AN ATTEMPT TO ESTABLISH A COLONY OF YELLOW-HEADED BLACKBIRDS*

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THE classic example of the re-establishment of a bird that had been extirpated from part of its native range is Harvie-Brown's (1879) record of the Capercaillie *(Tetrao urogallus)* in Scotland. Other attempts to re-establish species of birds have not been attended by outstanding success. To our knowledge no such effort has been undertaken with any of the passeriform birds.

This paper describes an attempt to establish (or re-establish) a passerine species, the Yellow-headed Blackbird *(Xanthocephalus xanthocephalus)*, in a cattail marsh along University Bay of Lake Mendota at Madison, Wisconsin. The vegetation of this marsh is emergent, or nearly so, depending on water levels. It contains a breeding colony of about 30 pairs of Red-winged Blackbirds *(Agelaius phoeniceus)*. Because of the apparently ideal nesting conditions and because it is within the breeding range of the species, there is reason to believe that Yellow-headed Blackbirds once nested here. Two marshes about five miles away have breeding colonies of Yellow-headed Blackbirds today. A. W. Schorger (pers. comm., 1960) observed Yellow-headed Blackbirds on the University Bay marsh in the springs of 1917 and 1922. The original marsh covered about 180 acres and was drained in 1914. The present study area of nine acres is only that portion bordering the bay proper, since the remaining acreage, isolated by a road, has been cultivated for about 45 years. Since the University Bay marsh has been an important bird-observation site, we had hoped to re-establish a colony of Yellow-headed Blackbirds.

Our plan was to transfer eggs and young of the Yellow-heads[1] into the nests of the Lake Mendota Redwing colony. The Redwings could then act as foster parents and raise the young. In subsequent years, some of these young would return to the home marsh and become the nucleus for the new population.

The source of birds for this transplanting was a colony located on a 130-acre pond, known locally as Dushack's Marsh, about 15 miles northeast of University Bay, and two miles north of the city of Sun

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[1] To simplify the text and to aid in reading, the abbreviations for the Yellow-headed Blackbird and the Red-winged Blackbird will be Yellow-heads and Redwings, respectively.

TABLE 1

SUMMARY OF TRANSFER BETWEEN RED-WINGED AND YELLOW-HEADED BLACKBIRD NESTS

	1947	*1948*	*1949*	*Total*
Red-winged Blackbird				
No. eggs removed	23	23	22	68
No. young removed	29	32	49	110
Yellow-headed Blackbird				
No. eggs transplanted	18	13	9	40
No. young transplanted	33	38	52	123

Prairie. The shores of this shallow pond had two distinct cattail areas, each supporting a population of breeding Yellow-headed Blackbirds. The larger was used as a special Yellow-head study area, while the smaller served as a source of eggs and young for transplanting.

The nesting cycle of the Redwing is normally about one week in advance of that for the Yellow-head in the Dane County region. Our data show 10 June as the mean hatching date for Yellow-heads. Beer and Tibbitts (1950), working with the Redwing in this area, show 2 June as the mean hatching date.

Any proposed transfer would therefore have to take place in the relatively short periods of overlap in the respective nesting cycles. At those times the Redwing is usually feeding young while the Yellow-head is incubating. Phenological advance or retardation of the nesting cycles affects only the time of possible transfer. Other events, particularly those that destroy Redwing nests and thereby promote renesting, tend to synchronize the renesting of the Redwing with the first nesting attempts of the Yellow-head. We thought that it might be necessary to destroy first clutches of the Redwing in order to cause renesting and thus insure an adequate number of host nests. This procedure could have been done but, as it turned out, was unnecessary.

The nesting of the Yellow-head was closely watched as part of an ecological study on the larger colony at Dushack's Marsh. As soon as the first young began to appear, the University Bay Redwing colony was examined, and usable nests were marked for future exploitation.

On days during which the transfers were made, Redwing nests were located in the morning, and the Yellow-head eggs and/or young substituted in the late afternoon. The inactivity in the marsh late in the day, and night brooding of young, we felt, helped in the acceptance of transplanted young.

TABLE 2

Comparative Success of Various Types of Transfer between Nests (3 Years)

Redwings removed	Eggs 40	Eggs 28	Young 110
Yellow-heads transferred	Eggs 40	Young 23	Young 100
No. fledging	10 (26%)	25 (76%)	79 (80%)

In the three-year project (1947–1949) 68 eggs and 110 young of the Redwing were destroyed. In their places we transferred 40 Yellow-head eggs and 123 young (Table 1). Involved in the transfer were 60 nests in which the yearly success was as follows:

	1947	*1948*	*1949*	*Total*
Nests	18	19	23	60
No. successful	15	11	18	44 (73%)

Not all transfers were kind for kind, nor was the stage of the nesting cycle comparable in each case. Often it was a matter of taking any available host situation.

When we switched Yellow-head eggs for Redwing eggs, the success was poor. This was due largely to desertion by Redwing females, particularly those that had recently begun to incubate. Only 19 Yellow-head eggs hatched out of 40 that were transferred, and only 10 fledged young. Of the 13 nests in which egg-for-egg transfers were made, we had precise periods of incubation by the Redwing female in six cases. These averaged 4.5 days. To what extent this short incubation responsibility may have contributed to nest desertion, or how it altered parental behavior, we do not know. Unfortunately, we did not record most of the ages of Redwing embryos destroyed at time of transfer.

Smith (1950) introduced 43 Redwing eggs into 24 Yellow-head nests as part of a behavioral study. Of this number, 26 per cent fledged. This is the same percentage that fledged in our study where the introductions were Yellow-head eggs to Redwing nests (Table 2).

The success of Yellow-head young transferred to Redwing nests from which eggs were removed was 76 per cent (Table 2). As a possible means of insuring acceptance of the young in this premature hatching, the Redwing eggs were broken, the contents destroyed, and the egg shells placed with the Yellow-head young in the Redwing nest. This was done to simulate conditions at hatching.

By far the largest transfer was made on a young-for-young basis, 100 Yellow-heads for 110 Redwings. This type of transfer was also

the most successful, with only 20 per cent failing to fledge. In most cases of young-for-young transfers, the ages of the respective young were the same. There were several instances, however, when the Redwing young removed were twice the age of the Yellow-head transplants. There was no nest failure attributable to this age difference. In one instance, a pair of Yellow-head young that were reared by Redwings for a period of six days were about to fledge from a nest when two more Yellow-heads (age five to six days) were added to the nest. These last two birds were reared in spite of the fledging of the older two birds a week in advance of the late-arriving nest mates.

A single one-day-old Yellow-head was added to a nest containing two Redwing young of the same age. All three birds were reared and were equally healthy when they fledged.

In all, 100 young were fledged from 43 nests in the three-year period for an average of 2.3 young per nest. The average number of young per nest in a Red-winged Blackbird study (Beer and Tibbitts, 1950) in this area was 3.0 (170 young from 57 nests).

There were 16 nest failures: seven were destroyed by unknown causes; six were deserted after transfer; two were broken up by a rain storm; and one was lost to predation.

Our human cowbird-like activities also included transfers to other passerines more as a matter of expedience than experimental design. Two Catbird *(Dumetella carolinensis)* nests adjacent to the marsh in a willow thicket acted as host sites. In both cases young Catbirds were removed and Yellow-head young transferred. One pair deserted, and the other reared and fledged three blackbird young. A Robin *(Turdus migratorius)* nest with a single young was given two Yellow-head young, which were successfully reared and fledged.

The tolerance of Yellow-heads for foster young is not so pronounced as in the species mentioned above. Smith *(op. cit.)* reports that Yellow-heads will hatch Western Meadowlark *(Sturnella neglecta)* eggs but will either kill the young or fail to feed them.

The young Yellow-heads were often examined carefully by the foster parents after the transfer. The older the young, the longer it took for acceptance, although several hours was all the time generally required. In one case of desertion by the Red-winged Blackbird, it appeared as though the young had been accepted in the late afternoon following the transfer, but they were found dead in the nest several days later. The extreme difference in voice between the two species did not seem to affect the Redwing adults. The cries of hungry Yellow-head young would drown out all other bird vocalization on the marsh in the summer of 1949, when the fledging success was particularly good.

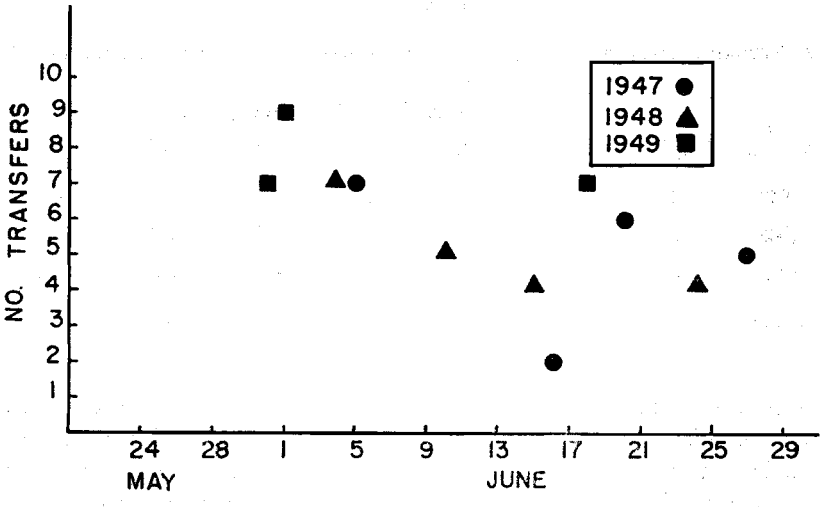

Figure 1. Time span for transfer operations during three-year period.

The time span for the 12 transfer operations involving 60 nests during the three-year period is shown in Figure 1. The earliest transfers were made in 1949, and the latest in 1947. The time of nesting-cycle overlap was shortest in 1948 (16 days).

The young Yellow-heads stayed on the marsh until late summer, when they moved daily to feeding areas with the Redwings, and eventually left the marsh at the same time as the resident birds.

Results and Discussion

The techniques and mechanics of transfer of eggs and young between these two blackbirds were worked out so that the number of young fledged by the foster parents could be regarded as sufficient to consider the operation successful. This aspect, however, was only the means to an end. The end itself, namely the return of the Yellow-heads to the home marsh where they would establish themselves, was not successful.

After the experiment was concluded, several Yellow-heads returned to the marsh in four different years, but no breeding resulted.

In the spring of 1950 a male Yellow-head, apparently a young bird from the appearance of its plumage, set up a territory in the center of the University Bay marsh. He defended this area with great vigor and ardently courted all the Redwing females that came near. There were no Yellow-head females on the marsh, but he futilely attempted to

TABLE 3

A RETURN SCHEDULE FOR THE POTENTIAL YELLOW-HEAD BREEDING POPULATION

Year fledged	*No. fledging*	*Expected No. of returning fledglings*					
		1948	*1949*	*1950*	*1951*	*1952*	*1953*
1947	40	10	5	2.5	1.75	0.88	—
1948	23	—	6	3	1.5	0.75	—
1949	37	—	—	9	4.5	2.25	1.12
Totals	100	10	11	16	8	4	1

acquire a mate and continued to defend his territory for about a month, and then disappeared. Other male Yellow-heads stayed for shorter periods of time. All remained longer than what might be construed as migratory resting. If any females returned, they were not recognized or did not remain long in the absence of a Yellow-head male. In any event, we have no records of a female Yellow-head having returned to the University Bay marsh.

There are other factors that mitigate against a substantial return of young to a home marsh. Birds migrating north to breed for the first time do not "pin point" to their rearing sites as do those birds that have previously nested in a given marsh. This partial failure of first-year breeders to return to the area in which they were reared has been pointed out by Hickey (1952) using data on the Robin and Nice's (1937) data on the Song Sparrow, *Melospiza melodia.*

At the outset of the experiment we made the following assumptions: (1) that 50 per cent of the young fledged would be alive to return north the following spring; (2) that 50 per cent of these would not return to the home marsh; and (3) that an annual mortality rate on adults would be 50 per cent. At the time these assumptions seemed realistic. There were few research data available that could be of assistance.

The hoped-for results of the transfers were calculated (Table 3), using the above assumptions but not including recruitment by the breeding birds. The peak year for returning fledglings was to be 1950 when 16 were expected. Only one was observed. One added hope was that if the assumptions for our original releases were too bold, recruitment might bolster the breeding nucleus. The failure of this breeding population to materialize can be attributed largely, we feel, to the lack of "pin point homing" on the return from the wintering grounds. Our studies with other passerines not then complete indicate that the percentage returning to the home marsh is likely to be between

5 and 10 for first-year birds. Also, the estimated survival of the first-year birds may have been too high, particularly since there is still no way that mortality from fledging to 1 November or 1 January can be determined. These difficulties alone could, and probably did, account for the inadequate response of our experimental birds.

From our observations on the larger study area of Dushack's Marsh, we were reasonably sure, although we had no birds individually marked, that immature males do not breed. All females, however, appeared to be nesting. The first-year breeding by females and the lack of breeding by first-year males were also guessed by Linsdale (1938). Two of the four males that returned to the experimental marsh were in immature plumage. One male, noted earlier, defended its territory as well as any mature Yellow-head could have done. It may be that immature males in established colonies are prevented from normal breeding by aggressive mature males, thus creating bands of nonterritorial immature males and fostering polygamy among the females.

Attempts to establish a breeding population of wild birds by transferring eggs or young into the nests of another wild species have been reported by Blockley (1939), who put White Stork *(Ciconia ciconia)* eggs from Holland in nests of Gray Herons *(Ardea cinerea)* in England; by Schüz (1939) in Germany, who put eggs of the Common Gull *(Larus canus)* into nests of the Blackheaded Gull *(Larus ridibundus)* located about 500 kilometers from the Common Gull colony; and by Allen and Hickey (1940), who transferred Snowy Egret *(Leucophoyx thula)* eggs, shipped from Florida, into nests of Black-crowned Night Herons *(Nycticorax nycticorax)* in a colony on Long Island, New York.

In the case of the gull-egg transfer, there was a short period when it appeared that a breeding population might become established. All attempts including our effort with blackbirds must be considered as failures.

Summary

An attempt was made to establish a colony of Yellow-headed Blackbirds on a marsh at Madison, Wisconsin. Eggs and young from a colony of Yellow-headed Blackbirds 15 miles distant were transferred to active nests of Red-winged Blackbirds on the Madison marsh. Redwings readily accepted Yellow-head young even when the Redwing nest was in the early stages of incubation. Yellow-head eggs were not readily accepted as a substitute for Redwing eggs or young (47 per cent successful transfers). In three consecutive years the effort resulted in the fledging of 100 Yellow-headed Blackbirds. During the

five-year period following the transfers, four males returned to the marsh in which they were reared. Only one bird was observed in any one year. No Yellow-headed Blackbirds were subsequently known to have bred on the marsh.

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