(1975) reported a very high rate of cowbird parasitism. He found 117 of 321 nests (36.4%) were parasitized. Rates of parasitism from other studies include 1.2% in Tennessee (Coffey 1963), 11.7% in Michigan (Middleton and Johnston 1956) and 14% in Michigan (Cuthbert 1962). The low rate of cowbird parasitism probably contributed to the high rate of reproductive success in my study.

The nestling period ranged from 13–16 days ($\bar{x}$ = 15.2 ± 0.5). Bent (1942) and Coffey (1963) reported fledging at 15–16 days and 15 days, respectively. At a few nests, the return of fledglings made it difficult to determine the length of the nestling period at these nests.

Thirty-nine of the 110 nestlings were second broods, which were always more successful than first broods (Table 1). No significant difference existed between second brood success ($\bar{x}$ = 84.4% ± 1.35) and first brood success ($\bar{x}$ = 77.3% ± 4.96). There was no significant difference in the average number of fledglings per successful nest ($\bar{x}$ = 3.4 ± 0.43) in second broods and ($\bar{x}$ = 3.0 ± 0.04) in first broods.

Annual reproductive success remained essentially constant even though several reproductive parameters varied (Table 2). Chi-square analysis indicated there was no significant difference in yearly reproductive success.

Nest mortality was attributable to infertile eggs, embryonic death, nest abandonment and nest mites. Overall, 22.1% of the eggs laid failed because of all mortality factors combined. Seven nests were abandoned, of which harassment by trout fishermen probably caused 3. The causes of the other 4 abandonments are unknown.

Nest mites observed in 9 nests probably contributed to the deaths of 35 young phoebes. Coffey (1963) reported a low incidence of nest mites, with 3 of 78 nests containing mites. Although the possibility of young being pushed or knocked from the nest seemed high because of the shallow construction, only at 1 site did it appear that nestlings had been pushed out.

During incubation, adult phoebes were passive when I investigated the nest. The incubating adult usually flew from the nest and perched on a nearby branch. Upon my departure, the adult would usually return within 2 min. With young in the nest, the adults became very aggressive when I approached and the brooding adult would give a loud chip call. The mate would usually arrive upon hearing the call note and both adults would fly rapidly among perches continuing to call.—CRAIG A. FAANES, *U.S. Fish and Wildlife Service, Minneapolis, Minnesota 55111.* (Present address: *U.S. Fish and Wildlife Service, Northern Prairie Wildlife Research Center, Jamestown, North Dakota 58401.*) *Accepted 28 Mar. 1979.*

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Variation in promiscuity among Red-winged Blackbirds.—Promiscuous matings by female Red-winged Blackbirds (*Agelaius phoeniceus*) have been observed by a few investigators (Allen, Proc. Linn. Soc. N.Y. 24–25:43–128, 1914; Beer and Tibbitts, Flicker 22:61–77, 1950; Simmers, M.S. thesis, Univ. Mass., Amherst, Massachusetts, 1961). Bray et al. (Wilson Bull. 87:187–195, 1975) were the first to apply experimental method to the phenomenon by vasectomizing males and using fertile clutches produced on their territories as evidence of promiscuity. They found fertile clutches on marshes in which 100% of the males were sterilized, suggesting that some breeding takes place outside the polygynous "harem."

In 1976, we applied the vasectomy technique at 9 study sites near Amherst, Massachusetts, as part of a study of red-wing promiscuity. Each site contained the territories of a sterilized

TABLE 1
FERTILITY OF CLUTCHES ON TERRITORIES OF VASECTOMIZED MALE RED-WINGS IN 1976 AND 1977

Classification	Phase I[1]			Phase II[2]			Totals	
	1976	1977	total	1976	1977	total	1976	1977
Number of territorial males	2	6	8	7	2	9	9	8
Number of clutches:								
Infertile	0	2	2	7	0	7	7	2
Fertile	4	12	16	4	1	5	8	13
Percent fertile	100	86	89	36	100	42	53	87
Total percent fertile							70	

[1] Males sterilized before arrival of nesting females.
[2] Males sterilized after female began nesting.

male and an adjacent unmarked control male. Within 1 week of establishing territories and before the arrival of breeding females, males were decoy trapped and vasectomized. All sites where males were treated before arrival of females were classified as phase I. In mid-season, after onset of breeding, males were decoy trapped, vasectomized and all nests on their territories were destroyed; these sites were classified as phase II. Preliminary results (see Roberts and Kennelly, Trans. 1977 Northeast Fish and Wildl. Conf., Boston, Massachusetts, 1977:99) supported the conclusions of Bray et al. (1975). All clutches on phase I sites and 36% of phase II clutches were fertile (Table 1).

Behavioral observations were made during 7 h on each of the 9 treated/control territorial pairs, including frequency of territorial singing and display, frequency of pursuit of females or aggressive encounters with other males, and number of territory boundary crossings per female per observation period. These observations failed to show any significant difference between sterilized males and adjacent control males.

Further research in 1977 allowed us to refine and expand our findings. Seven of 9 males sterilized the previous year and 1 sham-operated male returned to their territories, increasing our confidence that the surgical procedure was benign. Oviducts from 13 females of known breeding history were sampled and examined histologically for sperm in utero-vaginal "glands." Proportion of glands containing sperm peaked at 40% on the second day of egg-laying, but declined to 0 by the first day of incubation. Although Bray et al. (1975) reported red-wing sperm persisting in the female tract for longer periods, our data favor promiscuity, rather than sperm retention as the probable cause for fertile clutches.

Clutch fertility over 2 years showed a curious variation (Table 1), with clutch fertility highest in phase I clutches. The sample is too small for valid statistical analysis, and it is difficult at this point to determine whether the disparity arises from the effects of seasonality, year differences or male fertility. It is unlikely that females "remembered" sterile males from year to year, since in our marked sample of females, only 25% were even seen in the study area the following year. A decline in overall male reproductive capacity rather than rate of promiscuous mating could account for declining fertility. However, Payne (Univ. Calif. Publ. Zool. 90:1–115, 1969) found that males maintain a constant fertility throughout the breeding season.

Phase II clutches tended to be initiated later in the nesting season than phase I clutches.

This leads us to propose the following hypothesis as a basis for future research: promiscuity declines as the season advances. This could be true if, for example, food was increasingly available at the nest-site as the season progressed, reducing daily female travel distances and hence the opportunities for mating with other males.

This additional evidence for promiscuity argues against the use of male chemosterilants in blackbird population control, an idea explored by several authors (Davis, Trans. N. Am. Wildl. Nat. Res. Conf. 26:160–167, 1961; Vandenbergh and Davis, J. Wildl. Manage. 26:366–371, 1962; Messersmith, Pest Control 38:35, 40–41, 1971). On a theoretical level, the existence of promiscuity and its possible relationship to an environmental variable raises some questions regarding the reproductive strategies of females. How does optimal mate choice of a female change over the season? Is it a function of change in male behavior, female behavior or some ecological factor such as territory quality? Further research may elucidate some of these options in the behavioral repertoire of this much studied species.

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Notes on parasitism by Bronzed Cowbirds in El Salvador.— Bronzed Cowbirds (*Molothrus aeneus*) are abundant in El Salvador (Dickey and van Rossem, Field Mus. Nat. Hist., Zool. Series 23, 1938; pers. obs.), but there is a notable lack of records of nest parasitism by this species. None was found by van Rossem (loc. cit.) during his sojourn there; his only reference to possible hosts was an undocumented comment that the natives claim the 3 common orioles—Altamira (*Icterus gularis*), Streak-backed (*I. sclateri*) and Spot-breasted (*I. pectoralis*)—are the species most often victimized. During 11 years in El Salvador we have only 3 verified instances of nest parasitism, all within a month's time, and all close together in the narrow canyon of Los Chorros, La Libertad. We have other observations that strongly suggest nest parasitism of other species.

Orange-billed Nightingale-Thrush (*Catharus aurantiirostris*).—A nest found 30 July 1971, at Los Chorros, contained 3 thrush eggs and 1 cowbird egg. On 7 August the nest contained 1 thrush nestling, 1 cowbird nestling and 1 thrush egg. On 10 August the last thrush egg had disappeared. Initially the nestlings closely resembled each other; both were covered with mouse-gray down and were nearly equal in size. However, the cowbird was slightly larger, could stretch its neck a few mm higher and its redder mouth lining contrasted more vividly with its gape.

On 12 August the nest was watched all day from a blind at 6 m; the nestlings received approximately an equal number of feedings. Commonly, after a feeding, a nestling of either species excreted a fecal sac which an adult seized and drew from the cloaca. Occasionally, a sac burst and the adults thoroughly removed the excrement from the nest. Of the few instances when we identified the nestling involved, we noted that 3 burst sacs came from the cowbird and intact sacs were excreted by the thrush.

During the 13 h of continuous observation, and other short observational periods, the nestlings did not vocalize, or if they did, their voices were not audible at 6 m. Both nestlings remained low in the nest throughout the nestling period, crouching when closely approached and, if touched, contracting their bodies.