Why does the Ruby-throated Hummingbird's throat patch appear to flash on and off?

Iridescent colors, such as those found on the throats of many hummingbirds, are very bright and change with the angle formed by the observer's eye, the reflecting surface (the iridescent throat patch), and the light source (in this case the sun). As the angle of view changes, light waves contacting the hummingbird's throat feathers interfere with each other in different ways: at each angle, some wavelengths of light are brightened and others are cancelled out before they reach the observer's eye. At each position the observer only sees the brightened colors. The hummingbird's throat appears to flash on and off because his movements change the angle of view, and hence which colors the observer can perceive. (http://www.birds.cornell.edu/homestudy/quiz/quiz-question-5#)

When should I take my hummingbird feeders down?

Many people worry that by providing sugar water in autumn, they will cause hummingbirds to linger at their feeders rather than migrate when they should. In fact, hummingbirds have a strong instinct to migrate. Even if your feeders are full, the hummingbirds will leave when it's time, in response to decreasing daylight and other environmental cues. To make food available for late migrants and vagrants, fill your feeders with a solution of four parts water and one part sugar, for three weeks after the last hummingbird has visited. In temperatures below 28° F, you can prevent the solution from freezing by bringing the feeders in overnight.

In some regions, such as the southernmost states, hummingbirds regularly visit feeders year-round. In North Carolina where the Rubythroated Hummingbird is the only breeder, 10 vagrant hummingbird species have been documented during the nonbreeding season!

Despite their small size, hummingbirds are hardy. They can survive sub-freezing temperatures, and even blizzards, by going into torpor—a sleeplike state that saves energy. When not in torpor, however, hummingbirds use energy quickly. At rest, a Ruby-throated Hummingbird uses three times as much energy per unit weight as a House Sparrow, and its heart beats more than 10 times per second! By providing food, you may help a hummingbird survive at a time of year when insects and nectar are difficult to find.
(http://www.birds.cornell.edu/AllAboutBirds/notes/BirdNote20_FallFAQs.pdf)

Migration Basics

Although hummingbird migration is not well documented by large numbers of banding records, we do know a few facts, and we can draw logical inferences about some of the unknown areas. ("Banding" means trapping a bird and wrapping a tiny numbered strip of aluminum around one leg. This is currently the only way to identify individual hummingbirds. Species are studied by gathering data on large numbers of individuals.)

Each hummingbird species has its own migration strategy, and it's incorrect to think of "hummingbirds" as a single type of animal, all alike. This article will discuss Ruby-throated migration, because it's likely that more people see that species than all the others in North America combined, and its dynamics are similar to other species, although the dates and locations vary. An exception is

Anna's Hummingbird, which typically does not migrate but may wander up- and downslope following seasonal food resources.

Banding studies suggest that individual birds may follow a set route year after year, often arriving at the same feeder on the same day. We do not know if any individual bird follows the same route in both directions, and there are some indications that they do not.

Why migrate?

As with most of our migratory birds, hummingbirds apparently evolved to their present forms during the last ice age. They were (and largely still are) tropical birds, but as the great ice sheets retreated from North America, they gradually expanded their ranges to exploit rich temperate food resources and nesting space, filling unoccupied niches in the U.S and southern Canada while evading intense competition in the tropics. Some songbird species have adapted completely to our variable North American climates, in part by becoming vegetarians in winter, and don't migrate. But hummingbirds are carnivores (nectar is just the fuel to power their flycatching activity) and depend on insects that are not abundant in subfreezing weather, so most of them must retreat back "home" to Central America in the winter or risk starvation. A few Ruby-throated remain along the Gulf coast each winter instead of continuing to Central America, perhaps because they are too old or sick to make another trans-Gulf flight or too young (from very late nests) to have had time to grow fat and strong enough to migrate; their survival chances depend on the severity of each particular winter, and many perish in unusually cold years. Another small population winters in the Outer Banks of North Carolina.

Northward Migration

Most Ruby-throated Hummingbirds winter between southern Mexico and northern Panama. Since hummingbirds lead solitary lives and neither live nor migrate in flocks, an individual bird may spend the winter anywhere in this range where the habitat is favorable, but probably returns to the same location each winter. Ruby-throats begin moving north as early as January, and by the end of February they are at the northern coast of Yucatan, gorging on insects and spiders to add a thick layer of fat in preparation for flying to the U.S. Some will skirt the Gulf of Mexico and follow the Texas coast north, while most apparently cross the Gulf, typically leaving at dusk for a nonstop flight of up to 500 miles, which takes 18- 22 hours depending on the weather. Although hummingbirds may fly over water in company of mixed flocks of other bird species, they do not "hitchhike" on

other birds. Some hummingbirds land on offshore oil rigs or fishing boats to rest. Individual birds may make landfall anywhere between southern Texas and central Florida. Before departing, each bird will have nearly doubled its weight, from about 3.25 grams to over 6 grams; when it reaches the U.S. Gulf coast, it may weigh only 2.5 grams. It's also possible that a few Ruby-throats island-hop across the Caribbean and enter the U.S. through the Florida Keys.

Males depart Yucatan first, followed about 10 days later by the first females. But the migration is spread over a three-month period, which prevents a catastrophic weather event from wiping out the entire species. This means that a few birds will arrive at any location very early (the dots on the migration map), but the bulk of the population will follow later, so you may not see your first hummingbird for several more weeks. Each individual has its own internal map and schedule, and "your" birds may arrive early, late, or anywhere within a two-month span.

Once in North America, migration proceeds at an average rate of about 20 miles per day, generally following the earliest blooming of flowers hummingbirds prefer. The northern limit of this species coincides with that of the Yellow-bellied Sapsucker; if the earliest males arrive in Canada before sufficient flowers are blooming, they raid sapsucker wells for sugar, as well as eat insects caught in the sap. The northward migration is complete by late May. Banding studies show that each bird tends to return every year to the same place it hatched, even visiting the same feeders

Southward Migration

Unlike the Rufous and other hummingbirds of the western mountains, where freezing nights are common even in summer, Ruby-throats aren't well adapted to cold temperatures; they have a tough time below the mid-20s (F), and don't enter torpor as regularly as their western cousins to conserve energy. To avoid the cold, and the scarcity of food when flowers stop blooming and insects stop flying, they go south. Some adult males start migrating south as early as mid-July, but the peak of southward migration for this species is late August and early September. By mid-September, essentially all of the Ruby- throated at feeders are migrating through from farther north, and not the same individuals seen in the summer. This is difficult to see, since they all look alike, but has been proven by banding studies. The number of birds migrating south may be twice that of the northward trip, since it includes all immature birds that hatched during the summer, as well as surviving adults.

For a hummer that just hatched, there's no memory of past migrations, only an urge to put on a lot of weight (see above) and fly in a particular direction for a certain amount of time, then look for a good place to spend the winter. Once it learns such a route, a bird may retrace it every year as long as it lives. The initial urge is triggered by the shortening length of sunlight as autumn approaches, and has nothing to do with temperature or the availability of food; in fact, hummingbirds migrate south at the time of greatest food abundance. When the bird is fat enough, it migrates. It's not necessary to take down feeders to force hummingbirds to leave, and in the fall all the birds at your feeder are already migrating anyway. If you remove your feeder, birds will just feed elsewhere, but may not bother to return to your yard the next year. I recommend continuing to maintain feeders until freezing becomes a problem.

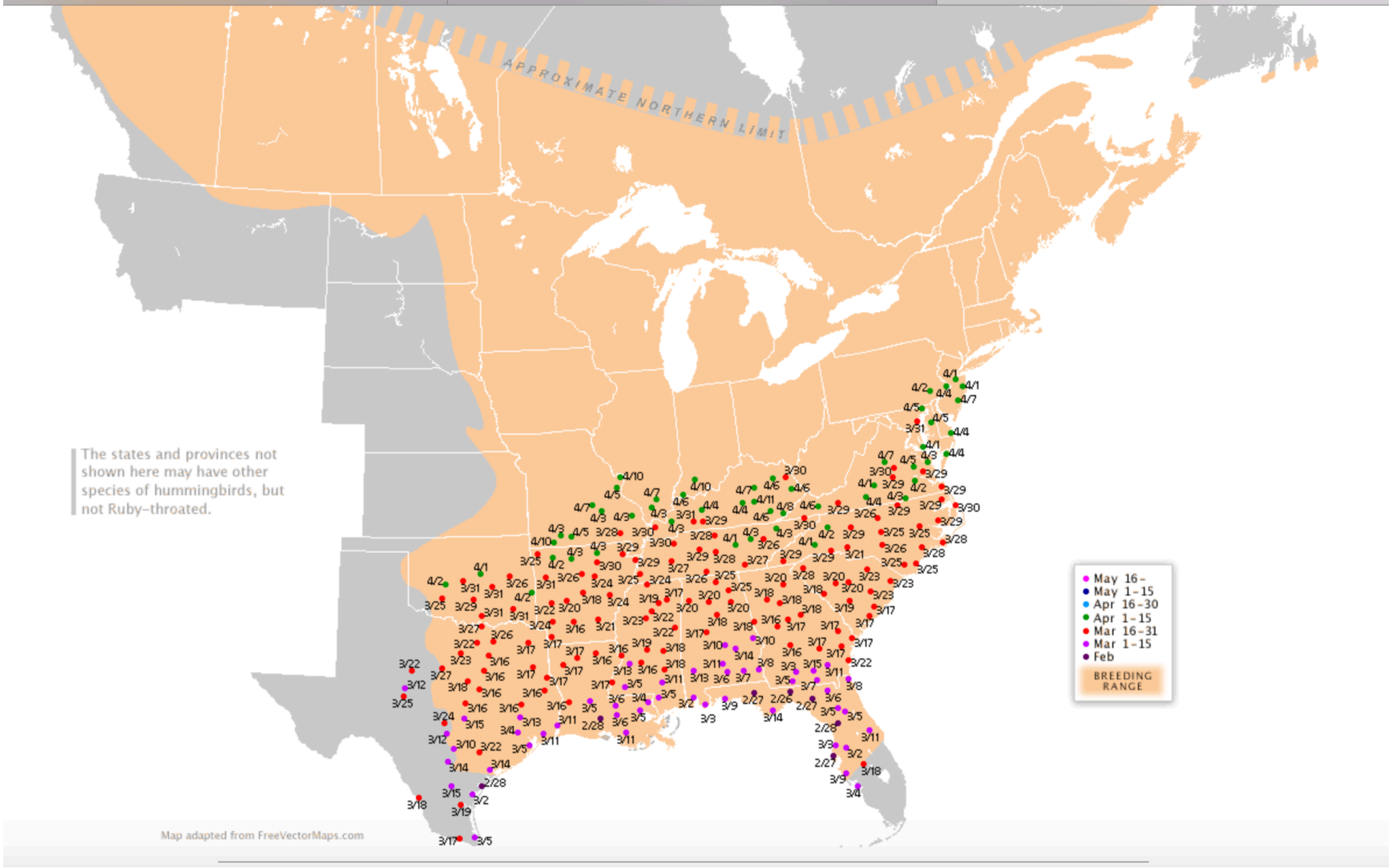
Many people notice that adult males migrate earlier than females, because in the last month or so there may be no birds with red throats at feeders. However, remember that immature Ruby- throats of both sexes look much like their mothers. Young males often have a "5 o'clock shadow" of dark throat feathers in broken streaks, and many develop one or more red gorget feathers by the time they migrate. Immature females may have much lighter streaks in their throats, but no red.

There is evidence that fewer Ruby-throats cross the Gulf in fall than in spring, most instead following the Texas coast back into Mexico. Perhaps the hurricane season is a factor, and the genes of many birds with a tendency to fly over water were lost at sea during storms.

We still have many more questions than answers about hummingbird migration. Until technology provides radio transmitters small enough for a 3- gram hummingbird to carry safely, banding is the best tool to collect data on individual birds. But since only a few dozen people in North America - almost all of them amateurs like me - are licensed to handle hummingbirds, progress is slow and the odds of recapturing a banded bird are very low.
(http://www.hummingbirds.net/migration.html)

Migration map following: http://www.hummingbirds.net/map.html

Bookmark and check back for updates! Hummers on the Move!


APPROXIMATE NORTHERN LIMIT
The states and provinces not shown here may have other species of hummingbirds, but not Ruby-throated.
May 16-
May 1-15
Apr 16-30
Apr 1-15
Mar 16-31
Mar 1-15
Feb
BREEDING RANGE
Map adapted from FreeVectorMaps.com