

## A female Lucifer Hummingbird (*Calothorax lucifer*) with iridescent chin feathers

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**ABSTRACT.** We report an observation of a female Lucifer Hummingbird (*Calothorax lucifer*) with iridescent feathers on the chin, resembling the plumage of the juvenile male. The female and nest were found in a xeric shrubland in Barranca de Metztitlán Biosphere Reserve, Hidalgo State, Mexico. This is the first definitive report of a breeding female with such plumage, supporting a previous observation in which sex was not confirmed by behavior. Although this condition appears to be rare in female Lucifer Hummingbirds, females in other species of hummingbirds exhibit much variation in the amount of iridescent plumage on the chin and in some, such as Costa's Hummingbirds (*Calypte costae*), females commonly exhibit colored feathers on the chin.

### SINOPSIS. Hembra adulta de *Calothorax lucifer* con plumas iridiscentes en la barbilla

Reportamos una observación de una hembra de colibrí Lucifer (*Calothorax lucifer*) con plumas iridiscentes en el babero, parecidas al plumaje de un macho juvenil. La hembra, la cual estaba incubando, fue encontrada en un área arbustiva xerofítica en la Reserva Biosférica Barranca de Metztitlán, en Hidalgo, México. Este es el primer informe definitivo de una hembra reproductora con este tipo de plumaje, en apoyo a una observación previa en donde el sexo no fue confirmado. Esta condición parece ser rara en estas aves en contraste con otras especies de zumbadores como *Calypte costae*, pero común en otras especies dimórficas de México y de los Estados Unidos.

**Key words:** Barranca de Metztitlán Biosphere Reserve, *Calothorax lucifer*, Hidalgo, hummingbird coloration, Lucifer Hummingbird, Trochilinae

Among hummingbird species that exhibit sexual differences, many males have iridescent feathers on the gorget that reflect metallic colors such as red, orange, green, and blue. Females typically lack these colored feathers (Johnsgard, 1997, del Hoyo et al. 1999). Lucifer Hummingbirds (*Calothorax lucifer*) range from the southwestern United States to central Mexico (Howell and Webb 1995, AOU 1998). Only adult males have an iridescent gorget that reflects purple, red, or magenta, and a long, dark, deeply forked tail. Females have a short, double-lobed tail with green undertail coverts and rectrices with three colors: cinnamon (proximal section), black (middle), and white (terminal). Immature males resemble females in plumage, but first-year males have an elongated, forked tail and some iridescent feathers in the gorget (Peterson and Chalif 1989, Russell et al. 1994, Scott 1994, Howell and Webb 1995, Johnsgard 1997, del Hoyo et al. 1999, Scott 1999, Williamson 2001,

National Geographic Society 2002). Pyle (1997) indicated that some females may have a few iridescent feathers on the chin, but noted the need for more data. Here we report an observation of a nesting individual with this rare plumage.

Our observation was made in the Barranca de Metztitlán Biosphere Reserve (BMBR; 96,043 ha) in Hidalgo, Mexico (19°35'–21°25'N, 97°57'–99°51'E, 1000–2300 m asl). BMBR has a mean annual temperature between 18 and 22° C and mean annual precipitation of 500–700 mm (INEGI 1999). The reserve consists primarily of xeric shrubland, dry forest, *Juniperus* forest, *Quercus* forest, and *Pinus* forest (SEMARNAT 2001). Lucifer Hummingbirds are migratory at the BMBR, and are present from February to November.

On 13 May 2004, while walking along a transect in xeric shrub, we discovered a nesting female Lucifer Hummingbird. It exhibited all the characteristics of female Lucifer Hummingbirds (Peterson and Chalif 1989, Williamson 2001, National Geographic Society 2002) except for the presence of some iridescent feathers on the chin that reflected purple, red, and magenta

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Fig. 1. Female Lucifer Hummingbird with iridescent feathers on the chin. Photograph taken on 13 May 2004 in a xeric shrubland located in Reserva de la Biosfera Barranca de Metztitlán, Hidalgo, México.

(Fig. 1). The nest had two eggs. During all subsequent visits, the female flew from the nest and returned after a few minutes. We last observed the female on the nest on 31 May.

Although most references (Peterson and Chalif 1989, Howell and Webb 1995, Johnsgard 1997, Scott 1999, Williamson 2001, National Geographic Society 2002) do not report female Lucifer Hummingbirds with iridescent feathers on the chin, this characteristic has been reported for immature males. However, general plumage coloration, tail shape and color, and the incubation behavior all indicate that this bird was a female. Among hummingbirds, only females are known to tend the nest (del Hoyo et al. 1999).

Iridescent plumage seems to be rare in female Lucifer Hummingbirds. At four locations (two in the BMBR, one 50 km from the BMBR near Pachuca, and one 100 km from the BMBR near Nopala Town) over a 3-yr period (2002–2004), we observed 194 individuals (nearly 50% females) and only two or, possibly, three had any iridescence on the chin. Further study is needed to determine the proportion of females with this pattern of coloration and to better understand its possible function, if any. In other species where such coloration is not common, evidence suggests that it may be a function of age (R. R.

Sargent as cited in Howell 2002, W. H. Baltosser, pers. comm.).

Females in other species of hummingbirds exhibit much variation in the amount of iridescent plumage on the chin. Female Anna's (*Calypte anna*), Rufous (*Selasphorus rufus*), and Allen's (*S. sasin*) hummingbirds commonly exhibit colored feathers on the chin (Williamson 2001, Howell 2002). In Costa's Hummingbirds (*Calypte costae*), about 50% of females have colored feathers on the chin (Baltosser and Scott 1996), and 20–30% of female Broad-tailed Hummingbirds (*S. platycercus*) have iridescent rose spots (P. E. Scott, pers. comm.). Iridescent chin feathers are rare in female Ruby-throated (*Archilochus colubris*), Black-chinned (*A. alexandri*), and Calliope (*Stellula calliope*) hummingbirds (R.R. Sargent and R. Hoyer, as cited in Howell 2002). Some populations of Tourmaline Sunangels (*Helianthus exortis exortis*) have females with no colored feathers on the chin, some populations have females with colored feathers, and some populations have both morphs (Bleiweiss 1985).

The possible adaptive value of variable amounts of iridescent plumage on the chins of female hummingbirds is not known. However, Pyle (1997) suggested that such plumage could provide advantages to individuals who possess it, for example, enhancing the foraging ability of individuals. Bleiweiss (1985) suggested that female Tourmaline Sunangels with partial male coloration could be more aggressive when defending a food source.

To our knowledge, this is the first report of iridescent feathers on the throat of female Lucifer Hummingbirds. Additional study is needed to determine how often such plumage occurs. We urge those who study hummingbirds to record the presence or absence of such plumage in females.

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