods were from 0.5 h before sunrise to 11:00, 11:01 to 15:00, and 15:01 to 0.5 h after sunset. Each reservoir was observed twice monthly during morning and evening and once or twice monthly during midday. Observation periods lasted 1–6 h. When bobwhites visited a reservoir, we recorded their number and used a stopwatch to determine time spent in sight of water and drinking. Observations totaled 157 h at Welder and 166 h at Encino.

Results.—No bobwhites were observed at the Welder site. At the Encino site, a total of 27 quail visits was recorded on 14 occasions during 142 h of observation from 4 May–2 October. Birds spent 179 ± 28 sec [SE] ($N = 14$) near water. Drinking was recorded only during July (9), August (1), and October (2). Quail that drank visited water singly or in pairs during July through August; a covey of 9 drank in October. Drinking time averaged 58 ± 8 sec ($N = 12$). Twenty-one visits were between 1.5–2.5 h after sunrise and 6 were between 4–1.5 h before sunset.

Discussion.—Our failure to observe birds at the Welder site may have occurred because quail density was lower there (10 birds/40 ha vs 50–80 birds/40 ha at Encino [unpubl. data]), because drinking by gallinaceous birds in arid areas is associated with low availability of succulent foods (Elder 1956, Crawford and Bolen 1973, Degen et al. 1984), or both. During the time bobwhites were seen drinking, rainfall was 54 cm at Welder and 22 cm at Encino; respective mean maximum temperatures were 33.0 and 33.8°C. Presumably, dew and foods rich in preformed water were available in greater quantities at Welder than at Encino.

Different environments may also explain the difference in drinking behavior between bobwhites in the Southeast (Stoddard 1931) and Texas (Lehmann 1984, this study). Whereas annual precipitation exceeds 100 cm in much southeastern quail range, less than 60 cm falls about 36% of the time in southwestern quail range (Norwine and Bingham 1985). During the warmer months, particularly in drought years, preformed water is largely unavailable. Oxidative water does not appear to meet the needs of birds in drier environments (Bartholomew and Cade 1963). Our data indicate that when preformed water is limited and higher temperatures elevate the need for evaporative cooling, bobwhites in the warmer portions of Texas apparently drink surface water to supplement oxidative water.

Acknowledgments.—We thank the Welder Wildlife Foundation and the King Ranch, Inc., for granting access to the study sites. J. H. Rappole, J. A. Hovis, D. L. Drawe, and N. E. Koerth reviewed the manuscript.

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Wilson Bull., 98(3), 1986, pp. 486-488

Severe aggression between female Black-headed Grosbeaks.—On 27 May 1985 at 11:00, while conducting a study of the breeding biology of a color-banded population of Black-headed Grosbeaks (*Pheucticus melanocephalus*) in the Sandia Mountains in central New Mexico, I encountered two color-marked female grosbeaks engaged in a vigorous struggle. The birds were on the ground with their bills locked. At least one of the combatants continually emitted a loud distress call. As I watched, the bird on top (GRAO) forced its opponent (AORO) into a small stream but did not submerge the lower bird's head. GRAO had a nest with two eggs, one and 2 days from hatching, about 20 m from where the struggle took place. I did not know the breeding status of AORO, but I had seen it frequently about 300 m from the encounter. I observed the struggling birds for about 5 min before they moved into an area of very thick ground cover and disappeared from view.

The next day, AORO was captured in a trap 50 m from the location of the fight. The bird had several lacerations about its bill and throat and was bleeding from the mouth. It weighed 46.0 g, 5.0 g less than it had 2 weeks before. Despite its injuries, the bird flew off when released. On the night of 28-29 May a dog retrieved the body of AORO, which I believe almost certainly had died from injuries sustained in the struggle a day and a half earlier. An autopsy of the body revealed no injury that a dog might inflict (e.g., tooth marks or broken bones) but did show blood in the trachea and damage to the neck region coinciding with the wounds that were present when the bird was captured alive on the previous day. GRAO was trapped 3 days after the struggle and showed no signs of the battle. It was incubating eggs 3 h after the fight and both young in its nest fledged.

Intraspecific struggles resulting in death are rare even among male passerines (Lack 1956, Brown 1977, and references therein); however, Gowaty (1981, 1985) recently reported that female Eastern Bluebirds (*Sialia sialis*) frequently engage in vigorous clashes and occasionally kill one another. She hypothesized that fights between female bluebirds center around nest cavities, which are critical to reproduction but are limited in supply. Cavity owners may