

Hummingbirds

Get the lowdown on these tiny but fascinating creatures

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Often heard before they are seen — their brilliant jewel-toned feathers glinting in the sun as they whirl through the garden — hummingbirds remind an observer more of some exquisitely wrought mechanical toy than a living bird. Hummingbirds have captured hearts and captivated minds as far back as history records.

Native peoples credited them with bringing beneficial rains, healing the sick, carrying messages to the gods and even being the sun in disguise. European and North American ornithologists showed their fascination with them by bestowing upon the different species a host of flamboyant names: Peacock Coquette, Sapphire-spangled Emerald and Shining Sunbeam, to name a few. Then, of course, there are the millions of people who set out hummingbird feeders, hoping to entice a few of these tiny flying jewels.

Different Types

Hummingbirds — along with swifts, treeswifts and, according to some authorities, owlet-nightjars — belong to the taxonomic order Apodiformes. It means “those without feet,” an unfortunate name that likely gave rise to the “hummingbirds have no feet” myth.

The family of hummingbirds itself is named Trochilidae (very appropriately meaning “small bird”) and contains the second highest number of individual species of any bird family in the world. The family Trochilidae is split into two subfamilies: the Phaethornithinae, or “hermits,” a small group of species found in areas of Mexico, Central and South America, and the Trochilinae, or “typical,” meaning all the rest. Ornithologists don’t agree on exactly how many different genera and species of hummingbirds exist. Current lists record between 328 and 338 species grouped into between 102 and 108 total genera.

Hummer Homes

Hummingbirds live exclusively in the Western Hemisphere. Collectively, their ranges span from the southernmost tip of South America to Alaska and northern Canada. Within this vast expanse, however, some species are highly migratory with breeding areas that are thousands of miles from their wintering habitats. Other species are highly localized to only one particular location — an area perhaps as small as an individual forest or mountainside.

According to Operation RubyThroat, a prominent hummingbird conservation organization (www.rubythroat.org), 27 species have been recorded in the United States and Canada.

Of these, 18 species could be considered commonly seen, with 16 species breeding in this geographic area. Arizona and Texas lead the list of states recording the most hummingbird species within their borders (18 species each), with New Mexico bringing up a close third place (17 species). Among Canadian provinces, British Columbia has recorded the most hummingbird species (eight). Only the state of Hawaii and the provinces of Nunavut and the Northwest Territories have no hummingbird records at all.

Physical Differences

In many ways, hummingbirds look physically just like most other birds. They have feathers and wings and they lay eggs. In some aspects of their anatomy, however, they are quite different, and these differences help to give them some of their most fascinating abilities.

Length and Weight

Perhaps more so than any one other single physical feature, hummingbirds are known for their small size. Most adults measure between 6 and 12 centimeters in length (bill included) and weigh between 3 and 6 grams. The smallest hummingbird species, the Bee Hummingbird of Cuba (also the smallest bird species in the world), has an average adult length of only 5 centimeters and weighs less than 2 grams.

Bill and Tongue

The long, thin bill of a hummingbird, another well-known feature of its anatomy, is particularly well adapted for retrieving nectar from flower blossoms and for capturing tiny insects in their hiding places. Many species of hummingbirds have evolved bills specially suited for particular shapes of flower varieties.

For example, the White-tipped Sicklebill, which lives in Central America, has a dramatically decurved (curved downward) bill that perfectly matches the shape of the tubular corollas of the Heliconia and Centropogon flowers from which it feeds, while the Sword-billed Hummingbird, which lives in South America, has a long, straight bill (longer than both its body and tail length combined) that is perfectly suited for reaching nectar at the bottom of the deepest corollas.

Just as the hummingbird bill is ideally adapted for inserting into blossom corollas, the tongue — which retrieves nectar by a rapid lapping technique — is superbly suited for this task. To increase the amount of nectar retrieved, the tip of the tongue is divided and covered with tiny bristles that capture and hold liquid for return to the bill, where the nectar is squeezed out and swallowed.

Skeleton

Among all the superb fliers of the avian world, few can rival hummingbirds when it comes to having a skeleton perfectly adapted for flight. Like most birds, the majority of a hummingbird's bones are pneumatized (that is, porous rather than solid, a weight-reducing adaptation for flight).

In order to provide a sound foundation for their powerful pectoral flight muscles, hummingbirds have rib cages made up of eight pairs of ribs rather than the six pairs found in most birds. They also have very large breastbone keels — to which those muscles attach — that extend nearly the entire length of their bodies from their shoulders to their tails.

Hummingbird skeletons also differ from all birds except swifts in their ball-and-socket shoulder joints, which allow a range of rotation as wide as 180 degrees (an essential element in their ability to hover in place). Unlike almost all other birds, the “wrist” and “elbow” joints in a hummingbird's wings are fused, making the wings rigid in flight and able to most efficiently use the force exerted on them by the powerful flight muscles located in the chest.

Feathers

Of course, the feature of the hummingbird that attracts so much attention remains its plumage. Despite having the least average number of feathers of any bird family, hummingbirds more than make up for this lack of quantity through quality.

It often surprises many hummer aficionados to see that, when viewed under indirect light, hummingbirds' vividly colored feathers are actually rather flat, often dark colors. The brilliant jewel-like and flashy metallic colors that make their feathers so noticeable come from melanin pigment arranged in flat platelets. These platelets contain tiny air bubbles that serve as reflectors and cause their feathers to appear iridescent. When light shines directly on a hummingbird feather from a particular direction, some wavelengths of that light are absorbed, while others are reflected. Thus, the feather appears to the observer as a vibrant, sometimes even metallic color.

The most iridescent of hummingbird feathers appear on males in their gorgets (throat patches) and, in some species, on their crowns. These feathers are arranged in a way so that the hummingbird can position them and reflect in the same direction all at once, producing the seemingly electric flash used in courtship displays.

Frequent Fliers

Thanks to its ball-and-socket shoulder joints, unusual wing structure and flight muscles that are proportionally larger than those found in any other bird family, a hummingbird's wings can move in a figure-eight motion. Because of this, hummingbirds can fly forward, straight up, straight down and backward.

Hummingbirds also can hover in place — something that no other bird species is capable of doing and a crucial ability for obtaining nectar from hanging flower blossoms. In fact, a hummingbird's wings are so central to its mobility that when perched or sitting on a nest, a hummingbird will take to the air briefly and then land, rather than take a step or two to reposition itself.

Anyone watching hummingbirds in flight might assume that they are exceedingly fast fliers. In fact, their small size and ability to rise vertically and depart instantaneously without needing to pick up speed gives the illusion of exceptionally fast flight. The actual flight speed of a hummingbird is seldom more than 25 miles per hour, although a bird might more than double this speed during escapes and short aerial courtship dives.

Feeding Frenzy

Hummingbirds feed mostly on the nectar of flowers. They have beaks and long tongues perfectly adapted to reach into the corollas of blossoms to retrieve the sweet liquid found there. Of course, they visit feeders containing sugar water, too. While providing tremendous energy, natural nectar and sugar water cannot provide the proteins, fats and other nutrients that hummingbirds need. They also eat many types of small, soft-bodied insects and arachnids.

Unlike many birds, hummingbirds feed more or less constantly throughout the day. The primary reason for this is that their metabolic rate is astonishingly fast, especially when in flight. With a body temperature averaging 105° F (40.5° C), a flying hummingbird has a heart rate of roughly 1,200 beats per minute and might burn calories at a rate as high as eight times its normal resting rate.

Because of this, hummingbirds must consume between three to seven calories each day in order to survive. To put that into human perspective: A person who eats 2,000 calories each day would need to consume more than 88,570 calories, given the differences in body size and weight.

Of course, far more could be written about hummingbirds, their remarkable abilities and their fascinating lives. Indeed, you will find all these things and more within the pages of this publication. While you can learn a considerable amount about hummingbirds from books and articles, there is no substitute for spending time near an actively visited hummingbird feeder and simply allowing yourself to become enchanted by their comings and goings. Let the knowledge that you have gained mix with the magic of the birds' presence, and you will truly come to know hummingbirds.