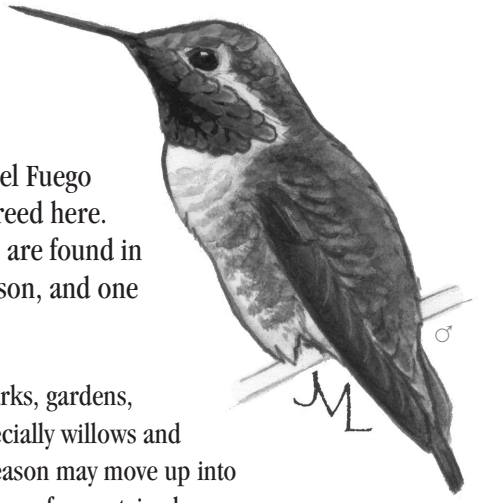
Hummingbirds

In the Nevada and Placer County Region of the Northern Sierra Foothills



Hummingbirds are found only in the Americas, from Alaska in the north to Tierra del Fuego in the south. Of the approximately 340 known species, 22 are found in the US and 16 breed here. They are the second largest family of birds (*Trochilidae*) after flycatchers. Most species are found in the tropics. Nevada and Placer Counties host one year-round resident, two breeding season, and one migrant species of hummingbirds.

Anna's Hummingbird

Calypte anna

Has the largest year-round range of US hummingbirds. **Range:** Very common, Pacific Coast north to British Columbia and inland into southwestern Arizona. For the last 50 years (as of 1989) the Anna's hummingbird has been expanding its range, which used to be mainly in Southern California. **Migration:** Moves around within its range to areas with more food. **Habitat:** Suburban gardens, coastal sage scrub, oak woodlands, city parks. **Breeding:** December to June. **Nesting:** Sites include branches of shrubs and trees (often in oaks), 17–30′ up.

One of the few wild plants in bloom during December, when the Anna's starts breeding is Chaparral Current, *Ribes malvaceum,* which starts to bloom soon after fall rains begin. A month or so later Fuchsia-flowering Gooseberry, *Ribes speciosum,* takes over as the main flowering plant in the wild. Scientists believe that the *Ribes* and Anna's hummingbirds may have co-evolved. Both species have gained from the relationship: the hummingbird gets a source of food in winter that enables it to breed earlier than other birds and before migrant species of hummingbirds return; in turn, the plant gets the undivided attention of an effective pollinator. In many cases, male Anna's territories are centered around *Ribes* plants, and the most dominant males claim territories around plants with the most blooms. It may even be that females judge males on the basis of the quantity and/or quality of these plants in the male's territory.

Black-chinned Hummingbird

Archilochus alexandri

Has the most extensive breeding range of western US hummingbirds. **Range:** Widespread at low elevations in the West; summers from British Columbia to central Texas and Southern California; winters in Mexico. **Migration:** northward, mid-March to mid-May; southward, mid-August into November, small numbers may stray east and a few may winter near the Gulf Coast. **Habitat:** Semi-open arid lowlands, suburbs, open woods, parks, gardens, riparian woodlands, especially willows and sycamores; later in the season may move up into foothills or lower elevations of mountain slopes. **Breeding:** April to August. **Nesting:** Usually on a horizontal or diagonal branch in a deciduous tree or shrub 4–10′ up. Often nests in backyards and gardens.

Calliope Hummingbird

Stellula calliope

Smallest hummer normally found in the US. **Range:** Summers in mountains of western North America from southwest Canada to Baja; winters in Mexico. **Migration:** northward, March through May, through Pacific lowlands; southward, late July through September, mostly through Rocky Mountain region. **Habitat:** High mountain forests and meadow; pine-oak woods in Mexico. **Breeding:** mid-May through July. **Nesting:** Almost to timberline; site is on a twig or branch under overhanging foliage, 2–70′ up. Sometimes builds on base of old pine cone, making nest look like part of the cone.

Rufous Hummingbird

Selasphorus rufus

Feisty and aggressive; has the longest migration route of North American hummers and nests farther north than any other hummer. **Range:** Pacific Northwest to south central Alaska; winters in Mexico; small numbers winter in Gulf Coast states. **Migration:** northward, March through May, mostly through Pacific lowlands; southward, late June through September, moves southeast through Sierra and Rocky Mountains, following seasonal blooming of flowers. **Habitat:** Forest edges and clearings, streamsides. **Breeding:** April to July. **Nesting:** Usually well hidden in lower part of coniferous trees, deciduous shrubs, or vines, 3–30′ up.

Anna's Hummingbird, *Calypte anna*
Illustration by and courtesy of John Muir Laws, ©2008

Nearly everything about hummingbirds is superlative. Relative to body size, they have the largest flight muscles, the biggest brain, the fastest wingbeat, the most rapid heartbeat, the highest body temperature, the greatest appetite, and the most unslakable thirst. Along with shrews, hummingbirds achieve the smallest body size possible for warm-blooded animals; any smaller and it would be impossible for them to eat enough calories to stay alive. As it is, these animals require access to rich foods throughout the day, and hummingbirds have found this in the form of easily digested, calorie-rich nectar.

These calories power a tiny metabolic bundle of feathers with a rate of caloric consumption that requires visiting 1,000 to 3,000 flowers per day. This is the point where things get complicated for hummingbirds, because flowers are temperamental with constantly changing amounts of nectar in each flower, each patch, and each species. In the laboratory, hummingbirds alter their behavior in less than 20 minutes if a nectar source is modified. In the field, hummingbirds expand and contract their territories hourly to compensate for shifts in the nectar production of flowers. The ability to develop mental maps of the landscape and make foraging decisions based on those images is perhaps the central and most essential feature of hummingbirds' lives. Foraging decisions fall into two broad strategies, each with its advantages and disadvantages: territoriality and traplining.

Territoriality involves one bird restricting access to a food resource in order to control the rate of nectar harvesting, and it arises when dense and productive patches of food justify staying in place and mounting an active defense. To help offset the challenge of intruders, some hummingbirds begin their day by drinking nectar from all the flowers around the periphery of their territory, creating a "dry" zone that helps buffer the heart of the territory.

Traplining involves visiting many small, scattered food sources along a regular foraging path where each patch of flowers is too small to justify defending. This is the most common strategy for hummingbird species unable to defend a large and productive patch. Such hummingbirds live on the margins, so to speak, snacking here and there as they are able and sometimes sneaking a quick sip from someone's territory.

One consistent factor in all territories and all foraging strategies is that hummingbirds maintain a very precise level of energy input. That is, each territory and each foraging strategy provides access to a specific number of calories. Anything smaller, and the hummingbird couldn't survive, anything larger, and the associated costs become too much.

In terms of foraging, territories confer several advantages that offset the costs of defense—the most important being the ability to control access to productive flowers. A territory increases the predictability of the nectar supply and frees up time for the territory holder to pursue other activities, such as increasing opportunities to breed. Also, territory holders have the option of patterning their visits to avoid previously visited flowers, giving the flowers more time to replenish their nectar. More nectar translates into a higher rate of energy gain per feeding bout.

This technique of waiting until flowers refill with nectar is also found in traplining strategies and points to the remarkable, fine-grained spatial memory of hummingbirds that allows them to track numerous flowers and patches at the same time. It even appears that hummingbirds perceive and remember the number of flowers available in a given inflorescence or cluster, the number that already have been probed, the amount of nectar obtained at each flower, and the expected time for each flower to refill. These calculations are computed on the scale of each inflorescence, of each patch of flowers, and the habitats and geographic ranges.

Females build their nests by themselves on a shrub or tree branch. Nests are constructed of soft plant fibers, which vary by habitat. Favorites include thistle and dandelion down (various species of *Agoseris* and *Micoseris* are locally native dandelion-type flowers) and willow, cottonwood, and sycamore fuzz. Some species camouflage the exterior with lichens. The nest is bound together with spider silk, which allows the female to mold it to her body for maximum insulation and for it to stretch as the nestlings grow. Construction takes six to ten days, and during this time, the make continues courting additional mates. Females sometimes refurbish old nests for a second brood, or they may build another nest for their second brood while still feeding the first brood.

Iridescent hummingbird feathers are the most specialized of all bird feathers. On a hummingbird's brilliant gorget (throat patch), only the outer third of each feather is iridescent. This part of the feather contains layers of minute structures called platelets that are filled with tiny air bubbles. These structures partially reflect back light, causing the brilliant shining colors of reds, purples, and blues. The iridescent parts of the feathers of the gorget are flat, and so reflect light in just one direction. The back feathers of hummingbirds also have iridescence, but the iridescent parts of the feathers are concave and reflect light from any direction.

Ribes spp.,
Gooseberry and Currant

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