The Science of Bird Sounds

By Sarah Belles

If you spend a lot of time outside, especially early in the morning, you probably know that birds can be quite vocal. But have you ever wondered how these small creatures are capable of producing such loud and often complex sounds? For most birds, it all comes down to a tiny water droplet sized organ called a syrinx.

Located towards the bottom of the windpipe, the syrinx allows songbirds to perform amazing vocal feats. In songbirds, both sides of the syrinx can be operated independently, allowing for two totally different notes to be produced at once! This ability allows birds to create complex songs made up of many different notes, trills, buzzes, and other sounds.

While other animals have a larynx at the top of the throat that vibrates folded tissue to produce sounds, birds only really use their larynx for eating and breathing. Also, while humans and other animals only use a small portion of exhaled air for producing sound, birds are capable of utilizing all of the air that passes through to create their songs and calls.

Not all birds are created equal in terms of vocal ability. To make their syrinxes work, birds rely on a muscle or series of muscles. The birds with more impressive songs and sounds will probably have more muscles controlling the syrinx as opposed to birds that can only produce simple sounds. Since different bird species are capable of producing different sounds, it can be useful to listen closely and use songs and calls to help you when trying to identify birds.

Some birds actually have ways to create sounds using other parts of their bodies. One example you might be familiar with is the peculiar whistling noise created by doves when they take off. While it may at first seem like doves are making this sound with their mouths, they are actually producing the sound with their wings! When Mourning Doves take off or land, their wings rub together quickly and make a whistling noise thanks to the shape of some of their flight feathers. The American Woodcock is another example of this phenomenon. A whistling sound is created when air passes through modified wing feathers in flight.

Another example of a non-vocal bird sound that you might recognize is the drumming noise created by a woodpecker's beak on a tree or other object. Drumming is used much in the same way that a male songbird uses a song to attract a mate and shouldn't be confused with drilling, which is performed when a woodpecker is trying to collect food or create a cavity for a nest. The sounds created by drumming are usually rapid and rhythmic, while drilling has less of a pattern.

When I hear songs, calls, or other bird related sounds, I like to think about what is happening on the inside or outside to allow the bird to make those noises. The next time you are outside, take a minute to sit and listen to what bird sounds you hear. If you wake up early enough, you might even be able to experience a dawn chorus, or a period of time in the morning when many different birds might be singing at the same time. Try to pick out how many different songs or calls you can distinguish!

Photo by Mike Williams. Caption: The Dickcissel has a relatively basic call, but it still has several notes and syllables. It's song of "*dick-dick-see-see-see,"* is where it gets its name.