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The Kentucky Warbler

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No. 4



Immature Red-tailed Hawk

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THE KENTUCKY WARBLER

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OUR COVER

Lawrence D. Smith's photograph of an immature Red-tailed Hawk, reproduced on the cover of this issue, was taken at Otter Creek Park, opposite the Fort Knox Reservation.

BIRDS OF FORT KNOX

JOSEPH E. CROFT AND AUSTIN R. LAWRENCE

By virtue of occupational happenstance, the authors have had some occasion to study the birdlife of the Fort Knox Military Reservation, with the results hereinafter reported. One of the largest Army posts in the United States, Fort Knox lies within 40 miles of Louisville; however, few outsiders visit the post's hills and ranges on an uninvited basis, and very little has been previously written specifically regarding the birds of this large and comparatively wild tract.

Ornithological Work

Doubtless the first ornithological account from the area now, in part, included within the bounds of Fort Knox is Audubon's famous narrative (1831:320-321) of a three-day flight of Passenger Pigeons observed in his journey from Hardinsburg to Louisville in the autumn of 1813. After this account, deservedly a classic of American ornithology, there follows a great gap in the avifaunal chronicle.

In the modern period there have been but a few notes related to our subject. Lovell and Kirkpatrick (1946) described a winter roost, composed mainly of Robins and Starlings, on the reservation; Kirkpatrick (1946) recorded a winter Great Blue Heron; Stamm (1952) recorded a pair of summering Blue-winged Warblers; and Clagett (1955) described a late-summer roost composed of Purple Martins and blackbirds.

There have, however, been a number of publications on the birds of Otter Creek Park, a 2500-acre Meade County tract adjacent to the reservation. The most important of these is Lovell's excellent study (1949) of the breeding birds, based primarily on observations made throughout the summer of 1945 and containing a great many nest records. The Otter Creek Christmas Counts, taken annually since 1942, with the exception of 1947, have regularly included birds observed on nearby portions of the reservation; since 1960 a small part of the reservation has been more systematically covered on these counts, with productive results.

The work on which the present paper is based may be grouped as: (1) occasional trips, mostly in winter, from late 1963 through early 1966, by Croft; (2) regular trips, mostly in spring and summer, from September 1965 through early 1967, by Lawrence; (3) frequent trips in spring, and occasional trips thereafter, from April through September 1967, by both authors; (4) scattered observations from October 1967 through May 1969, by Croft. Most of our observations were made in the period between September 1965 and June 1968, when one or both of us were stationed on the post.

Description of the Area

Fort Knox comprises slightly over 110,000 acres—about 173 square miles—occupying large portions of Hardin, Meade, and Bullitt Counties, plus a small section of Jefferson County. The first land for the installation was acquired by the old War Department in 1918 and designated as Camp Knox. After the First World War, the camp was used mainly for summer training of National Guardsmen and Reservists. Following a period (1925-

28) as a national forest, the post was designated a permanent garrison in 1932, and the following year the First Cavalry, newly mechanized, was brought to Fort Knox, beginning the evolution that has today made Fort Knox the largest armored warfare center in the Western world.

A few statistics may give some idea of the scope of military activities on the post. The usual population of the post today is somewhat over 60,000 persons, including military dependents and civilian workers, making Fort Knox in effect the third largest "city" in Kentucky. As one of the Army's largest and most diversified training centers, the post has recently been receiving some 100,000 trainees per year. Over the past several years, helicopter warfare training has become an increasingly important activity. More than 200 miles of improved roads serve parts of the post, and there are 19 miles of Army railroad. The number of tanks on post is in the neighborhood of 750, and there are some 60 firing ranges, for everything from small arms to 105 mm. tank guns and various types of artillery weapons. The designated range impact area covers some 60,000 acres, roughly circular in form, with an average "diameter" of about 9 miles. The impact area, in northeastern Hardin County and western Bullitt County, comprises the roughest and wildest portion of the reservation.

In elevation Fort Knox ranges from 400 feet, in parts of the Salt River bottoms, to 1000 feet, at Snow Mountain, site of an Air Force radar station. With some notable exceptions, most of the western portion, including the garrison area, is of rolling terrain; the remainder, largely comprising the impact area, is rugged knob country divided by the valleys of Salt River, which winds 16 miles through the post, and Rolling Fork, traversing 11 miles. Hays Flats, a low-lying area of scrubby growth perhaps 5000 acres in extent, lies in the southwestern portion of the impact area.

In addition to Salt River and Rolling Fork, many smaller streams run through the post. The more important of these are Otter Creek, running for 8 miles through the far western section, Mill Creek and Cedar Creek, flowing, respectively, some 15 and 7 miles through the central portion, and Cedar Point Branch, flowing 5 miles in the northeastern section. The Ohio River runs along the far northwestern edge for about 2½ miles. Tiny ponds are quite numerous in some western sections. Several artificial lakes have been developed, with a maximum size of approximately 25 acres, the most interesting being several in the Salt River flats. Other physical aspects of the area, especially concerning the vegetation, are brought out in the general discussion of the birdlife, found at the end of this paper.

It seems appropriate also to mention a few other forms of wildlife found on the reservation. The deer herd, descended from releases made in 1953 and 1956, now numbers 10,000 or more, resulting in recent years in serious problems of overbrowsing and stunted growth; organized hunts, involving several thousand hunters annually, are now held on several weekends each fall, with a current annual harvest of over 3000 deer. In 1966 numerous persons reported seeing a black bear, often with one or two cubs, and convincing reports have since continued, coming from widely separated areas. The origin of these bears is unknown.

There are two other central Kentucky areas which, despite some obvious differences from Fort Knox, lend themselves to comparison with this area. Bernheim Forest, a 10,000-acre tract hardly five miles east of the Fort Knox boundary in Bullitt County, is comprised of knobland terrain like much of the reservation; as a forest preserve, maintained by the Isaac W. Bernheim Foundation, it is naturally free from the types of disturbance

characteristic of Knox. Bernheim Forest is regularly visited by Louisville birders, and Monroe (1965) has prepared a useful account of the area's birdlife. A second area, Mammoth Cave National Park, of some 50,000 acres lying roughly 50 miles to the south of Fort Knox, is similarly composed of rough hills, largely forested. Wilson has published a long series of detailed observations from the park, most recently summarized in Wilson (1968). Despite their differences, these three areas are comparable in being the only large tracts of central Kentucky land essentially preserved from current urban and agricultural uses. Consequently they are of particular interest as comparatively "wild" areas preserving, albeit in more or less diluted form, many faunal features not evident in the surrounding countryside.

Species Recorded

We recorded a total of 170 species in our study of the area. Six of these were recorded just beyond the reservation boundaries, and are so designated in the following lists. A few waterbirds recorded over that portion of the Ohio River contiguous to the reservation are included without special note. These lists are of course to be regarded only as preliminary; we are very much aware that a number of species not listed undoubtedly occur regularly. Our list is particularly limited with regard to waterbirds; a good many species not listed probably occur occasionally. Due to the nature of the terrain, however, waterbirds are not a conspicuous feature of the post's birdlife, and we believe our lists are representative ones. Future observations may result in changes in the indicated seasonal status of a few species.

Notes on Selected Species

RED-TAILED HAWK. *Buteo jamaicensis*. The rugged, relatively unfrequented nature of much of the area makes Fort Knox an unusually good place for hawks, compared to most areas in central Kentucky, and the Red-tail is the most evident, occurring throughout the year. A good deal of plumage variation in migrant and winter birds is apparent. An especially interesting individual, observed November 5, 1967, along the Ohio River just downstream from the reservation, had a tail that showed almost pure white from above, with a very pale subterminal band; from below the tail appeared a very pale reddish. This bird, observed in bright sunlight for several minutes, was slightly streaked on the chest, with heavy dark streakings on the belly. The wing linings were whitish, the head rather pale. From above and, less noticeably, from below the bird showed dirty white at the base of the primaries, indicating that it was not yet fully mature. A typical adult Red-tail was soaring nearby. Several other migrant hawks, as well as waterfowl, were noted this day, apparently newly arrived; it would be interesting to know the area of origin of this particular bird.

On March 11, 1967, a buteonine hawk observed soaring over Hays Flats was the size and shape of a Red-tailed Hawk, but had a dark body and dark wing linings; the tail was mottled whitish above, with a slight, poorly defined dark subterminal band. These markings suggest identification as a Harlan's Hawk (*B. harlani*), in a plumage close to that illustrated by Peterson (1947:plate 17) for this confusing, highly variable

Permanent Residents

**Turkey Vulture
 Black Vulture
 Cooper's Hawk
 Red-tailed Hawk
 Red-shouldered Hawk
 Sparrow Hawk
 Bobwhite
 Turkey
 Killdeer
 Mourning Dove
 Great Horned Owl
 Barred Owl
 Belted Kingfisher
 Yellow-shafted Flicker
 Pileated Woodpecker
 Red-bellied Woodpecker
 Red-headed Woodpecker
 Hairy Woodpecker
 Downy Woodpecker
 **Eastern Phoebe
 Horned Lark
 Blue Jay
 Common Crow
 Carolina Chickadee
 Tufted Titmouse
 White-breasted Nuthatch
 Carolina Wren
 Mockingbird
 **Brown Thrasher
 Robin
 Eastern Bluebird
 *Loggerhead Shrike
 Starling
 House Sparrow
 Eastern Meadowlark
 Red-winged Blackbird
 Common Grackle
 Brown-headed Cowbird
 Cardinal
 Common Goldfinch
 Rufous-sided Towhee
 Field Sparrow
 Song Sparrow

Summer Residents

***Great Blue Heron
 Green Heron
 Yellow-crowned Night Heron
 ***Wood Duck
 Broad-winged Hawk
 American Woodcock
 Yellow-billed Cuckoo
 Chuck-will's-widow
 Whip-poor-will
 Common Nighthawk
 Chimney Swift
 Ruby-throated Hummingbird
 Eastern Kingbird
 Great Crested Flycatcher
 Acadian Flycatcher
 Trail's Flycatcher
 Eastern Wood Pewee
 Rough-winged Swallow
 Barn Swallow
 Purple Martin
 ***House Wren
 Bewick's Wren
 ***Catbird
 Wood Thrush
 Blue-gray Gnatcatcher
 White-eyed Vireo
 Yellow-throated Vireo
 Red-eyed Vireo
 Warbling Vireo
 Black-and-white Warbler
 Prothonotary Warbler
 Worm-eating Warbler
 Blue-winged Warbler
 Parula Warbler
 Yellow Warbler
 Cerulean Warbler
 Yellow-throated Warbler
 Prairie Warbler
 Louisiana Waterthrush
 Kentucky Warbler
 Yellowthroat
 Yellow-breasted Chat
 Hooded Warbler
 American Redstart
 Orchard Oriole
 Scarlet Tanager
 Summer Tanager
 Indigo Bunting
 Dickcissel
 *Grasshopper Sparrow
 Chipping Sparrow

*recorded near, but not on, the reservation

**irregular in winter

***one or more winter records, but best regarded as a summer bird

Winter Visitants

Canada Goose
 Mallard
 Black Duck
 Redhead
 *Canvasback
 Bufflehead
 Hooded Merganser
 Sharp-shinned Hawk
 Rough-legged Hawk
 Bald Eagle
 Marsh Hawk
 Herring Gull
 Ring-billed Gull
 Yellow-bellied Sapsucker
 Red-breasted Nuthatch
 Brown Creeper
 Winter Wren
 Hermit Thrush
 Golden-crowned Kinglet
 Cedar Waxwing
 Myrtle Warbler
 Rusty Blackbird
 Purple Finch
 Pine Siskin
 Slate-colored Junco
 Tree Sparrow
 White-crowned Sparrow
 White-throated Sparrow
 Fox Sparrow
 Swamp Sparrow

Migrants

***Pied-billed Grebe
 *Pintail
 Blue-winged Teal
 Ring-necked Duck
 *Red-breasted Merganser
 Osprey
 Peregrine Falcon
 Sora
 American Coot
 Wilson's Snipe
 Spotted Sandpiper
 Solitary Sandpiper
 *Lesser Yellowlegs
 Black-billed Cuckoo
 Olive-sided Flycatcher
 Tree Swallow
 Bank Swallow
 Cliff Swallow
 Swainson's Thrush
 Gray-cheeked Thrush
 Veery
 ***Ruby-crowned Kinglet
 Philadelphia Vireo
 Tennessee Warbler
 Nashville Warbler
 Magnolia Warbler
 Cape May Warbler
 Black-throated Blue Warbler
 Black-throated Green Warbler
 Blackburnian Warbler
 Chestnut-sided Warbler
 Bay-breasted Warbler
 Blackpoll Warbler
 Pine Warbler
 Palm Warbler
 Ovenbird
 Northern Waterthrush
 Mourning Warbler
 Wilson's Warbler
 Canada Warbler
 Baltimore Oriole
 Rose-breasted Grosbeak
 Savannah Sparrow

Casual Visitants

(see species accounts)
 Harlan's Hawk
 Golden Eagle
 Blue Grosbeak

*recorded near, but not on, the reservation

***one or more winter records, but best regarded as a migrant

bird. The status of this form seems still a subject of dispute. Mengel (1965:210-211), who records a specimen and two other observations for western Kentucky, regards it as a subspecies of *B. jamaicensis*. Monroe and Monroe (1961:28) list one additional sight record, from Oldham County.

ROUGH-LEGGED HAWK. *Buteo lagopus*. Two birds in typical plumage of the light phase were observed at Hays Flats on March 11, 1967. In addition, there are a few records, all of single light-phase birds, made at Rock Haven, downriver from the reservation, by various observers: December 24, 1966 (William Rowe); November 22, 1968 (Lawrence Smith); March 1, 1969 (Dr. and Mrs. Robert H. Miller); March 8, 1969 (Rowe and Croft; across river in Indiana).

GOLDEN EAGLE. *Aquila chrysaetos*. On January 26, 1965, an immature Golden Eagle was observed along Salt River. At one point the bird wheeled overhead within 100 feet, giving a clear view of the sharply defined tail pattern, white at the base, with a wide dark terminal band, as well as the white patches at the base of the primaries. Shortly thereafter the bird perched about 100 yards away, across the river, revealing a golden sheen on the feathers at the back of the head and neck; this marking was unexpected on an immature bird. Two eagles seen later that day, several miles downstream and still within the reservation, sailing high overhead in a dark sky, were suspected, from their shape, of being this species, but a definite identification could not be made.

Mr. and Mrs. F. W. Stamm recorded an immature Golden Eagle along the wooded bluff at the edge of the Ohio, near Rock Haven, February 20, 1966.

A decade previously, Charles L. Clagett and Robert J. Weatherby (Monroe, 1965:15) found a Golden Eagle on the reservation on November 8, 1954.

BALD EAGLE. *Haliaeetus leucocephalus*. Fort Knox and the adjacent territory is now the only area within the Louisville region where one can expect to see these magnificent birds regularly. A few winter, apparently every year, being most often seen along Salt River, or along the Ohio River between West Point and Brandenburg. Our records range from November 5 (1967, one immature along the Ohio, near the reservation) to March 11 (1967, one immature at Hays Flats). The greatest number recorded at one time in the area seems to be five birds, recorded by Mr. and Mrs. F. W. Stamm along the Ohio just downstream, February 15, 1969 (Stamm, 1969:58); also, Rowe found three adults and one immature at Rock Haven on December 31, 1968, plus an immature several miles upriver near Kosmosdale, Jefferson County.

OSPREY: *Pandion haliaeetus*. Our only record of the Osprey is of one bird observed flying over Otter Creek, several miles from the Ohio River, April 26, 1968.

PEREGRINE FALCON. *Falco peregrinus*. One record on post, November 5, 1967, one bird heading south, rather high over the western part of the reservation. Rowe saw one fly across the river near Rock Haven on December 31, 1968.

SPARROW HAWK. *Falco sparverius*. An interesting example of at-

tempted predation was noted on September 3, 1968, just across the reservation boundary in Otter Creek Park. A female Sparrow Hawk sailed into a pipeline right-of-way clearing where a Mourning Dove (*Zenaidura macroura*) was feeding; as the dove flew up, the falcon struck it, scattering a fair cloud of feathers. The dove reeled but escaped without further apparent harm, as the two birds flew off in different directions. Other examples of actual or attempted predation by Sparrow Hawks are given by Croft (1958).

RUFFED GROUSE. *Bonasa umbellus*. Somewhat surprisingly, we saw none of these birds, despite the stocking of 66 wild-trapped birds between 1963 and 1965. Drumming censuses by game management personnel resulted in estimates of a total population of 100-150 birds in April 1966 and, according to the official report, 350-450 birds in 1967. (It may be pertinent to mention here that Croft flushed a Ruffed Grouse at McNeely Lake in south-central Jefferson County on December 28, 1960. This bird was suspected to have come from a small release said to have been made in the county, but details are unknown.)

TURKEY. *Meleagris gallopavo*. Various attempts have been made at restocking this fine game bird. After the failure of earlier efforts using farm-raised birds, in 1966 a total of 21 wild-trapped birds were released, and these have apparently taken hold. The official report for 1966 lists an estimated population of 60-75, and the 1967 report lists 100-125 birds. These figures presumably include birds involved in a controlled experiment, in a five-acre wooded enclosure within the Muldraugh ammunition storage area, where semi-wild Turkeys have been stocked. A release of 18 birds in this enclosure in fall 1966 resulted the following spring in at least 10 nests, six of which were reported successful in hatching out 42 poults. Our only observation was of one quite wary bird on Chappel Ridge, May 22, 1966.

AMERICAN WOODCOCK. *Philohela minor*. Small numbers of Woodcock may regularly be heard giving their courtship performance about old fields at dusk on evenings in early spring. On April 22, 1968, workmen at Otter Creek Park showed Croft a group of three newly hatched young, just beyond the reservation boundary. (In the Louisville region this species, as a breeding bird, seems now to be very largely confined to Meade, Hardin, and Bullitt Counties. Among the very few recent summer records near Louisville may be mentioned singles flushed by Croft at Caperton's Swamp, Jefferson County, on July 7, 1963, and near Sleepy Hollow, Oldham County, on August 28, 1965.)

BLACK-BILLED CUCKOO. *Coccyzus erythrophthalmus*. The possibility of this species' occasional nesting is suggested (though only suggested) by two late spring records in 1967: May 27, one bird in deciduous woodland in the knobs; May 30, another in scrubby thickets at Hays Flats. An early spring record is of two birds on April 25, 1968, just outside the reservation in Otter Creek Park.

CHUCK-WILL'S-WIDOW. *Caprimulgus carolinensis*. This species is easily found, but in much smaller numbers than the Whip-poor-will, and in our observations has been limited to an area lying largely along the southern boundary of the reservation, where the two species may often be heard singing simultaneously. Even in this area the Whip-poor-will appears to outnumber the larger bird by three or four to one.

WHIP-POOR-WILL. *Caprimulgus vociferus*. The Whip-poor-will is a very common summer bird over a large part of the reservation; in an evening cruise across the post one may hear upwards of 100 birds in early summer, and the birds can often be heard from some of the barracks. As Mengel (1965:285) has indicated, this seems one of the most suitable areas in central Kentucky for the species.

RED-HEADED WOODPECKER. *Melanerpes erythrocephalus*. Common and widely distributed in summer, perhaps more so than anywhere else in the Louisville region. During the winter of 1965-66 the species was common in oak woods on the Bullitt County portion of the reservation, with as many as 50 birds noted in a day.

TRAILL'S FLYCATCHER. *Empidonax traillii*. We have noted summering flycatchers of the "fitz-bew" song form in several areas of the reservation, most regularly around Duck Lake, where several pairs occur in the willows, and in scrubby growth around wet ditches on Hays Flats. A nest in the latter area held three eggs on July 17, 1965.

HORNED LARK. *Eremophila alpestris*. These birds occur in small flocks around many bare, open places in the garrison area through the winter, and some, presumably nesting, remain there through spring and summer. Other birds are much in evidence in spring about some of the firing ranges, presumably nesting on bare, eroded places. These birds may be observed giving their flight songs repeatedly, seemingly undisturbed by the heavy firing below them.

HOUSE WREN. *Troglodytes aedon*. A few summer in some of the residential areas. A nest in Lawrence's garage held two eggs in the late spring of 1967. An occasional bird is met with in migration or summer elsewhere on post. An interesting example of the latter was of three birds seen on July 4, 1967, in a brushy area at one of the tank ranges, miles from any building worthy of the name. One winter record, December 21, 1961, a bird closely observed on the reservation during the Otter Creek Christmas Count.

CATBIRD. *Dumetella carolinensis*. Two winter records, both on the Otter Creek Christmas Count: January 5, 1957, one just across the reservation boundary, in the park; December 22, 1964, one in the same tangle where the winter record of the House Wren mentioned above was made.

BROWN THRASHER. *Toxostoma rufum*. This species has been recorded several times on the Otter Creek Christmas Count. At least one of these birds, recorded January 1, 1963, was on the reservation.

HERMIT THRUSH. *Hylocichla guttata*. Small numbers of Hermit Thrushes are noted throughout the winter, occurring regularly in sheltered tangles and cedar thickets, and occasionally in more exposed areas in deciduous woods in the knobs. The almost annual appearance of this bird on the Otter Creek Christmas Count, in numbers up to nine (January 1, 1958), contrasts with the species' virtual absence on the Louisville count, 40 miles to the northeast, in the last 20 years. Habitat differences seem to be largely responsible for the striking difference.

PROTHONOTARY WARBLER. *Protonotaria citrea*. A conspicuous bird in early summer, when it occurs in modest numbers around Duck Lake and

along parts of Salt River and some of its associated streams. Judging from scattered observations in the surrounding area, it seems that Fort Knox is still on the eastern perimeter of this species' regular Kentucky breeding range, as indicated on Mengel's (1965:388) well-plotted map.

WORM-EATING WARBLER. *Helmitheros vermivorus*. Summers in small numbers in some of the moister areas of the knobs. Earliest record, one bird on April 13 (1968).

BLUE-WINGED WARBLER. *Vermivora pinus*. Stamm (1952) recorded a pair of these warblers in the summer of 1952 near Mount Eden, apparently in an area now included in the reservation; this is the only summer record given for the Louisville region by Monroe and Monroe (1961:37). We found the species present in early summer in numerous, scattered areas both on and off the reservation.

BLACK-THROATED GREEN WARBLER. *Dendroica virens*. A bird singing in mature oak woods in a remote section of the knobs on May 30, 1968, was likely to have been a late migrant, but also raises the question of possible summering, despite the separation of some 100 miles from the edge of the regular Kentucky breeding range on the Cumberland Plateau. The habitat here (and for that matter the elevation) is not unlike that in some areas harboring the birds in the Cumberlands. Beckham's (1885:16) isolated summer record of July 14, 1882, in nearby Nelson County lends added interest to this speculation—which, for the present at least, must remain speculation. Range and training activities prevented further access to this area.

OVENBIRD. *Seiurus aurocapillus*. On May 30, 1968, in the area mentioned under the preceding species, at least 10 Ovenbirds were recorded. This is our only indication that the species may possibly remain on post during the summer.

AMERICAN REDSTART. *Setophaga ruticilla*. A few birds were regularly observed in low-lying woodlands in early summer, and Rowe (1967:64) has recorded others near Brandenburg.

SCARLET TANAGER. *Piranga olivacea*. In many parts of the post, particularly in the knobs, we would estimate that this species outnumbered the Summer Tanager (*P. rubra*) by fully four to one; while on the reservation as a whole the Scarlet also seems more numerous, though we do not venture to suggest by how wide a margin. We are unaware of any other extensive central-Kentucky area where this situation obtains.

DICKCISSEL. *Spiza americana*. This distinctive open-country bird occurs in summer in large numbers in the extensive Meade County fields just west of the reservation, but disappears abruptly at the boundary. It is of interest to find a colony of the species occupying brushy fields in the middle of Hays Flats, where about a dozen pairs occur in summer. This habitat is unlike any other in which we have seen Dickcissels in central or western Kentucky, but apparently resembles areas in Pulaski and Laurel Counties where Mengel (1965:469) found a few birds, on the extreme eastern margin of the Kentucky range.

BLUE GROSBEEK. *Guiraca caerulea*. One record, July 4, 1967 (Croft, 1967:68). The species should be looked for in the future.

Discussion .

The natural question that arises from such a study as this is, of course, one of how the enclosure of this area in a military reservation has affected the birdlife. Some partial answers have been suggested in the preceding species accounts. More generally, we would suggest the following major features as in some measure distinguishing the birdlife of Fort Knox from that of nearby areas:

1. The setting aside of the large impact area needed for tank and artillery firing, combined with the rugged nature of the terrain, has made possible the continuing existence of some of the larger, wilder birds that are less frequently observed in the surrounding inhabited area. Several examples are indicated above.

2. The more heavily wooded areas in the knobs have a substantial nesting population of woodland birds much depleted in nearby cut-over areas. Good examples are the Hooded Warbler and Scarlet Tanager. The variety of nesting warblers (minimum of 15 species) is probably unsurpassed in the Louisville region. In addition, the richer woodlands are excellent areas for spring migrant warblers (maximum one-day count of 29 species, May 6, 1967).

3. The large amount of land where plant development is stopped, partly because of military training activities, at the stage of scrub and brushwood has resulted in a large population of such birds as Prairie Warblers, Indigo Buntings, Rufous-sided Towhees, and Field Sparrows. Frequent, sustained disturbance, however, as in some areas on the western part of the reservation, makes successful nesting virtually impossible, resulting in very low bird populations there.

4. Heavy winter cover found on some areas of the reservation makes possible some locally abundant populations of wintering birds. Cedar thickets and tangles in sheltered areas harbor more wintering Hermit Thrushes and Fox Sparrows than are usually found in this part of Kentucky, while the House Wren, Catbird, and Brown Thrasher have all been recorded in late December or early January. Robins, Cedar Waxwings, Myrtle Warblers, and Purple Finches are also frequently more numerous here than elsewhere in north-central Kentucky. In addition, particularly large numbers of White-throated Sparrows and Swamp Sparrows occur in bottomland weed patches.

5. Birds typical of open grassland are limited in numbers and variety. Dickcissels and Grasshopper Sparrows, for example, are common in the alfalfa and orchard grass fields of western Meade County, but disappear abruptly at the reservation boundary. The former species shows its adaptability, however, by breeding in some numbers in the Hays Flats area, in low scrubby growth, a habitat seemingly avoided by the Dickcissel elsewhere in central Kentucky.

6. Areas denuded by extensive armored exercises or frequent fire by high-caliber weapons are, of course, relatively little used by birds. Even here, however, Killdeers, Horned Larks, and Crows may be observed gleaning their food.

7. Woodland areas intensively used for bivouac and related training activities have little understory and depleted populations of breeding birds, in this respect resembling woodlands subjected to heavy grazing. Where the trees are sufficiently mature, however, such birds as woodpeckers and tanagers persist in the upper canopy.

8. The continuing development of an on-post conservation program is resulting in many instances in the preservation or improvement of wildlife habitats. In addition to the re-introduction of Ruffed Grouse and Wild Turkey, long extirpated from this region, the development of waterfowl habitats should be of material benefit.

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 1949 The breeding birds at Otter Creek Park. *Ky. Warbler*, 25:41-47, 67-72.
- Lovell, Harvey B., and C. M. Kirkpatrick
 1946 A winter roost. *Ky. Warbler*, 22:17-19.
- Mengel, Robert M.
 1965 The birds of Kentucky. *A.O.U. Orn. Mon. No. 3*.
- Monroe, Burt L., Sr.
 1965 *Birds of Bernheim Forest*. N.p.
- Monroe, Burt L., Sr., and Burt L. Monroe, Jr.
 1961 Birds of the Louisville region. *Ky. Warbler*, 37:23-42.
- Peterson, Roger Tory
 1947 *A field guide to the birds*. Boston, Houghton Mifflin Co.
- Rowe, William
 1967 Parula Warblers in Meade County. *Ky. Warbler*, 43:63-64.
- Stamm, Anne L.
 1952 Blue-winged Warbler in Bullitt County. *Ky. Warbler*, 28:59.
 1969 One-day Bald Eagle count, 1969. *Ky. Warbler*, 45:57-58.
- Wilson, Gordon
 1968 *Birds and their habitats in Mammoth Cave National Park*.
 Louisville, Eastern National Park & Monument Assoc.
- 2366 Gladstone Avenue, Louisville, Ky. 40205; 3301 Patrick Henry Drive,
 Falls Church, Va. 22044

FORTY-SEVENTH ANNUAL FALL MEETING

October 2-4, 1970

The Kentucky Ornithological Society held its 1970 Fall Meeting at Cumberland Falls State Park with headquarters at DuPont Lodge.

The first meeting was held Friday night in the conference room at the Lodge at 7:30 with approximately 45 members present. The meeting was opened by Willard Gray, president, who welcomed members and guests.

Dr. Ray Nall, vice-president, presided at the meeting, and a very interesting program was presented.

Mr. James Pasikowski gave a talk, accompanied by movies, entitled, "A Glimpse at White-winged Crossbills in Cave Hill Cemetery." Mr. Jerry Allen, a student at Murray State University, presented a paper entitled, "Survey of Turkey Reproduction in the Land Between the Lakes." Mr. and Mrs. F. W. Stamm showed slides and talked about "Some Birds of the Gulf Coast." Mrs. Robert O. Meyer, Lexington, Kentucky, showed beautiful slides and commented on birds her daughter had photographed on their recent safari to Africa. Mr. Virgil King, Dayton, Ohio, a long-time KOS member, showed slides and made interesting comments on birds he had photographed in England.

Field trips for the next morning were outlined and group leaders named. The meeting was adjourned.

Early Saturday morning observers met in front of DuPont Lodge and divided into four groups, which were led by Dr. Herbert Shadowen, Dr. Ray Nall, Mr. Willard Gray, and Mrs. F. W. Stamm. It was a beautiful day and most observers spent many hours in the field.

President Willard Gray opened the general business meeting, held at 3:30 p.m. in DuPont Lodge. The minutes of the previous Spring Meeting were read and approved. Miss Evelyn Schneider, treasurer, presented her report and it was accepted (copy attached).

There was a general discussion concerning the 1971 Spring Meeting, which will be a joint meeting with the Tennessee Ornithological Society, to be held at Mammoth Cave National Park on April 30 through May 2nd.

Mr. Leonard Brecher gave a report on legislative progress concerning the Falls of the Ohio Bi-State Park.

Mr. Howard Jones made a few comments on articles concerning the Society that have appeared in the *Happy Hunting Ground*, stating that the magazine will no longer include such articles because of changes in format and policy.

Mr. William Ruhe, KOS representative to Kentuckians for Environmental Planning, was not present to report, but Mr. Leonard Brecher gave a few comments in his place.

The membership agreed that the second weekend in October would be the best date for the next Fall Meeting.

Mrs. F. W. Stamm encouraged members to make serious bird studies as good material is always needed for *The Kentucky Warbler*. She urged members to complete their Cornell nest-record cards and send them to her. She also commented on the One-Day Bald Eagle Count. The date of the count will be announced later and members will be notified.

Howard Jones, chairman of the nominating committee composed of Raymond Iles, Owensboro, and A. L. Whitt, Richmond, presented their slate, as follows:

President	Raymond Nall, Murray
Vice-President	Burt L. Monroe, Jr., Louisville
Corresponding Sec.-Treasurer	Mary Louise Daubard, Louisville
Recording Secretary	Emily Wilson, Bowling Green
Councillors	Leonard C. Brecher, Louisville
	Wendell Kingsolver, Carlisle
	Hunter M. Hancock, Murray

Dr. Hunter Hancock replaces Dr. Burt L. Monroe, Jr. and will serve the remaining one year term. Mr. Brecher and Dr. Kingsolver will serve the

regular two year term. The slate was elected by acclamation, and the meeting was adjourned.

The dinner meeting was held at 6:30 p.m. at DuPont Lodge with 70 members and guests present. The guest speaker was Mr. Ronald Austing, a talented and nationally-known naturalist-photographer, who specializes in hawks and owls. His slides were outstanding, and there was a display of his photographs around the walls of the dining room.

On Sunday morning observers met again in front of the Lodge for field trips. Many had to leave early because of long distances to be traveled. Dr. Herbert Shadowen compiled the bird list for the weekend, with a total of 63 species reported.

Respectfully submitted
Emily H. Wilson
Recording Secretary

REPORT OF THE TREASURER

October 1, 1970

GENERAL FUND

Balance brought forward, October 9, 1969\$1129.20

Receipts

Membership Dues:

198 Active Memberships @ 3.00	\$ 594.00
56 Family Memberships @ 4.00	224.00
32 Contributing Memberships @ 5.00	160.00
5 Family Contributing Memberships @ 6.00	30.00
15 Student Memberships @ 2.00	30.00
12 Corresponding Memberships @ 2.50	30.00
2 Life Memberships @ 50.00	100.00

Total from Membership Dues \$1168.00

Interest Income, Jefferson Federal Savings and
Loan Assn. on Full-paid Shares 34.13

Contributions:

Gordon Wilson Fund for Ornithology	10.00
Gordon Wilson Memorial Fund	80.00
Harvey B. Lovell Memorial Fund	90.00
Sally Schell Ruhe Memorial Fund	50.00

Total Contributions 230.00

Sales: Publications, Checklist Cards, etc. 59.15

Miscellaneous 4.06

Fall Meeting, 1969 208.20

Spring Meeting, 1970 228.40

Pre-Registration, Fall Meeting, 1970 214.00

Total Receipts 2145.94

TOTAL \$3275.14

Disbursements

Printing: <i>The Kentucky Warbler</i> , 4 issues	879.28
K.O.S. Brochure	42.21
K.O.S. Bills	51.45
Reprints, " <i>Summary of Occurrence of Birds of Kentucky</i> "	123.90
Supplies and Postage	94.62
Dues: The Nature Conservancy	10.00
Kentuckians for Environmental Planning	35.00
Kentucky State Treasurer, for Corporation Filing Fee	2.00
Transferred to the Gordon Wilson Fund for Ornithology	140.00
Transferred to the Endowment Fund	100.00
Expenses, Fall Meeting, 1969	388.45
Expenses, Spring Meeting, 1970	193.80
Miscellaneous expenses	17.85
Total Disbursements	2078.56
Balance on hand, First National Bank, Louisville, Ky.	1196.58
TOTAL	\$3275.14

ENDOWMENT FUND

Balance in Savings Account, Jefferson Federal Savings and Loan Assn., Louisville, Ky., October 9, 1969	\$1311.10
Seven Full-Paid Shares @ \$100.00	700.00
Total Balance in Fund, October 9, 1969	2011.10

Receipts

Interest on Full-Paid Shares	34.13
Interest on Savings Account	65.75
Two Life Memberships @ \$50.00	100.00
Total Receipts	199.88
TOTAL	\$2210.98

Disbursements

Transfer of Interest on Full-Paid Shares to General Fund	34.13
Total Disbursements	34.13
Balance in Fund, October 1, 1970	2176.85
TOTAL	\$2210.98
Balance in Savings Account, October 1, 1970	1476.85
Seven Full-Paid Shares @ 100.00	700.00
TOTAL ASSETS, Oct. 1, 1970	\$2176.85

THE GORDON WILSON FUND FOR ORNITHOLOGY

Balance in Savings Account, Greater Louisville First Federal Savings and Loan Assn., Louisville, Ky., October 9, 1969	\$1037.09
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Receipts

Contributions to the Fund	\$10.00
Gordon Wilson Memorial Fund	80.00
Sally Schell Ruhe Memorial Fund	50.00
Interest on Savings Account	53.69
	<hr/>
Total Receipts	193.69
TOTAL	\$1230.78

Disbursements

None	
Balance in Savings Account, October 1, 1970	\$1230.78
Principal Fund	\$ 848.00
Accumulated Interest	382.78
	<hr/>
Total	\$1230.78

BALANCE SHEET

October 1, 1970

Assets:

Cash in General Fund, First National Bank, Louisville, Ky.	\$1196.58
Endowment Fund, Jefferson Federal Savings and Loan Assn., Louisville, Ky.	2176.85
Gordon Wilson Fund for Ornithology, Greater Louis- ville First Federal Savings and Loan Assn., Louis- ville, Ky.	1230.70
TOTAL ASSETS, October 1, 1970 ...	<hr/> 4604.13

Evelyn J. Schneider, Treasurer

BIRDS RECORDED ON OUR FIELD TRIPS

Although our list of the birds recorded at Cumberland Falls State Park on October 2 and 3, 1970, is not large, some interesting birds were observed, and it seems logical that the list should be published in this issue, along with the minutes of our successful meeting. The warm weather may have played a part in the small number of individuals recorded. The list is, as follows: Pied-billed Grebe, Great Blue Heron, Turkey Vulture, Red-tailed Hawk, Red-shouldered Hawk, Broad-winged Hawk, Ruffed Grouse, Virginia Rail (found by Oscar McKinley Bryens), Spotted Sandpiper, Yellow-billed Cuckoo, Chimney Swift, Belted Kingfisher, Yellow-shafted Flicker, Pileated Woodpecker, Red-bellied Woodpecker, Yellow-bellied Sapsucker, Hairy Woodpecker, Downy Woodpecker, Eastern Phoebe, Acadian Flycatcher, Eastern Wood Pewee, Olive-sided Flycatcher, Blue Jay, Common Crow, Carolina Chickadee, Tufted Titmouse, White-breasted Nuthatch, Red-breasted Nuthatch, Carolina Wren, Mockingbird, Catbird, Robin, Wood Thrush, Swainson's Thrush, Gray-cheeked Thrush, Golden-crowned Kinglet, Ruby-crowned Kinglet, Cedar Waxwing, Black-and-white Warbler, Tennessee Warbler, Cape May Warbler, Myrtle Warbler, Black-throated Green Warbler, Blackburnian Warbler, Yellow-throated Warbler, Chestnut-sided Warbler, Bay-breasted Warbler, Pine Warbler (many singing), Palm Warbler, Ovenbird, American Redstart, Scarlet Tanager, Summer Tanager, Cardinal, Rose-breasted Grosbeak, Indigo Bunting, Evening Grosbeak, Purple Finch, American Goldfinch, Rufous-sided Towhee, Chipping Sparrow, Song Sparrow. The following day, two additional species were added to the list: Marsh Hawk and Cooper's Hawk. They were observed by Oscar McKinley Bryens and F. W. and Anne Stamm.

FALL MEETING, OCT. 2-4, 1970

MEMBERS AND GUESTS IN ATTENDANCE

BOWLING GREEN: Mrs. Harry W. Bowman, Dr. and Mrs. Herbert E. Shadowen, Mrs. F. Eugene Wilson.

BURKESVILLE: Charles S. Guthrie.

CARLISLE: Dr. and Mrs. Wendell R. Kingsolver, Robbie, Barbara, and Ann Kingsolver.

DANVILLE: Dr. and Mrs. Frank H. Heck.

FRANKFORT: Marvin Bing, Mr. and Mrs. Siegfried Bing, Howard Jones, Joel Jones.

LEXINGTON: Mrs. G. L. Burns, Mrs. Anna N. Heaton, Mrs. Robert O. Meyer, Mr. and Mrs. Alfred M. Reece, Jr.

LOUISVILLE: Amelia B. Alford, Mr. and Mrs. Leonard Brecher, Mrs. A. H. Calvert, Mrs. Kathryn Claxon, Mrs. Mary Louise Daubard, Mrs. John M. Gates, Mary Reuter Gates, Sue Hall, Mrs. Harry H. Hummel, Mrs. John E. Lester, Dr. and Mrs. Kenneth P. McConnell, Lois Massie, Mr. and Mrs. William B. Mathes, Doug Mathes, James C.

Pasikowski, Dorothy Peil, Mrs. Charles A. Robertson, Evelyn Schneider, Lawrence D. Smith, Mr. and Mrs. F. W. Stamm, Mr. and Mrs. Alfred G. Susie, Mr. and Mrs. L. C. Wetherell, Mrs. Helen P. Zuercher.

MURRAY: Jerry Allen, Dr. Raymond W. Nall.

OWENSBORO: Mr. and Mrs. Raymond R. Iles, Mr. and Mrs. Chester O. Merchant, Frederic Merchant, Wynema Sims, Sister Casimir Czurlles.

RICHMOND: Prof. A. L. Whitt, Jr.

VERSAILLES: Mrs. Wallace V. Campbell, Mrs. George Gregory.

WILLIAMSBURG: Mr. and Mrs. Humphrey A. Olsen.

NEWBURGH, INDIANA: Willard N. Gray.

CINCINNATI, OHIO: William Mers.

DAYTON, OHIO: Mr. and Mrs. Virgil King.

HARRISON, OHIO: Ronald Austing.

WHITE PIGEON, MICHIGAN: Oscar McKinley Bryens.

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FIELD NOTES

RED CROSSBILLS IN MENIFEE COUNTY

On November 22, 1969, while hiking along the ridge-tops on Sargent Branch of Gladie Creek in southern Menifee County, I noticed a flock of 14 birds in bounding flight pass overhead from north to south. Soon another flock, this time more than 20 birds, followed a similar path but landed just ahead of me. The birds proved to be Red Crossbills (*Loxia curvirostra*). I approached to within 14 feet and studied them closely for more than five minutes. The males were a dull brick-red with slaty-black wings while the females were a dull olive with slaty wings. Also, the crossed mandibles were obvious as the birds fed on the pine cones. Suddenly the birds took to the air and flew away chattering excitedly. On the same afternoon, I saw two additional flocks of approximately 12 birds in each one.—LAWRENCE D. SMITH, 4206 Norbourne Boulevard, Louisville 40207.

(Editor's note: Cletis Weller also reported a small flock of Red Crossbills, feeding along the roadside on KY 245 near Bernheim Forest, in mid-January 1970.)

NEWS AND VIEWS

Colonel Austin R. Lawrence, formerly stationed at Fort Knox, Kentucky, and co-author of "The Birds of Fort Knox" in this issue, has been head of the United States Military Mission in Saudi Arabia since leaving Kentucky, and is now at the Pentagon.

* * *

Joseph E. Croft of Louisville, is now at Princeton University working toward a doctorate in classical languages. Although his studies include "a steady diet of Greek" he manages to go afield occasionally and reports seeing scores of Glossy Ibis, Cattle Egrets, Black Skimmer, Whimbrel, Kittiwake, Wheatear, and Goshawks; our loss is New Jersey's gain.

* * *

A recent addition to the roster of Life Members of the Kentucky Ornithological Society is Mary Louise Daubard of Louisville. Mrs. Daubard, who holds degrees from the University of Louisville and George Peabody College for Teachers, is currently a teacher at the I. N. Bloom Elementary School in Louisville. In addition to her Master's degree, she has taken graduate work at the University of Southern California, George Peabody College, and the University of Louisville.

Although only a member since 1962, she has served the Beckham Bird Club (Louisville Chapter, Kentucky Ornithological Society) as its secretary, and is currently vice president. Also, in October, she was elected secretary-treasurer of the K.O.S. Although Mrs. Daubard has always been interested in the out-of-doors, her quest for bird study has been intensified since moving to a three-acre tract in northeast Jefferson County.

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The Kentucky Ornithological Society is grateful to the members who have sent memorial gifts to the Gordon Wilson Fund for Ornithology. Further gifts may be sent to the treasurer (see inside cover page for address).

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As the final number of Volume 46 goes to press, the editor wishes to acknowledge, with sincere thanks, the cooperation and helpful assistance of the following members who contributed to the success of the journal: Joseph E. Croft, assistant editor, Roger W. Barbour, Leonard C. Brecher, Evelyn Schneider, Herbert Shadowen, and Frederick W. Stamm. Also, thanks are extended to all authors of papers for publication in *The Kentucky Warbler*.