

ABOUT THE COVER

Allen's Hummingbird? Rufous Hummingbird?

The bird featured on the cover is either an Allen's (*Selasphorus sasin*) or a Rufous (*S. rufus*) hummingbird. These closely related species are often impossible to separate in the field and can even pose problems of identification in the hand. Females and juvenile males simply cannot be reliably identified in the field, and males of the two species can overlap in plumage characteristics. In addition, the two species apparently hybridize in the narrow range of overlap of breeding grounds in southern Oregon. Both species are small, sturdy, relatively short-winged hummingbirds. They can be separated from the Broad-tailed Hummingbird (*S. platyceris*) by the latter's longer body and much longer tail. Males of both Rufous and Allen's hummingbirds have a coppery red gorget, with rufous-orange on the flanks, face, and tails. Allen's always have a green back but may have an orange rump, while male Rufous Hummingbirds may have green backs, although the usual color is orange. In the hand the species can usually be identified by Allen's having shorter wings and tail and by the shape of tail feathers, although the age and sex of the bird must be established for correct species identification. The Rufous Hummingbird is monotypic (no subspecies), but Allen's has two recognized subspecies: *S. s. sasin*, which has a breeding range along the west coast from north of Los Angeles to southern Oregon, and *S. s. sedentarius*, which, as its name implies, is nonmigratory, local around Los Angeles and the Channel Islands. The migratory *S. s. sasin* winters in a small area of central Mexico. Rufous Hummingbirds have wandered far from their tropical origins, breeding from southern Oregon to Alaska and inland to Montana. They reach 61° N Latitude, the farthest north of any hummingbird species. They winter from southern California through Mexico and Central America and along the Gulf Coast to western Florida. The occasional bird shows up inland and in peninsular Florida. If you measure the distance migrated in body-lengths, the Rufous Hummingbird travels the farthest of any bird species. Rufous Hummingbirds migrate in spring largely up the west coast, and back in fall along the Rocky Mountains. Both species are very early migrants, arriving in the United States from January to March and leaving in the "fall" as early as May for Allen's and July for Rufous. Both species are territorial on stopover sites, and in both species males migrate before females in spring and fall, and in fall females migrate before juveniles.

The occurrence of *Selasphorus* hummingbirds in Massachusetts is intriguing. A hummingbird that was mist-netted on Nantucket in 1988 subsequently died and was identified as an Allen's Hummingbird. In 1978 and 1986 indeterminate *Selasphorus* birds were reported from Newton and Wellfleet, respectively. Since 1992 there has been a dramatic increase in the occurrence of these birds, with unidentified *Selasphorus* seen in at least nine localities by 2001. In addition, three Rufous Hummingbirds were reported. In 2002 a veritable invasion of these birds occurred, with at least eight indeterminate birds, two from the same feeder, and three Rufous Hummingbirds reported. Several birds were captured and identified in the hand, and

one, a female that was banded, returned to the same feeder every fall from 1996-2002, where it spent its winters in a greenhouse. The total number of reported *Selasphorus* hummingbirds thus approaches two dozen, with the bulk of the records in recent years. The locations of the sightings are sprinkled around the state from Cape Cod to Northhampton. The reasons for this spectacular increase are not clear, but the phenomenon may to some degree reflect the increased use of feeders and greater observer awareness.

Both species are polygynous breeders, with territorial males displaying for females, and then, after mating, not aiding in any of the nesting activities or in feeding fledged young. Rufous Hummingbirds nest in more open successional habitats and use mountain meadows as migration stopover sites. Allen's Hummingbirds are coastal and prefer moist, fog-shrouded forests and woodlands. These hummingbirds have no true song, but give a series of *chip* notes and chatter in territorial encounters and mate attraction. Both species produce buzzing sounds with their wings. Territorial males of both species have spectacular flight displays given to interloping males and perspective mates. The Rufous Hummingbird's display has been described as an oval or U-shaped flight pattern as seen by the object of the display. Another display involves a horizontal figure-8 flight, with wings buzzing, directed at the perched object of the male's hostility or desire. Allen's display has several elements: the first is the "Pendulum Display," a back-and-forth flight that precedes a climb to heights of up to 90 feet, from which it descends in powered flight, pulling out in the bottom of a J-shaped path. Another display, the "Shuttle Display," involves the male moving back and forth in looping coils with gorget flared, wings and tail spread, and wings buzzing. The fact that hummingbirds can fly backwards adds a dimension to these flight displays not found in other birds. Males apparently establish feeding territories that they then secondarily use for nuptial displays.

After mating, females build the nest alone, typically on a branch, with an outer layer of bark, moss, lichen, and spider web, lined with fine plant fibers. The clutch is two tiny white eggs. The incubation periods are apparently variable but in the range of 2-3 weeks. Fledging occurs in about three weeks, and the female continues to feed the young for an additional week or so. The female feeds the young small insects and nectar, inserting her bill directly into the open mouth of the chick and depositing food.

Hummingbirds have been much studied for testing "optimal foraging theory," attempting, for example, to determine how hummingbirds choose which flowers to probe for nectar and how many flowering plants to defend in their territories. They have also been studied in regard to the apparent coevolution of hummingbirds and flowering plants, the plants attracting the hummingbirds with colored flowers and nectar, the hummingbirds in turn pollinating the plants. Allen's and Rufous hummingbirds apparently are particularly attracted to flowers that are tubular and red, such as columbine and paintbrushes, which produce high-sucrose nectar. The hummingbirds also hawk and glean small insects such as gnats, midges, and spiders, and use sapsucker wells. The short wings of these two species mean greater energy expenditure while hovering but more maneuverability, and hence they can defend

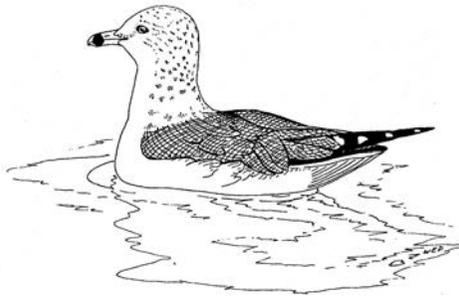
their territories more efficiently. Rufous Hummingbirds have a reputation as a particularly aggressive species.

The tiny size of these hummingbirds poses special physiological challenges. They have high metabolic rates, diminished energy storage capacity, and surface area/volume ratios that favor heat loss; thus they cannot feed at night. Hummingbirds have evolved some intriguing solutions to these problems. Most are capable of becoming torpid at night during cold weather, when their metabolism slows down, and their body temperature may drop to near ambient temperature. Rufous Hummingbirds may increase their body weight as much as 72 percent before migrating. They also have problems with eliminating water, because they take in so much water when drinking nectar. They are constantly naturally diuretic and have been described as “frequent pee-ers.” Census data do not give a consistent picture of the status of Rufous and Allen’s hummingbirds, but it appears that most populations may be about stable. Their interactions with man are interesting. Exotic plants such as eucalyptus have provided new flower resources during critical periods of food shortage for these species, particularly for Allen’s Hummingbirds, and feeders have provided additional food supplements. However, these resources may have benefited Anna’s Hummingbirds to a greater extent in the areas where their breeding range overlaps, thus causing a competitive interaction that may be detrimental to the Allen’s Hummingbirds. The invasion of the northeast by these marvelous little birds in recent years is hopefully an indication that things are going well. 

William E. Davis, Jr.

About the Cover Artist

Barry Van Dusen resides in central Massachusetts. He has contributed illustrations to a variety of natural history books and pocket guides published by the Massachusetts Audubon Society, Harper Collins, and Princeton University Press. He was elected a full member of London’s Society of Wildlife Artists in 1994 and exhibits regularly at the Birds in Art Exhibition in Wausau, Wisconsin, as well as in galleries, museums, and nature centers throughout New England and Europe. 



RING-BILLED GULL BY WILLIAM E. DAVIS, JR.