

Foundation Summer Fellowship to the University of Minnesota Biological Station.—SCOTT L. COLLINS, *Dept. Botany and Microbiology, Univ. Oklahoma, Norman, Oklahoma 73019. Accepted 8 Nov. 1980.*

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**Use of artificial perches on burned and unburned tallgrass prairie.**—Kendeigh (Condor 43:165–175, 1941) stated that territorial male birds may lack sufficient perches in grasslands from which to conduct display activities. I investigated the importance of artificial perch availability to tallgrass prairie birds, from 7 June–31 July 1979, at the Konza Prairie Research Natural Area. This area of native bluestem (*Andropogon*) prairie is located in the extreme south-central portion of Riley and northern portion of Geary counties, Kansas.

Two areas on annually burned prairie and two on unburned prairie were selected for study. Artificial perches were added to one annually burned prairie (35 ha) and one unburned prairie (25 ha) with the other annually burned prairie (12 ha) and unburned prairie (39 ha) used as controls. The experimental sites were located adjacent to each other. Control sites were separated from experimental sites and from each other.

Perches were  $2 \times 2$  cm wooden stakes, 1.5 and 2.0 m above ground level. Twenty-three perches were placed on the 35-ha annually burned prairie and 17 perches on the 25-ha unburned prairie, giving approximately equal perch density (0.67 perch/ha) in each area. The perches were placed in 15 m<sup>2</sup> subplots in each experimental area using randomly generated numbers. Use of perches in burned and unburned prairie and perch height preference were recorded during 36 spot check censuses. Spot check censuses were performed by approaching each perch within 100 m and noting the species and activity of each bird.

A vegetation density analysis on each plot was made using randomly selected 5 m<sup>2</sup> areas, for which standing height and percent cover by life form were recorded. For each area, 50% of the total area was analyzed.

Vegetation analyses indicated that the following plants were dominant. Grasses included: big bluestem (*Andropogon gerardi*), little bluestem (*A. scoparius*), windmillgrass (*Chloris verticillata*), switchgrass (*Panicum virgatum*) and side-oats grama (*Bouteloua curtipendula*). Dominant forbes were lead plant (*Amorpha canescens*), prairie wild indigo (*Baptisia leucophaea*), Baldwin ironweed (*Vernonia baldwini*), wild alfalfa (*Medicago lupulina*), fingeleaf ruellia (*Ruellia humilis*), tick-trefoil (*Desmodium illinoense*), butterfly milkweed (*Asclepias tuberosa*) and narrow-leaved milkweed (*A. stenophylla*). Woody vegetation consisted of the prairie rose (*Rosa arkansana*) and buckbrush (*Symphoricarpos abiculatus*). The mean standing height of vegetation for burned and unburned prairie was 27.66 cm and 45.50 cm, respectively.

Eleven of 23 perches (48%) were used on the burned area and 5 of 17 perches (29%) on the unburned area. This difference was not significant using the Chi-square test for equal proportions ( $\chi^2 = 1.18$ ,  $df = 1$ ,  $P = 0.17$ ). Lack of significance may have been caused by small sample size and similarity in proportions of bird density/perch use in each area.

Species observed using perches in the burned area, in order of decreasing perch use were Dickcissel (*Spiza americana*), Eastern Meadowlark (*Sturnella magna*), Red-winged Blackbird (*Agelaius phoeniceus*), Brown-headed Cowbird (*Molothrus ater*), Common Nighthawk (*Chordeiles minor*), Grasshopper Sparrow (*Ammodramus savannarum*), Eastern Kingbird (*Tyrannus tyrannus*) and Upland Sandpiper (*Bartramia longicauda*). The following birds were found to use perches in the unburned area in order of decreasing perch use: Eastern Meadowlark, Grasshopper Sparrow, Dickcissel and Brown-headed Cowbird. Birds using

perches engaged in territorial song, establishment of territorial boundaries, call notes, preening and resting. Birds seemed to prefer natural perches to artificial perches.

No difference in average male density between areas with and without perches in unburned prairie (31 ♂♂/ha in both) was observed. In the burned prairie, however, area without perches had a density twice as great as the area with perches (56 ♂♂/ha vs 27 ♂♂/ha). This difference was believed to be due to large numbers of Dickcissels and Red-winged Blackbirds attracted to a stream in the area. When the data with all birds were tested, differences in density between the two areas were significant (Wilcoxon signed ranks test,  $P = 0.008$ ); however, when Dickcissels and Red-winged Blackbirds were deleted from the analyses, the difference was not significant ( $P = 0.11$ ) indicating that these two species had measurable impacts on the observed densities.

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**Juvenile Peregrine Falcon swoops on Roseate Spoonbills.**—On 26 September 1979, I observed an immature Peregrine Falcon (*Falco peregrinus*) swoop down on two Roseate Spoonbills (*Ajaia ajaja*) which were foraging about a meter apart in an impoundment on the Merritt Island National Wildlife Refuge, Brevard Co., Florida. My watch began at the impoundment at 08:00, and the falcon was noted in a dead white mangrove (*Laguncularia racemosa*) at 09:20. At 10:04 the falcon left the tree and headed directly toward the spoonbills, which were 20 m away, in a gliding-flapping flight. As the falcon approached the spoonbills, they stopped feeding, stood erect, faced the falcon and flashed their wings. The wing flash consisted of opening the wings to the wrist and allowing the remainder of the wing to droop with the primaries near the body. After the wing flashes, the falcon turned abruptly and landed in a nearby mangrove tree. Approximately 10 min later, the foraging spoonbills were 10 m apart when the falcon swooped down on one bird. The reaction of the spoonbill was the same. Although both spoonbills continued to feed for an additional 10 min before departing, they continuously watched the falcon which remained in the area for about an hour.

The Roseate Spoonbill is a relatively large bird to be taken by a Peregrine Falcon, and this episode may have been a "mock attack" or play. However, it is possible the swoops were an attempt by the falcon to flush the spoonbills so it could take one. George (Raptor Res. 13:88–90, 1979) observed an immature Peregrine Falcon strike a Snow Goose (*Chen caerulescens*) and Cade (Univ. Calif. Publ. Zool. 63:151–267, 1961) found a Peregrine could take a 1400 g Black Brant (*Branta bernicla*) and a 1300 g Canvasback (*Aythya valisineria*). Palmer (Handbook of North American Birds, Vol. 1, Yale Univ. Press, New Haven, Connecticut, 1962) states the Roseate Spoonbill weighs up to 1600 g, and one immature bird weighed 1169 g. Because no other flight intention movement was observed, and the posture of the spoonbills was different from a high intensity threat display (body axis parallel to the ground, wings held above the body and neck outstretched [pers. obs.]), it is possible the wing flashes gave the falcon information on the size of the birds or may have served to increase their effective size. Cade (1961) observed a similar behavior in a molting Canada Goose to ward off a Peregrine Falcon.

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