

## Hummingbirds: Nature's Perfect Helicopters

By Dr. Reese Halter

The diminutive warm-blooded hummingbirds of the West are beautiful, fearless and possess magical-like qualities. Rufous, Anna's, black-chinned and calliope hummingbirds appear during the late spring and early summer. They attain speeds in excess of 50 miles per hour (80 km. per hour) and migrate some 1,677 miles (2,700 kilometers) to their wintering habitat in Mexico.

Hummingbirds are often heard - by their hum - before they are seen. Their feather colors are a combination of brilliant iridescents and metallics. Their beaks are needle-like in shape. They have extremely strong chest muscles that account for 30 percent of their body mass - the highest of any migratory birds. These muscles enable them to roll their shoulder joints back and, using their wing tips projected in a flat figure of eight, they hover. In fact they accomplish this extraordinary feat of 200 beats per seconds in the same manner of a variable-pitch rotor on a helicopter. By slightly altering the wing angle they can move forward, backward, sideways and with ease perform upside-down maneuvers. There are about 10,000 species of birds, of which only 328 kinds of hummingbirds can hover.

Hummingbirds are specialists. They co-evolved with flowering nectar-rich plants over the past 40 million years. These remarkable birds have helped shape the landscapes of South, Central and North America. They have been Mother Nature's emissaries of evolution and creators of diversity.

They have the fastest metabolism of any bird, with a daily energy requirement of between four and five grams. Like humans, they prefer the simple sugar of sucrose as opposed to glucose and fructose. That means they must visit between 1,000 and 2,000 nectar bearing flowers a day.

Hummingbirds are extremely busy. As a result, they have the highest oxygen requirements of any animal species on Earth. Their specialized lungs have nine thin walled air-sacs that are adapted to use high gas volumes. At rest, their breathing rate is about 300 times per minute. Under hot conditions or during flight it elevates to 500 times per minute. In comparison, starlings and pigeons breathe 30 times per minute whereas the humans' rate is between 14 and 18 breathes per minute.

When a hummingbird eats, they stick their long brush-tipped tongues out the ends of their bills and lap away. The daily nectar plus water they consume is equal to about 160 per cent of their body weight.

Hummingbirds will also eat gnats, flies, aphids, beetles and spiders' webs for their silk wrapped prey. Insects provide them with an important source of protein. They must eat constantly and they store excess food in a pouch under their tongue called a crop in order to live through the night. If they run

out of energy during the night or if bad weather sets in they become dormant for day or two in order to survive.

Prior to late summer migration they gorge themselves to double their body weight.

Males are more colorful and slightly smaller than females. They are polygamous mating with several females during a season. Females are excellent single mums in charge of building the nest, incubating the two eggs for about 18 days and feeding the chicks. Hummingbirds are fearless and will defend against birds of prey, jays, wrens, squirrels and even snakes. Though fewer than half of all hummingbird nests produce fledglings.

Hummingbirds occupy shady forest edges and alpine meadows throughout the West including the bunchgrass ecosystem. They have adapted to the presence of humans through increased use of nectar producing plants.

Feeders to attract hummingbirds must be kept clean and free of black mold. The sugar feeding solution should be four parts water to one part sugar. Do not add food coloring nor use honey, for it can go bad. Feeders must be maintained all summer long as hummingbirds become very dependent on the food source. If planting flowers, consider fireweed, honeysuckle, willow, penstemons and, on the South Coast, arbutus.

This magical angle-like bird likes to bathe several times a day along forest streams.

Hummingbirds are joyful and, according to Haida legend, they are healing.

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