

An Informal Survey of Raptor Imitations by Blue Jays

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It started when I kept hearing the *kek-kek-kek* calls of a Cooper's Hawk (*Accipiter cooperii*) in our yard in Ipswich, Massachusetts. I had seen an adult Cooper's at our feeders once or twice this past fall (2003) and thought the bird might still be in the area, until I began hearing the calls more frequently than I would have expected away from a nest and outside the nesting season. So I began to suspect an impostor — perhaps a Blue Jay (*Cyanocitta cristata*), a species well known for imitations of various hawks. But my own experience was limited to hearing them imitate Red-shouldered Hawks (*Buteo lineatus*); I had never heard or read of them imitating accipiters.

On December 16, I was standing in the driveway and heard the call from the Norway spruce that holds our hanging feeders. I walked toward the tree, hoping to flush a Cooper's Hawk or otherwise find out once and for all who was making the sound. A Blue Jay left the tree and flew to a nearby oak. It made no other sound while I watched it, and I could see no other bird in the spruce. A hawk almost certainly would have flushed at my approach.

I reported the incident to the *Massbird* and *NH.Bird* listserves and asked subscribers to relay incidents where they had visually witnessed Blue Jays imitating raptors, adding that I myself have occasionally SEEN them imitate Red-shouldered Hawks. I emphasized that actually seeing the jay voice the imitation was preferable to simply hearing it and suspecting a Blue Jay without visual proof.

Over the next two weeks, forty-four people responded to my informal survey. A few recounted imitations of nonraptor vocalizations as well as various mechanical sounds, and several wrote of watching Steller's Jays (*Cyanocitta stelleri*) or Western Scrub Jays (*Aphelocoma californica*) imitate Red-tailed Hawks (*Buteo jamaicensis*) in the west. Most, however, spoke of their observations of Blue Jays imitating one or more of six hawk species: Red-tailed, Red-shouldered, Broad-winged (*Buteo platypterus*), Cooper's, Northern Goshawk (*Accipiter gentilis*), and, interestingly, Osprey (*Pandion haliaetus*). In the vast majority of cases the individual had actually witnessed the jay make the imitation; in the remainder, the person had heard the imitation in circumstances that made it virtually certain that it was a jay giving the call and not a hawk. Where there was doubt, I went back to the respondent to get more details on the event.

The list below gives the numbers of respondents reporting such hawk imitations by Blue Jays, by species of hawk. The few accounts in which the person *thought* the jay gave such an imitation, but was not sure or did not provide enough evidence, have been omitted.

Broad-winged Hawk	16
Red-shouldered Hawk	16
Red-tailed Hawk	13
Cooper's Hawk	9
Osprey	4
Northern Goshawk	1

Many authors have written of this propensity of Blue Jays to imitate raptors, and in some cases songbirds. (In this summary I focus solely on raptor imitations.) For example, as far back as 1876 H. D. Minot wrote, "They imitate the cries of the Sparrow Hawk (American Kestrel, *Falco sparverius*), and those of the 'Hen Hawks,' with great exactness...." (Minot gave the nickname "Hen Hawk" to both Red-shoulders and Red-tails.) Hoffman (1904) mentions the "*tee-ar, tee-ar* (call), which exactly simulates the scream of the Red-shouldered Hawk," and adds, "Many good observers believe that the Jay imitates the cries of various hawks, such as the Broad-winged and the Sparrow Hawk." Chapman (1939) calls the Blue Jay "both a mimic and a ventriloquist. Besides an inexhaustible stock of whistles and calls of his own, he imitates the notes of other species, notably those of the Red-shouldered, Redtail [sic], and Sparrow Hawks." Chapman had named the same three species in his 1897 book *Bird-Life*.

Frederic Steele, in Foss (1994), cites imitations of Red-shouldered and Broad-winged hawks. Gail McPeck, in Brewer et al. (1991), lists Red-tailed and Red-shouldered, as does Peterson (1947 and subsequent editions). Eight other references I checked mention only the Red-shoulder. Several other authors, including Forbush (1927), simply say that Blue Jays imitate hawks, without specifying which ones. I found no references that mentioned accipiters or the Osprey. On the other hand, none of my respondents included the American Kestrel in their reports.

Why do Blue Jays — and other jays — imitate raptors? Some of my survey respondents offered possible reasons. The most frequently suggested explanation, which I will label **Theory A**, would apply only around bird feeders (which is where much human observation of Blue Jays takes place). It proposes that the jay imitates a hawk to "clear the feeder" so that it can have the food to itself. Several observers described witnessing this behavior. I would counter that the jay doesn't NEED to imitate a hawk to clear the feeder, since it can do this simply by flying in aggressively, which often has the same effect. But if pretending to be a hawk helps, some jays have clearly taken advantage of this tactic; perhaps it works to scare off other jays as well as the smaller birds. George Gladden, in Pearson (1936), liked this idea, though for anthropomorphic reasons: ". . . witness [the Blue Jay's] frequent and almost perfect imitation of the whistled scream of the Red-shouldered Hawk, which many will insist is a deliberate attempt to terrify the other birds, and is perfectly in keeping with the Jay's love of a practical joke."

Several people thought that the hawk call was given simply to indicate the presence of the imitated raptor (**Theory B**), presumably as a warning. They

emphasized that imitations were given of raptors resident in the area; one said that such calls were not given until the hawk (in this case a migratory Broad-wing) returned to the area in spring, while another said the jay imitated a Broad-wing long after the hawk had departed, indicating a good memory. This theory is similar to (A) above, but its application isn't necessarily limited to the vicinity of a feeder. But it leads to another question: what is the advantage to the jay of sounding such a warning? In theory A, that question has a plausible answer. Perhaps in this case it could be warning other family members of a hawk's presence.

Two theories from single respondents pertained to the nesting season. One (C) was that the jays, by giving Cooper's Hawk imitations, might be trying to get territorial Cooper's Hawks, if present, to respond, as a means of ascertaining their own nesting safety; an intriguing idea. The other (D) suggested that, by giving hawk calls from high in the canopy, jays were hoping to elicit a fright response from birds nesting lower down, thus revealing the location of nests to rob of eggs or young. This idea is less likely, since the reaction of most songbirds upon hearing raptor calls is to freeze, not to flee. The latter reaction is resorted to when the raptor is actually attacking.

The other theory offered (E) was that the calls might not be strictly deliberate imitations, but rather sounds within the jays' normal range of vocalizations. This theory was supported by Hoffman (1904), who ended his account of the Blue Jay with this sentence: "The fact remains that even where the Red-shouldered Hawk is uncommon, the Jay frequently uses a note like his scream, so that it may be a part of his original repertoire, and not an imitation." Given the frequency of excellent imitations of a variety of hawk species by Blue Jays, not to mention the astounding mimicking skills of many other corvids, one might conclude that such an idea would not receive much support today, whether or not such calls might be within the jays' normal range of sounds.

However, the most recent, and thorough, reference on Blue Jays, the *Birds of North America* account (Tarvin and Woolfenden 1999), indicates otherwise. These authors devote an entire column to mimicry, and cite, from either the literature or their own or others' personal experience, reports of imitations of all the species mentioned above except the goshawk, and add the Eastern Screech-Owl, the only reference I have found to any owl imitations. Consider their comments on the whole issue:

Hawk Calls [are] usually given when in a highly excited state such as when approaching a feeding station or when human approaches nest. Unclear whether imitations given in response to actual hawk. Most 'imitations,' such as those of Red-tailed and Red-shouldered hawk calls, clearly are modulations of typical Jeer Calls, or combinations of Jeer and Pumphandle calls. Others, such as Cooper's Hawk and Eastern Screech-Owl calls, may be more closely related to Intrapair Contact Calls. [These calls are all defined elsewhere in the text.] Some renditions of Red-shouldered, Red-tailed, and Cooper's hawk calls nearly perfect, but not as loud. However, renditions of Hawk Calls sometime slurred such that they are easily distinguishable from the model, calling into question intention of true mimicry by jays.


Tarvin and Woolfenden go on to cite an article by Hailman (1990) that “offered 4 hypotheses to explain evolution of Hawk Calls by Blue Jays: (1) jays emit Hawk Calls to alert other individuals to near presence of a raptor (‘hawk is here’ hypothesis), (2) jays indicate where a hawk was previously (‘hawk was here’ hypothesis), (3) jays deceive other species into believing a raptor is present (‘deception’ hypothesis), and (4) jays simply incorporate environmental sounds into their repertoires (‘idiot mimic’ hypothesis). A fifth logical, and thus necessary, but rather uninteresting hypothesis is (5) jays emit Hawk Calls because the calls are native to the repertoire of jays (‘convergence’ hypothesis). Although each hypothesis is supported by a modicum of anecdotal evidence, none seems to be substantially more compelling than the others, and systematic study is needed (Hailman 1990).”

It is interesting how some of the theories offered by my survey respondents paralleled those offered by Hailman. **A** and **D** fit into Hailman’s “deception” hypothesis (#3), while **B** is the same as #1 (“hawk is here”) and **E** similar to #5 (“convergence”). **C** had no counterpart, nor did #2 and #4. Personally, I find #2 of little value, since I cannot imagine a reason why a jay would imitate a hawk after it had left the area, when the need for a warning (or whatever) had passed. Be that as it may, it seems clear that we have a long way to go to draw any conclusions about why Blue Jays imitate hawks, how many of them are able to do it, and the degree to which the hawk calls are pure mimicry or simply modifications to their own innate and learned vocalizations aimed at imitation (a subtle difference). My own unscientific inclination, given the known intelligence and outstanding mimicry skills of many corvid species, is that the jays are imitating the hawks with deliberation and adding to their vocabularies accordingly, at least in the case of the Buteo calls, which are widely given and frequently witnessed.

A final thought has to do with how we as humans hear things differently — or, if we hear the same things, how we describe them differently (witness the wide variation in how the various authors describe Blue Jay calls). Some of this is surely related to the widely variable degree to which humans hear and relate to music. There is also the degree to which we as birders are truly familiar with both Blue Jay calls and the various calls of the hawks themselves. Have we all correctly reported the hawk species that we thought was being imitated? Could we have been mistaken in some cases, in that we might have interpreted a jay call as a hawk imitation when in reality it was something else, or an imitation of a different hawk?

This should rarely be a problem with the three Buteo species, which are typically vocal in flight. Most birders with a modicum of experience will correctly identify their calls. It might be more problematic with the Accipiters and Ospreys, which are not generally vocal in flight and make the sounds we think the jays are imitating mainly around their nests, as alarm calls. I should think both birds and birders would be generally less familiar with these calls, and cannot think of a reason why the jays would want to imitate them, especially around feeders, where, in consequence, I suspect they would be less likely to cause alarm. Nevertheless, a week or so after the event I related in the second paragraph, I actually witnessed what I assume was the same jay giving (again) what sounded exactly like a Cooper’s *kek-kek-kek* call directly

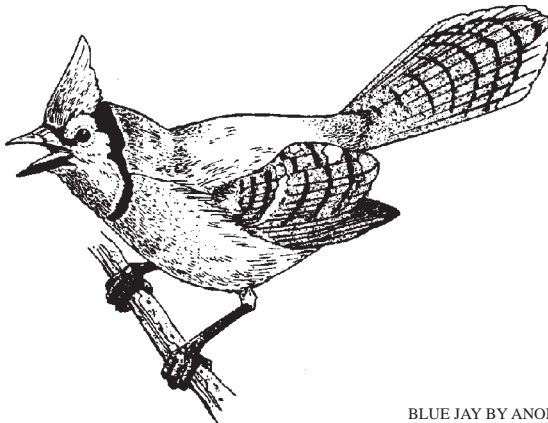
above our feeders. Clearly there is still a lot to learn about Blue Jay behavior, and my speculation is unlikely to reveal anything but more questions.

The question of why Blue Jays imitate raptors is fascinating. I hope readers will look and listen for jay imitations of hawks and report them, along with the circumstances, in a “field note” to *Bird Observer*. The more detailed observations that are published, the better our chances of coming up with some meaningful answers. 

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BLUE JAY BY ANON.