The Outside Story

The Unsung Music of Birds

By Kenrick Vezina

With spring creeping closer, our year-round avian residents such as cardinals and titmice are already raising their voices. But there's more than one way to make music, and birds have evolved means for using everything at their disposal to fill our forests with whistles, twitters, and booms – no voice needed.

Early spring is the perfect time to catch a bug-eyed, comically plump creature demonstrating birds' potential as instrumentalists. In March, male American woodcocks stake out turf along the edges of forests and in clearings, where they put on a show each evening, shortly after sunset.

Their performance has three acts, combining visual and auditory cues. First, a minute of urgent, nasal *peent* calls from the ground. Then a spiraling, twittering flight upward. And, finally, a steep descent accompanied by rapid, chirrupy sound. The first sound is vocal – videos abound online of woodcocks throwing their heads back and beaks wide to produce a *peent* call, which seems to be a whole-body effort. Once the bird takes off, however, that airy twitter is created by the three foremost primary feathers of its stubby wings as it beats its way skyward. These feathers are narrower and stiffer than the rest of its primaries, with greater space between them. During the display flight, they act like the reed in a clarinet, vibrating rapidly to produce a high-pitched sound. Interestingly, the same feathers on females and immature males are not as narrow, probably because they don't need to use them as noisemakers.

Musical feathers can do more than serenade a potential mate. If you've ever startled – and been startled by – a mourning dove, you'll know they make a distinctive high-pitched flutter on takeoff. Like woodcocks, they have specialized noise-making feathers, but for the doves this sound acts as a built-in alarm system that may momentarily confuse predators – and let other doves know it's time to skedaddle. Though it sounds to human ears like doves make the same panicky whistles *every* time they take off, experiments have shown that other birds can recognize the difference between a casual takeoff and a hawk-induced flight.

Whistles aren't the only sound feathers can make. Another secretive, round-bodied bird, the ruffed grouse, performs a "drumming" display that uses the entire wing – and serves to both mark his territory and attract mates. Drumming begins in late spring. A male grouse finds a good log to stand on, fans his tail, and flares the namesake ruff of chocolate-colored feathers around his neck in a collar that would make Shakespeare jealous. He stretches to his full height, pauses as if to gather his strength, and begins to pump his stumpy wings in what looks like an attempted clap. He quickly accelerates, and what starts as a few weak *whuffs* quickly builds to a hearty *whumph*-ing, a noise akin to the chug of a gas-powered mower. Each *whumph* is the sound of air collapsing into the tiny vacuums created by the bird's whipping wings. During a single 10-second performance, a ruffed grouse might beat its wings 50 times, reaching a peak speed of almost 20 beats per second.

Of course, feathers are just one of the tools birds use to make noise. Big, hard beaks also have great potential as instruments. The most obvious example is the staccato stylings of woodpeckers. By taking advantage of the natural acoustics of hollowed-out snags, even the little downy woodpecker can fill the forest with its territorial announcements. But birds don't need extremely specialized pecking hardware to send a message: ravens, with heavy but general-purpose beaks, are an excellent example. Dominant females will often follow-up their "knocking" call with a loud bill snap. The champion of beak-based communication must be the African shoebill – a.k.a. the "whale-headed stork" – a 5-foot-tall bird with a truly massive shovel-shaped beak. When it rattles its bill, the resulting sound is like machine-gun fire.

All of these unsung (literally) sounds illustrate an important aspect of evolution via natural selection: it works with what it's got. Feathers' *primary* purpose, in evolutionary terms, was probably insulation and, later, enabling flight. Likewise, beaks did not *originally* arise as biomechanical castanets. But communication is essential for both survival and reproduction, the twin imperatives of evolution, and sound is a very effective way to communicate. All the attention goes to the vocalists, but bird bodies are full of musical potential: a fact that evolution has exploited with aplomb.

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