

**Courtship Display and Copulation Observed
in a Pair of Philippine Hanging Parrots
(*Loriculus philippensis philippensis*)**

ELISHA W. BURR¹

*Araneta University Foundation, Institute of Veterinary Medicine,
Victoneta Park 3140, Malabon, Philippines*

While making a survey of the psittacine birds in the Philippine Islands, I observed mating by the Philippine Hanging Parrot (*Loriculus philippensis philippensis*). I observed a single pair of parrots at 1720 on 12 January 1978, while I was hiking through the Zambales Mountains of Luzon. The birds were flying about a wild fig tree approximately 24 m tall, feeding about 12 m from the ground as they moved from branch to branch. At 1820 the parrots hung upside down from a branch and started mutually preening each other, apparently after completing courtship feeding.

Following the mutual preening, the pair remained upside down, and the male began a courtsey by moving back and forth across the perch. The male was on the left side, was more aggressive, and displayed his feathers in a courtship manner (fantailed and ruffled appearance). He then moved his tail to the left side and placed his feet behind that of the female on the perch. Several times the male lifted his left or right wing, outstretching it to cover the female as if the wings were a type of canopy. The female fluffed her feathers and moved closer to the male. With a few jerking movements the male was able to come into contact with the female, and copulation took place. Following copulation, the female emitted a loud and harsh squeak. The whole act lasted approximately 2 min while both parrots were upside down. After copulation was completed, both parrots shook their feathers as if they had just finished dust bathing and flew off to another branch, where they remained huddled together in an upright position. Both birds appeared content and unwilling to continue courtship feeding as before mating took place. The pair of Philippine Hanging Parrots did not join other birds of the same species in nearby trees but appeared to be preparing for sleep. The birds remained in an upright position and did not turn upside down to sleep as most hanging parrots normally do. Shortly thereafter, it was too dark to view the birds any longer.

Buckley (1968, *Ibis* 110: 147) states that the first visible sign of any pairing activity is courtship feeding, which seems to be a major factor in maintaining the pair bond. A female that accepts food from a male will also allow him to sit or hang close to her; eventually, the male will chase all other birds away from the female, and the two will remain near and follow each other much of the time (*ibid.*). Adult hanging parrots occasionally rest in an upright position but usually only after preening.

Received 10 June 1980, accepted 28 January 1981.

¹ Present address: 5 Larkey Road, Oxford, Connecticut 06483 USA.

Autumn Selection of Breeding Location by Field Sparrows

RAYMOND J. ADAMS, JR.¹ AND RICHARD BREWER²

¹ *Kalamazoo Nature Center, Kalamazoo, Michigan 49001 USA, and*

² *Department of Biology, Western Michigan University, Kalamazoo, Michigan 49008 USA*

Young migratory birds of temperate regions might select habitat and site during explorations more or less continuous with territorial establishment in the spring. This seems to have been an assumption of many earlier discussions (e.g. Hildén 1965, Wiens 1969). Alternatively, young birds may search for suitable habitat and sites in the late summer or early autumn, after they have become independent (Brewer and Harrison 1975). Many older birds, of course, tend to return to areas where they nested the previous year (Nice 1937, Haartman 1949). Direct evidence of the actions of the young is scarce. Here, we give indirect evidence supporting the idea that breeding locations of Field Sparrows (*Spizella pusilla*) are selected prior to their autumn departure.

Large-scale, routine banding has been conducted at the Kalamazoo Nature Center (KNC) in the autumn (mid-August to early November) of each year since 1970. A small amount of spring and winter banding is practiced. In the autumns of 1970–1979, 475 Field Sparrows were banded. Mist nets were

TABLE 1. Recaptures of Field Sparrows banded as HY birds at the Kalamazoo Nature Center, Kalamazoo County, Michigan.

| Band number | Date banded | Date recaptured |
|-------------|-------------------|--|
| 1260-43343 | 8 September 1972 | 23 May 1974 |
| 1350-48899 | 4 October 1974 | 8 and 20 October 1975, 28 October 1978 |
| 1420-66786 | 3 October 1975 | 26 May 1976 |
| 1420-91403 | 13 October 1975 | 15 October 1977 |
| 27-26899 | 23 September 1978 | 15 August 1980 |

placed in marsh, crop fields, and mature floodplain forest. Field Sparrows breed on the KNC grounds in overgrown pasture lands and abandoned quarries but are not abundant; probably most of the birds caught were migrants.

We examined the data (through autumn 1980) for recaptures in subsequent years of KNC-banded Field Sparrows for evidence bearing on the time at which the breeding location is fixed. Our reasoning was as follows:

(1) The implication of a spring or autumn return is that the bird's breeding location is in the vicinity, because the incidence of migrants retrapped in passage is almost nil (Nisbet 1969, Leberman and Clench 1977).

(2) If the selection of breeding location occurs in the spring, recaptures in later years of hatching-year (HY) birds caught in autumn (i.e. before they have selected their breeding location) should be near zero.

(3) Contrariwise, if the selection of a breeding location occurs in late summer or autumn, prior to departure for the south, returns in later years of HY birds would be expected.

Given the accidental nature of returns in subsequent years under a hypothesis of spring selection of breeding location, any non-negligible rate of return is a disproof of that hypothesis and corroboration of the hypothesis of late summer–autumn selection.

There is one condition that is an exception to this argument. For birds of limited dispersal, the young of which tend to nest no more than a few hundred meters from their birthplace, later-year returns of autumn-banded HY birds could be consistent with either fall or spring habitat selection. We chose the Field Sparrow for this analysis because Walkinshaw (1978) showed that such limited dispersal does not characterize the Field Sparrow. From 1930–1948 Walkinshaw banded 514 nestling Field Sparrows on a 40-ha tract in Calhoun County, Michigan. Of these, only one was found in later years (a male, it bred on the tract the 2 succeeding yr). Field Sparrows seemingly undergo a summer or autumn period of dispersal of footlooseness, such as Weise and Meyer (1979) documented for the Black-capped Chickadee (*Parus atricapillus*).

Nine Field Sparrows banded in the autumn at KNC have been retrapped there in later years. Five were HY birds (Table 1), as shown by incomplete skull ossification (Wood n.d.). Of the remaining 4, 1 was listed as after-hatching year (AHY), and 3 were listed as age unknown, because heavy head molt precluded certain determination. Most unknown birds are probably AHY (because in skulling it is harder to be sure that unpneumatized areas are absent than that they are present). Of the total of 475 Field Sparrows banded, 362 were HY, 71 were AHY, and 42 were of unknown age. Consequently, the rate of return of autumn-banded young in this sample is more than 1%.

The idea that the breeding location in Field Sparrows is selected prior to fall migration is, accordingly, supported. We doubt, however, that habitat or site is immutably determined in autumn. Areas may become unsuitable between autumn and spring, so some degree of flexibility would be evolutionarily advantageous. As a working hypothesis, we suggest that birds that return to find their selected site no longer suitable move on to other sites that they explored the preceding autumn. It seems logical that the ability of species to use secondary sites should vary with the year-to-year stability of their characteristic habitat. Most of the foregoing comments refer to activities of the males; however, the time at which females select habitat and locus is also of interest, particularly in the context of sexual selection (e.g. Searcy 1979).

We thank David Cowan and Sydney A. Gauthreaux, Jr., for useful comments on the manuscript.

LITERATURE CITED

- BREWER, R., & K. L. HARRISON. 1975. The time of habitat selection by birds. *Ibis* 117: 521–522.
 HAARTMAN, L. VON. 1949. Der Trauerfliegenschnapper, I. Ortstreue und Rassenbildung. *Acta Zool. Fennica* 56: 1–104.

- HILDÉN, O. 1965. Habitat selection in birds: a review. *Ann. Zool. Fennica* 2: 53-75.
- LEBERMAN, R. C., & M. H. CLENCH. 1977. Bird-banding at Powdermill, 1976. Carnegie Museum, Powdermill Nature Reserve, Research Report 37: 1-20.
- NICE, M. M. 1937. Studies in the life history of the Song Sparrow. I. *Trans. Linnean Soc. New York* 4: 1-246.
- NISBET, I. C. T. 1969. Returns of transients: results of an inquiry. *EBBA News* 32: 269-274.
- SEARCY, W. A. 1979. Female choice of mates: a general model for birds and its application to Red-winged Blackbirds. *Amer. Natur.* 114: 77-100.
- WALKINSHAW, L. H. 1978. Life history of the eastern Field Sparrow in Calhoun County, Michigan. Ann Arbor, Michigan, University Microfilms.
- WEISE, C. M., & J. R. MEYER. 1979. Juvenile dispersal and development of site-fidelity in the Black-capped Chickadee. *Auk* 96: 40-55.
- WIENS, J. A. 1969. An approach to the study of ecological relationships among grassland birds. *Ornithol. Monogr.* 8: 1-93.
- WOOD, M. No date. A bird-bander's guide to determination of age and sex of selected species. University Park, Pennsylvania, Pennsylvania State Univ. College of Agriculture.

Received 6 October 1980, accepted 4 February 1981.

A Probable Record of Intraspecific Egg Dumping for Sandhill Cranes

CARROLL D. LITTLEFIELD

U.S. Fish and Wildlife Service, Box 113, Burns, Oregon 97720 USA

On 19 April 1978 a three-egg clutch of a Sandhill Crane (*Grus canadensis tabida*) was discovered by Lois Edford, an Oregon State University graduate student. Three-egg clutches have been rarely reported for the subspecies (e.g. two of 737 nests examined on Malheur National Wildlife Refuge). The location was approximately 8 km north of Frenchglen, Harney County, Oregon, on Malheur National Wildlife Refuge.

An examination of the nest on 21 April suggested that all three eggs had probably not been laid by the same female. Unfortunately, the eggs had been destroyed by a coyote (*Canis latrans*) before my second visit to the nest. Two of the depredated eggs were located, but the third was missing and had apparently been removed by the coyote. One egg was completely different from the other. Coloration and size of eggs laid by individual female cranes are usually distinctive (pers. obs.). The pair (Pair 102) that received the dumped egg has been observed for 5 yr, and the nest was within their territory. This female's eggs are light brown, small, and covered with small reddish spots. One of the remaining eggs was identical to those she had laid in the past. It measured 95.0 × 57.1 mm. The other egg was longer and measured 102.3 × 61.2 mm. Its coloration was dull olive, with the larger end almost completely covered with large reddish spots. This was the typical egg coloration and size of those laid by the neighboring female (Pair 20).

Pair 102 has the unusual behavior of both birds leaving their nest to feed simultaneously. In 1978, they nested 45 m farther west and within view of Pair 20. Previously, Pair 102's nest had been concealed from Pair 20 by a dense stand of hardstem bulrush (*Scirpus acutus*). Apparently, Pair 102 left their nest unattended for a time, allowing the neighboring female to deposit the extra egg.

By 7 May, Pair 20 had constructed their own nest and laid two eggs (both similar to the dumped egg) about 75 m south of Pair 102's original nest. Pair 102 renested unsuccessfully about 75 m northeast of their first attempt. The eggs were light brown, covered with small reddish spots. Pair 20 successfully hatched one egg; the other was infertile.

Females of certain species of waterfowl are well known for depositing eggs into the nests of others of their own species. However, this is the only record I know of for similar behavior in Sandhill Cranes.

I thank Larry Ditto, Brad Ehlers, and Steve Thompson for commenting on an early draft of this manuscript. I also thank Ruth Warneke for typing assistance.

Received 22 August 1980, accepted 12 November 1980.