



Amazilia hummingbird at feeding tube

Hummingbirds

The one-of-a-kind birds arrive for 50th anniversary of Weltvogel Park Walsrode

By Anne Hoppmann

Who does not know the small, shimmering hummingbirds which flap their wings faster than the human eye can see? The more than 320 species of hummingbirds exclusively inhabit the New World. They occupy forests, deserts, mountain regions and open landscapes from southern North to South America.

The smallest representative, with a size of only 5–6 cm and a weight of 2 g, is the Bee Hummingbird (*Mellisuga helenae*)—the male is the lightest bird in the world and not larger than a human thumb! The 11 x 8 mm eggs are only the size of a pea and weigh 0.4 g. With a size of 22 cm and a weight of 23 g, the Giant Hummingbird (*Patagona gigas*) is the largest of these tiny bird species.

Its eggs are 20 x 12 mm and weigh 1.4 g.

Most of the hummingbirds show a sexual dimorphism. In general, the male is considerably more colorful and shiny than the female. He uses the plumage coloration as a signal during courtship or dominance displays. Especially in very territorial species the iridescent plumage coloration is highly pronounced. The duller colored females rely on 'crypsis' during the rearing of their offspring as a defence against predation. Females care for the eggs and young by themselves without the help of the males. They build a tiny, mostly cup-shaped nest made of cobwebs, plant fibres, mosses or lichens, which is placed on branches, forked twigs or attached to large leaves. The one to two white eggs are usually incubated for 16 to 19 days before the chicks hatch. After hatching, the chicks are fed many times a day for three to four weeks.



Green-tailed Trainbearer

Hummingbirds mainly consume nectar—very energy-rich food—from flowers. They search for the nectar by visiting large, brightly colored flowers. Red seems to be the preferred color due to the spectral sensitivity of the hummingbirds' eyes. The nectar is gathered with an extremely extendable bifurcated tongue which is flicked three to 13 times per second. Hummingbirds feed on insects as well but to a much lesser extent. The shape of the hummingbirds' bills are as various as the flowers of their food plants—you can find bills that are short and pointed or long and curved—all being perfectly adapted to the shape of the flower they specialize in. Hummingbirds have to feed on nectar many times a day, as a meal of nectar will pass from the crop into the intestine in only about four minutes, and it takes less than 15 minutes for the body to extract up to 99 percent of the sugar glucose.

Hummingbirds are essential for reproduction of many New World plants, as pollen is attached to the plumage of a hummingbird while it feeds at a flower. Moving on while searching for food, the hummingbird transports the pollen to the next flower. Some flowers are visited by only one or a few species of hummingbirds

whereas others attract many different species. Plants which carry flowers that hummingbirds feed on provide nectar throughout the whole year—in contrast to plants which produce seasonal nectar and which are pollinated by insects.

Another special feature of hummingbirds is their flight - with the help of their flexible wings and 10 to 80 wingbeats per second, they can not only fly forward, but also back- and sideward, maneuvering like a helicopter and remaining 'motionless' in mid-air—thus they are able to reach even the most hidden flowers. Up to 200 wingbeats per second have been already measured in the wild. In contrast to other bird species hummingbirds beat their wings up and down to support their flight. The energy needed for the strength-sapping flight is gained from carbohydrates in the nectar.

At rest, hummingbirds breathe 300 times per minute. The breathing rate can rise to over 500 times per minute during flight or when the temperature increases. In comparison to that, doves only breathe 30 times and humans only 14 to 18 times per minute. It is important for such small birds with a high metabolism

to save energy whenever they can e.g. while resting during the night or when the temperature is low. Therefore, the metabolism and the body temperature are decreased during the night, conserving up to 60 percent of the energy normally used. Every night the birds enter a hibernation-like state, which is triggered by the onset of the dusk.

At the end of 2011, thanks to a cooperation with a hummingbird breeding center in Trieste, Italy, two species of hummingbirds moved into a newly designed breeding center at Weltvogelpark Walsrode. In general, hummingbirds are known to be difficult to keep and breed—thus they are not found in most zoo collections. At the moment we now house the Amazilia Hummingbird (*Amazilia amazilia*), which prefers habitats with scrub, xerophytic steppe, thorn forest and desert areas and is also common in habitations, even in parks and gardens within cities. The females strongly resemble the males in their appearance. Like the Amazilia Hummingbird, the Green-tailed Trainbearer (*Lesbia nuna*) can be found in the west of South America, where it inhabits Andean regions in heights of up to 3800 m. The females are similar to the males, but the male has a remarkably 10 to 12 cm long, forked tail. This species is rarely seen in zoos and Germany-wide can only be seen at Weltvogelpark.

Hummingbirds have special requirements in their environment and much thought was put into their housing in the new breeding center at Weltvogelpark Walsrode. Many factors are

constantly regulated and the room is kept as sterile as possible, as pathogens can be a very serious danger to the birds. The temperature as well as daylight are artificially controlled, the water used is specially filtered and a sprinkling system especially adapted to the needs of the hummingbirds regulates the air humidity.

In the breeding center the hummingbirds are kept at a temperature of 26°C by day which is reduced to 17 to 20 °C during the night. The humidity in the enclosures is 60 percent–70 percent. To give the birds a good start into the day, the dawn is controlled automatically. Shortly after 8 am the basic lighting is slowly increased and half an hour later UV-daylight-lamps are turned on as well. After 12 hours, shortly after 8 p.m., the artificial dusk is started and the lamps are phased down to 0 percent within one hour. During the night their room is completely dark to give the birds the necessary period of rest.

The birds in the breeding center are observed and cared for all day long by dedicated keepers despite all the automation, because scientific work and documentation is an important part of the work of Weltvogelpark. The behavior patterns of each bird are observed and recorded. The artificial nectar is prepared fresh twice daily— it consists of proteins, fats, carbohydrates as well as vitamins, which are strictly aligned to the needs of the birds. Free-hanging tube feeders in the enclosures are filled with fresh liquid nectar twice a day. Every 45 minutes hummingbirds need to feed on the nectar. During the breeding season the hummingbirds are



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additionally offered fruit flies, which they prefer for feeding their offspring.

The breeding enclosures are densely planted and offer sufficient hiding places for these very sensitive birds. Fibres of these plants can also be used for nest building. Additionally, silk and cotton threads are provided as nesting material. It is important that the plants or silk cocoons are not chemically treated but that the fibres are natural and unhandled. The nests of the various species can differ a lot. In the wild, the Amazilia Hummingbird builds cup-shaped nests made of plant wool and cobwebs which are placed on the upper side of branches. In contrast, the nests of the Green-tailed Trainbearer are built of mosses and rootlets and are placed underneath overhangs on slopes.

Most hummingbirds are very territorial, and males and females are not normally together. Some species like the Amazilia Hummingbird seem to be more hardy and can be kept more easily than others. This species can be found in some zoos in Europe. However, the Green-tailed Trainbearer is more delicate and sensitive to changes in its environment. The enclosures in the breeding center are build so that the females have their own enclosure and the males are housed in adjacent areas. The male is only allowed to enter a female's enclosure when she is actively building her nest. After successful pairing, the male is directly separated again and the female can concentrate on incubating the eggs and caring for the young.

From our season opening in March 2012 our visitors are able to experience the exciting world of the hummingbirds as well in the 'Kolibri-Haus' beneath the breeding center. New educational signs and short movies can be seen, but visitors can also closely observe the birds in enclosures especially designed to resemble the hummingbird's natural habitat. Visitors with enough patience and good observation skills are able to see a hummingbird in action at a feeding tube, using its unique flight manoeuvres. Live images of the breeding center which is located above the heads of our visitors show females building their nest or caring for eggs and young when they are breeding.

A ranger is always present in the house to answer questions and tell our visitors anecdotes and important things to know about the world of hummingbirds! By now the hummingbirds have settled in quite well and the breeding season has already started. At this moment one female is busy building her nest, while another one is incubating its eggs. And one chick already hatched in mid-May in the nest of our most 'hard-working' female which cares very well for its offspring! The staff of Weltvogelpark is very happy and is now looking forward to more tiny hummingbird chicks during this breeding season.

Reference

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