Florida Field Naturalist

PUBLISHED BY THE FLORIDA ORNITHOLOGICAL SOCIETY

VOL. 13, NO. 3 AUGUST 1985 PAGES 49-76

SOME BREEDING SEASON VOCALIZATIONS OF AMERICAN CROWS IN FLORIDA

LAWRENCE KILHAM
Department of Microbiology
Dartmouth Medical School
Hanover, New Hampshire 03755

Abstract.—In a 5-year study on a Florida ranch, the tameness of American Crows facilitated study of vocalizations made in the early breeding season. Among soft vocalizations heard were *Cu-koos, Kuck-woo-oos,* intimate notes made when a pair was on the nest and, rarely, Barred Owl-like calls. *G-wal-op, g-wal-ops* were loud vocalizations audible at considerable distances. Like them in being given as doublets were a variety of other vocalizations, such as *G-wong, g-wong* and *Kwarr-uck, kwarr-uck* that were given more as individual peculiarities. Also described are bowing displays that were, at times, accompanied by moans and bill-clacks.

In addition to their usual cawing, American Crows (*Corvus brachyrhynchos*) have other vocalizations, many associated with the breeding season, that may sound "uncrowlike" to a human listener. Some of these are so softly uttered that one has to be within 10-15 m to hear them. Others, while loud and far-carrying, still require that one be near by to discover in what context they are being made. As here reported, my wife and I watched crows in a locality where they were tame and allowed us close approach. The only previous study of some of these special vocalizations known to me is that of Chamberlain and Cornwell (1971). At that date little or no information was available on such features of crow behavior as territoriality (Kilham in press), cooperative breeding (Kilham 1984a), early breeding season behavior, including courtship and dominance (Kilham 1985) and copulation (Kilham 1984b) that might have aided in understanding contexts. Although Chamberlain and Cornwell report three of the vocalizations that I describe, i.e. the *Cu-koo* and the *G-wal-op, g-wal-ops* (*C. b. pascuus* screams), and the rattling cry, they do so in only a few lines. A further difficulty in their otherwise notable paper is failure to define how they differentiated adults from yearlings.

Florida Field Naturalist 13: 49-57.

Study Area and Methods

My wife and I watched 2-4 groups of cooperatively breeding crows from January to April, 1981-1985 at the Hendrie ranch, 24 km south of Lake Placid, Florida. Each group consisted of a breeding pair plus 2-5 auxiliaries. The crows were tame owing to years of protection and feeding of corn. Although unmarked by banding, the members of breeding pairs could be identified by the dominance of males, the fact that females did all of the incubating, as noted by Good (1952), and other criteria discussed in previous publications (Kilham 1984b, 1985). Yearlings were identified by Emlen's (1936) criteria, of which the square outline of the tail and the frayed tips of the rectrices were most helpful. I used a Sony WM D6 "Professional Walkman" recorder with a Realistic, 33-1062, Ultra-Directional Electret microphone. Copies of my recordings (available to other workers) have been deposited in the Florida State Museum Bioacoustic Archives, Gainesville, Florida.

Observations

Bowing displays.—A crow began these displays with a few shakes of its head, accompanied by mammalian-like moans, then pulled its head in against its breast to bow its head to its toes, while opening and clacking its bill. The same sounds might be accompanied, at times, by only a deep nodding of the head, or the bowings might be made in silence.

G-wal-op, g-wal-ops.—These calls (Fig. 1A), delivered as a doublet and loud enough to carry throughout a territory, were seldom given near a nest unless softly and singly at times of copulations, or once, repeatedly, when a recently completed nest was visited by a Red-tailed Hawk (*Buteo jamaicensis*). Full *G-wal-ops* appeared to be given mainly by the dominant or breeding male. One male came to a tall stub above where we got out of our car in two successive years to deliver repeated *G-wal-op, g-wal-ops* accompanied by bowings, the back of his neck appearing humped due to a raising of feathers. This was for a limited time of about 10 days at the start of nesting. Some yearlings, in early breeding seasons, gave hundreds of *Gwal-ops* of low volume, as if practicing.

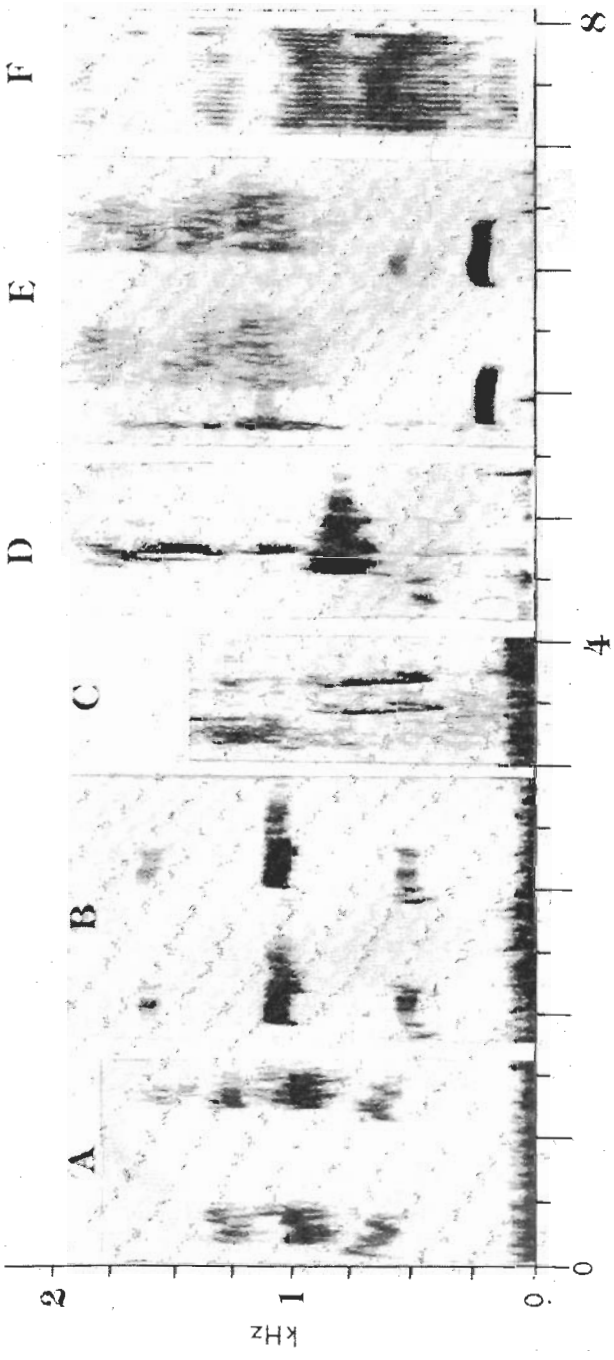
Other loud vocalizations.—A confusing situation was that *G-wal-ops* were one of a series of vocalizations related in being loud and given as doublets. Among the commoner of these were *G-wong, g-wongs* (Fig. 1B); *Kwar-uck, kwar-ucks* (Fig. 1G); *Guelph, guelphs* (not illustrated) and *Kuk, kuks* (Fig. 1H). Some yearlings gave one or more of the variants repeatedly as did some older auxiliaries. These latter were almost always ones driven away from

the rest of a group by the breeding male and apt to be by themselves. One breeding female gave *G-wong, g-wongs* in two successive years, often when perched next to her mate.

Cu-koos.—*Cu-koos* (Fig. 1C) were nearly always given singly. They might be given at the end of a deep bow or by themselves with only a slight bow from a branch or out in a pasture. *Cu-koos*, counted in 1983, were given when the two of a pair were together (n = 45), or nearly as frequently (n = 43) when a crow was alone. Single *Cu-koos* were the most frequent of vocalizations given before copulations (Kilham 1984b). Crows appeared at times to use *Cu-koos* as a greeting. A yearling walking below an oak on 1 March, gave a *Cu-koo* when the breeding female flew from her nest above. In another episode a female incubating on her nest gave a *Cu-koo* when her mate came to a perch 7 m away. I heard *Cu-koos* occasionally (n = 26) when the two of a pair were together on or by a nest prior to egg-laying. On three occasions a female incubating on a nest gave a soft *Cu-koo* immediately after a crow in the distance gave a *G-wal-ops*. Some females (n = 3) gave a *Cu-koo* when returning to a nest during incubation, either on landing or on the wing. In 1985 two breeding males were alike in giving a *Cu-koo* with bowing display when landing among others of their group feeding on corn, possibly as an expression of dominance.

A feature unique to *Cu-koos*, noted in all 5 years, was the way a crow might, seemingly, address them to my wife or me directly, flying to a perch 4-5 m overhead to do so. When a breeding male, one of the tamest of the crows, did this on 20 February, he bowed and gave bill clacks. Not all incidents were near nests. I was walking across a pasture on 15 January, with no crows in sight, when I heard a *Cu-koo*. When I turned, a crow that had alighted 6 m behind me gave *Cu-koos* five more times. Much the same events happened on another morning when I turned to find five crows that had apparently followed me. They were thickly bunched and making motions as if feeding on corn although none was there. It was striking on three of these occasions when crows seemed to be soliciting corn that *Cu-koos* were the only vocalization given.

Kuck-woo-ooos.—These vocalizations (Fig. 1D) were like *Cu-koos* in being associated, at times, with bowing displays and in having an exotic quality, like the cooing of some tropical dove. The two calls, however, were distinct. *Kuck-woos* differed from other vocalizations in having a faraway quality. When sitting by a nest


A
B
C
D
E
F
kHz
2
1
0
0
4
8

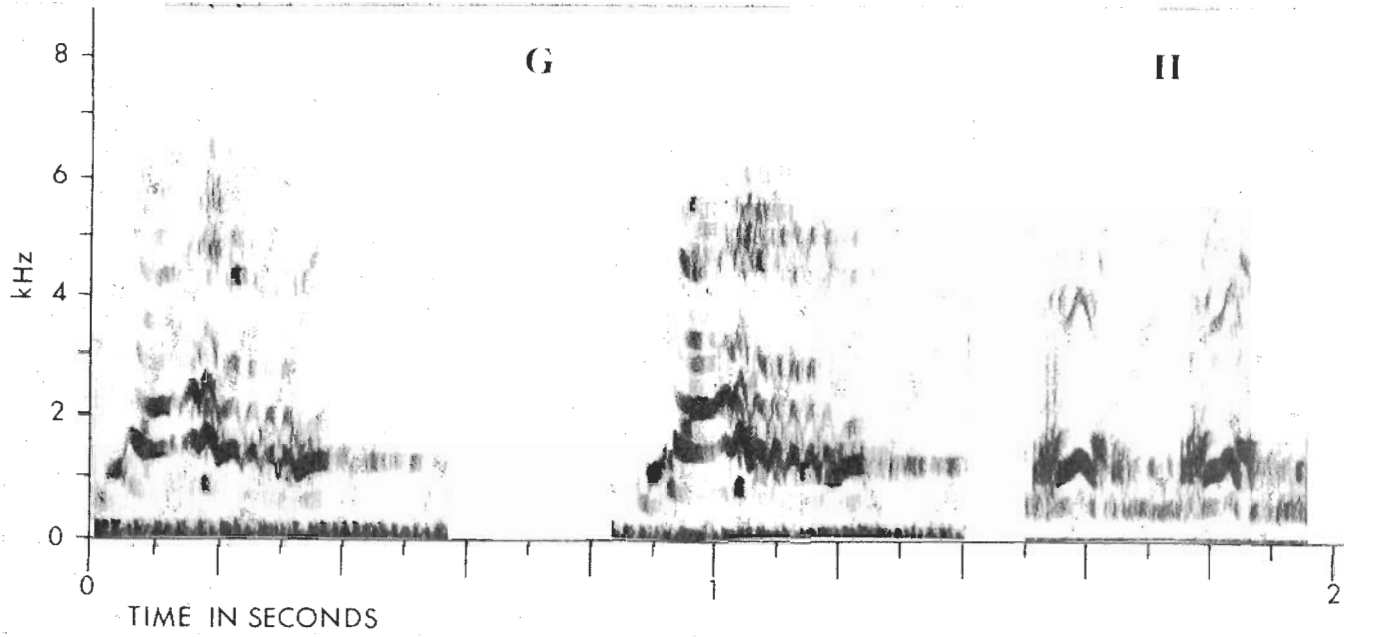


Figure 1. Special vocalizations of American Crows in Florida: A, *G-wal-op, g-wal-op*; B, *G-wong, g-wong*; C, *Cu-koo*; D, *Kuck-woo*; E, Play Vocalizations of Yearling; F, Rattling Cry; G, *Kwarr-uck, kwarr-uck*; H, *Kuk, kuk*. Note Different frequency and Temporal Scales Above and Below.

being built on 2 February, I heard what I thought to be a distant *Kuck-woo-ooo*. Then I wondered if it came from the top of an oak next to me. It took a minute to discover that the performer was on a branch 5 m away. The bird bowed twelve times as it lowered its head. Its wings were not moved and its tail was only slightly fanned. An indication that a *Kuck-woo* may serve as a low warning, at times, was suggested on 3 mornings when, otherwise silent, a breeding male gave *Kuck-woos* when driving away a gray squirrel (*Sciurus carolinensis*). A yearling that aided him on 2 mornings remained silent. The most continuous performances I heard were when a crow, perched on a cabbage palm (*Sabal palmetto*), gave *Kuck-woos* at a rate of 12/min for 5 min. A single interruption was a *Who-who-who-ah* like the hooting of a Barred Owl (*Strix varia*).

Barred owl calls.—I first heard these calls (not recorded) on 3 March 1952 when, close to a pair of crows in Seneca, Maryland, I heard one of them give *Who-Whos* in the course of singing. I did not hear the calls again until my wife and I heard them in Florida (n = 5). They are the only calls that I have heard made by crows, whether hand-raised (n = 4) or wild, that sounded mimetic.

Singing.—It is impossible to classify the mixtures of *Cohs, Caas, Cu-koos, G-wal-ops,* and *Kuck-woos,* mingled with groans, moans and, at times, varying *Caws* given at rates of up to 60/min. The effect is that a crow, often in solitude, is going over its entire repertoire of sounds. Most performers that I have been able to identify have been yearlings (Fig. 1E). Some older auxiliaries, ones that have become somewhat isolated by being driven away repeatedly by a dominant male early in the breeding season (Kilham 1985), may become the most vocal of crows with whom they are associated.

Rattling.—I heard rattles (Fig. 1F) a few times, always briefly, in conflicts between crows and both Red-shouldered (*Buteo lineatus*) and Red-tailed hawks. A lone crow that kept trying to join other groups in 1984-1985 made repeated rattles when being driven away.

Intimate notes.—A variety of soft sounds (not recorded) that might include moans and growly notes were made, at times, when members of a pair were together, as on nests in weeks prior to incubation, or again at the end of nesting in what appeared to be renewed courtship. This close vocal contact, or "talking," is described by Lamm (1958) for the Pied Crow (*C. albus*).

DISCUSSION

American Crows are sexually monomorphic and lack specialized feathers or colors that might aid in displays. Calls associated with contortions of the head and neck are characteristic of a number of corvids. Amadon (1944) described the piston-like thrusts that accompany the hiccup of the Florida Scrub Jay (*Aphelocoma c. coerulescens*) and Goodwin (1976), the odd postures assumed by European Jays (*Garrulus glandularus*). In these latter the back of the neck is humped as the head is bent downward. American and Carrion (*C corone*) (Wittenberg 1968) Crows have a similar silhouette when producing their calls which, like those of the European Jay, terminate in an upward jerk of the head. Singing or soliloquies are described by Goodwin (1976) for the Rook (*C. frugilegus*), by Lorenz (1970) for the Jackdaw (*C. monedula*) and by Baeyens (1979) for the Black-billed Magpie (*Pica pica*), Baeyens noting that the observer must be close to hear them. It would be of interest to know whether the singing in these varied species is done by adults or primarily by yearlings, as I have noted for American Crows.

Some of the vocalizations that I have described may sound different to others. Chamberlain and Cornwell (1971) describe *G-wal-ops* as being intense, raucous screams, whereas Stoddard (1978) described an American Crow, repeatedly bowing below the horizontal, as "uttering a note I had never heard before, which sounded very strange and carried a quarter mile away—a *t-o-o-t-o-o-w-a-h.*" It may be that *G-wal-ops* are restricted to *C. b. pascuus* for, were they given by northern crows, I feel sure that I would have heard them in Maryland or New Hampshire. Townsend (1927) heard *Cu-koos* in Massachusetts.

Bill-clacking similar to what I noted in displays of American Crows, is reported by Bacchus (1943) for Carrion Crows and by Gwinner (1964) for the Common Raven (*C. corax*). Bent (1946, p. 276) refers to a "curious clattering of the bill—which resembled horny plates struck together" in the Northwestern Crow (*C. caurinus*).

In seeking a meaning of some of the "uncrowlike" vocalizations of American Crows I have never been able to note any response of one crow to another giving a *Cu-koo*, a *Kuck-woo*, or *G-wal-op, g-wal-ops*. If these vocalizations have precise meanings, it may take

years to determine what they are. But I have an impression that American Crows are highly individualistic and express their individuality in a wide range of vocal peculiarities. One yearling gave repeated *Cu-koos* whenever I passed in its vicinity, which was daily throughout the nesting period; a female gave *G-wong, g-wongs* when with her mate; another *Kuk-kuks* for several years when no other member of its group was giving them, and a lone crow that belonged to no group, gave, at times, seemingly endless rattling cries. Although vocal peculiarities are most marked in yearlings, they may persist in some individuals from year to year.

Since the above was written, Brown (1985). has published a study of song and vocal imitation of American Crows, a study made largely of hand-raised crows maintained in cages. Since my studies were made under natural conditions, of crows participating in the nesting and other activities of cooperative groups, made up of a breeding pair plus auxiliaries of various ages, it is not surprising that our findings differ.

ACKNOWLEDGMENTS

I thank James H. Hendrie, Sr. and John D. Hendrie for their kindness in permitting my wife and I to visit their ranch; James N. Layne and Fred E. Lohrer of the Archbold Biological Station, Lake Placid, Florida, for general assistance and J. W. Hardy of The Florida State Museum for advice on making recordings and providing sonograms.

LITERATURE CITED

AMADON, D. 1944. A preliminary life history study of the Florida Jay, *Cyanocitta c. coerulescens*. Am. Mus. Novit. 1252: 1-22.

BACCHUS, J. G. 1943. Song of Carrion Crow. Brit. Birds 37: 38.

BAEYENS, G. 1979. Description of the social behavior of the Magpie (*Pica pica*). Ardea 67: 28-41.

BENT, A. C. 1946. Life histories of North American jays, crows and titmice. U. S. Nat. Mus. Bull. 191.

BROWN, E. D. 1985. The role of song and vocalization among Common Crows (*Corvus brachyrhynchos*) Z. Tierpsychol. 68: 115-136.

CHAMBERLAIN, D. R. AND G. W. CORNWELL. 1971. Selected vocalizations of the Common Crow. Auk 88: 613-634.

GOOD, E. E. 1952. The life history of the American Crow *Corvus brachyrhynchos* Brehm. Ph.D. dissertation. Columbus, Ohio: Ohio State Univ.

GOODWIN, D. 1976. Crows of the world. Ithaca, New York: Comstock Publ. Assoc.

GWINNER, E. 1964. Untersuchungen über das Ausdrucks und Sozialverhalten des Kolkraben (*Corvus corax*). Z. Tierpsychol. 21: 657-748.

KILHAM, L. 1984a. Cooperative breeding of American Crows. J. Field Ornithol. 55: 349-356.

KILHAM, L. 1984b. Intra- and extrapair copulatory behavior of American Crows. Wilson Bull. 96: 716-717.

KILHAM, L. 1985. Early breeding season behavior of American Crows. Fla. Field Nat. 13: 25-31.

KILHAM, L. (in press). Territorial behavior of American Crows. Wilson Bull.

LAMM, D. W. 1958. A nesting study of the Pied Crow at Accra, Ghana. Ostrich 29: 59-70.

LORENZ, K. 1970. Contributions to the study of ethology of social Corvidae. In: Studies in animal and human behavior 1. Cambridge, Massachusetts: Harvard University Press.

STODDARD, H. L. 1978. Birds of Grady County, Georgia. Bull. Tall Timbers Res. Sta. 21: 1-175.

TOWNSEND, C. W. 1927. Notes on the courtship of the Lesser Scaup, Everglade Kite, Crow, and Boat-tailed and Great-tailed Grackles. Auk 44: 549-554.

WITTENBERG, J. 1968. Freilanduntersuchungen zu Brutbiologie und Verhalten der Rabenkrahe *Corvus c. corone*. Zool. Jb. Syst. 95: 16-146.

REVIEW

An index to Georgia bird records in American Birds (Volumes 25-37, 1971-1983) and its predecessor, Audubon Field Notes (Volumes 1-24, 1947-1970).—Robert W. Loftin. 1984. Occasional Publ. No. 9, Georgia Ornithological Society, 28 pp., $4.00 by mail from G. O. S., 869 Clifton Road, N.E., Atlanta, Georgia 30307.—Complete compilation of Georgia records from the Seasonal Reports, articles, and Changing Seasons. Arranged by species and catagories such as "sparrows" and "blackbirds," The index includes 376 species and four hybrids. This extensive contribution is a suitable companion to Florida's Index, F.O.S. Special Publication No. 1.—**James A. Kushlan**, Department of Biological Sciences, East Texas State University, Commerce, Texas 75428.