



# FIELD IDENTIFICATION OF **ARCHILOCHUS** **HUMMINGBIRDS**

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Hummingbirds present some of the most challenging identification problems in North America. Views of these tiny, fast-flying birds in the field are often frustratingly brief, and many hummingbirds simply “get away” as unidentified – even for experienced birders. Accepting that most of your field encounters with hummingbirds may be this way is an important first step! Fortunately, hummingbird feeders increasingly allow close-range and prolonged studies that are difficult if not impossible to obtain “in the wild,” but then, if you do see a bird well, what do you look for? Females and immatures of different species, and even adult males, often look very similar to one another. Indeed, plumage differences between ages and sexes of the same species can be greater than those between species.

While field guides cover most North American birds reasonably well, space constraints do not permit in-depth treatment of the more complex identification problems, including hummingbirds. Many years ago, Allan Phillips (1975) pointed out subtle differences in the shape of the inner primaries between the *Archilochus* species, but such esoteric criteria were usually associated with museum workers. As recently as 1990, Kenn Kaufman in his *Field Guide to Advanced Birding* noted that “For all practical purposes, the Ruby-throated Hummingbird [*Archilochus colubris*] is identical to the Black-chinned [*A. alexandri*] except in adult male plumage.” Times have changed, however, and our ability to discern details of feather shape in the field has been enhanced by increasingly high-quality optics. In this regard, observers should become familiar with “in-hand” identification criteria for hummingbirds summarized by Peter Pyle in part one of his *Identification Guide to North American Birds* (1997).

Here I deal with the identification of two common and very similar North American species that together comprise the genus *Archilochus*: the Ruby-throated Hummingbird and the Black-chinned Hummingbird. These two east-west counterparts occur together locally, mainly through the Great Plains (especially during migration) and, increasingly, in the southeast USA in winter. In addition, vagrants can turn up almost anywhere in North America, e.g., Ruby-throated Hummingbird in British Columbia (Campbell et al. 1990) and Black-chinned Hummingbird in Nova Scotia (McLaren 1999). I synthesize previous published work and add material based on my field experience, examination of photos and specimens, and discussions with other observers (see Acknowledgements). Given an appreciation of some fundamentals of hummingbird identification, plus good views of a bird, many *Archilochus* can be identified in

the field. Still, one needs to realize that hummingbird identification may never be easy, given these birds' inherent nature, and responsible identification should always include a willingness not to force a name on every bird. This paper is by no means the final word, and should be viewed simply as another step along the way to determining reliable field identification criteria for *Archilochus* hummingbirds.

## FUNDAMENTALS OF HUMMINGBIRD IDENTIFICATION

### Variation and Environmental Factors

As with any identification challenge, the key to distinguishing hummingbirds lies with time spent watching and studying the common species in your area. If you pay attention to the plumage patterns, bill length and shape, behaviour, and calls of the hummingbirds in your garden or at regular birding spots you'll see that, like all species, they exhibit variation of one kind or another. Fortunately, geographic variation is not a major concern for identifying hummingbirds in North America. No subspecies of *Archilochus* are formally described, although a "diminutive race" of Black-chinned Hummingbird was alluded to by Phillips (1982) and Baltosser (1987). More information was provided by Baltosser and Russell (2000) who showed that Black-chinneds breeding from south Texas an undetermined distance south into Mexico average smaller than birds in most of the North American range.

Individual variation and age/sex variation, however, are often very pronounced in hummingbirds, even within age/sex classes. Simply gaining an appreciation for the degree of plumage variation in a species is a critical first step if you hope to find and identify similar species. In this regard, taking notes on aspects such as throat patterns of females and immatures can help focus your observation process.

Female hummingbirds tend to be slightly larger bodied, heavier, and longer billed than males, but males often appear to measure out as "larger" overall because of their longer tails. The bills of immatures start out shorter than those of adults but, within one to two months of fledging, bills are not appreciably different in length from those of adults (PRBO unpubl. data for Anna's Hummingbird *Calypte anna* and Allen's Hummingbird *Selasphorus sasin*). Immature *Archilochus* in fresh plumage have pale buffy or cinnamon tipping to the feathers of their upperparts, often including the secondaries and primary coverts (e.g., Figures 15-19), and most immatures can be distinguished in fall from worn-plumaged adults. Fresh-plumaged adults in late winter and spring can also show pale feather tips to their upperparts (e.g., Figure 10), although generally less pronounced than on immatures. Note that pale tips to the upperparts of immatures vary greatly in width and prominence, and that adult females in late summer and perhaps even fall can retain narrow pale tips to some feathers, especially the rump.

As if inherent variation were not enough, observers contend with a variety of environmental conditions when watching and identifying hummingbirds. Environmental factors may operate directly on the bird, or may be indirect but affect an observer's perception. The most striking feature of much hummingbird plumage is its iridescence. This means that a gorget can look glowing one second, simply black the next. The apparent colour of the upperparts can also change subtly depending on lighting or the angle of viewing.

In terms of direct factors, plumage wear probably has the most important potential effect on field identification. For example, plumage wear can alter wing-tip shape and affect the subtleties of iridescent colour. The shape of the outermost primary tip can be critical in the separation of *Archilochus* and, given a good view, this feature can be seen in the field. However, in mid-to late winter, when the wings are at their most worn, the primary tips can be heavily abraded so that diagnostic shapes cannot be discerned. Iridescent greens often look brighter and more golden when fresh, duller and bluer when worn, but note that pale feather tips of fresh plumage (especially on immatures) can veil the underlying bright green feather bases and so make plumage appear duller.

Also remember that hybrid hummingbirds occur, albeit rarely. If confronted with a particularly problematic individual the possibility of a hybrid should be considered, e.g., a presumed Black-chinned x Anna's hummingbird hybrid thought to be California's "first Ruby-throated Hummingbird" (Jones 1983), or an Anna's x Calliope *Stellula calliope* hummingbird hybrid thought to be a Broad-tailed Hummingbird *Selasphorus platycercus* in Louisiana (Graves and Newfield 1996).

## Hummingbird Topography

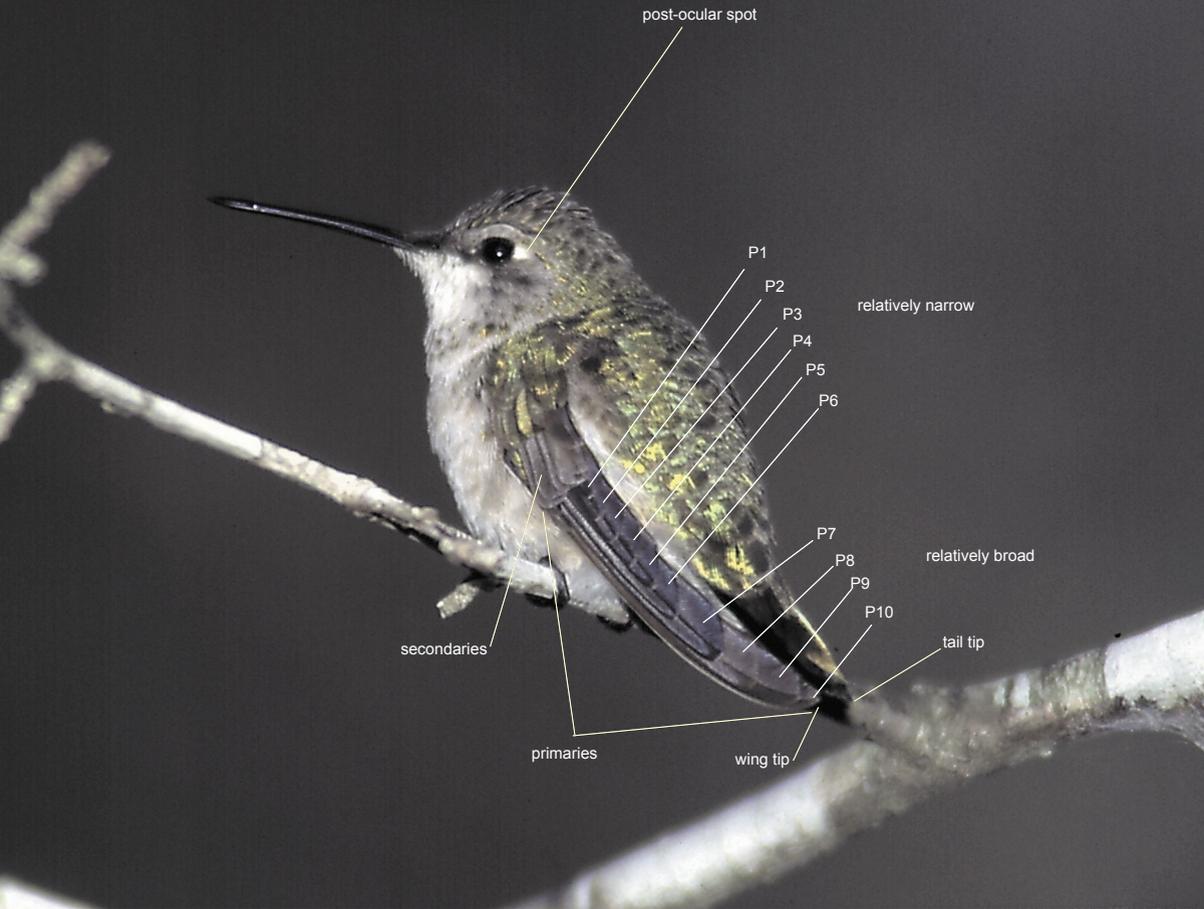
An understanding of hummingbird topography is crucial to being able to describe accurately what you see. Hummingbirds have the same general structure as most birds, it's just that some of the proportions differ. Hummingbirds have proportionately very long wings, with ten primaries (the same number as most birds), and usually all ten are visible on the closed wing (Figure 1). These are numbered from the shortest inner feather (primary 1, or P1) to the longest outer feather (P10). The inner primaries tend to be narrower than the outers, and P10 on many species is relatively narrow and often tapered at the tip. The shapes and relative widths of the primaries are key features in the separation of Ruby-throated and Black-chinned, and observers should take time to practice counting and numbering the primaries on a perched bird (often it's easiest to count back from P10) and noting the feather widths and shapes. It might seem impossible at first, but with practice (e.g., having your telescope trained on a feeder or favoured perch) you'll soon be able to see differences in primary shapes and also become used to detecting wing moult, which can be another useful clue in identification. In particular, a good photo can show diagnostic primary shapes and provide confirmation of an identification.

Hummingbirds have only six to seven secondaries, which appear to lie as a block across the bases of the primaries on a perched bird (Figure 1). The secondaries are not a key feature for most hummingbird identifications, but checking them for fresh buff tips can be useful when ageing a bird in fall.

The tails of hummingbirds comprise only five pairs of rectrices (unlike the six pairs of most passerines), numbered from the central rectrices (rectrix 1, or R1) out to the outermost rectrices (R5); the outer three rectrices on each side (R3-R5) are boldly tipped with white on female and immature *Archilochus* (e.g., Figures 11-12). The shape of individual rectrices and the relative lengths of different feathers are important characters to check; again sharp photos do help in this regard.

Another structural feature that should become an automatic check when viewing any hummingbird is the relative wing/tail projection on a perched bird: e.g., do the wing tips fall short of the tail tip or do they project slightly beyond? This is best judged in profile when the wings are held just under the tail.

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**Figure 1.** Female Black-chinned Hummingbird. Houston, Texas, January 18, 1996. Primary moult has reached P7 being replaced and appears to have suspended, at least briefly (wing moult of this individual had reached the same stage by January 5, or earlier), with an obvious contrast between the new P1-P7 and the old P8-P10. On some adults in summer, the outer primaries (P8-P10 or P9-P10) appear contrastingly fresher than the inners, probably resulting from suspended winter moult such as this. Note the narrow inner primaries (e.g., the change in width between P5 and P7), diagnostic of *Archilochus*, and the overall blunt primaries with no notch on the inner web of the inner primaries, diagnostic of Black-chinned. (Robert A. Behrstock)

## Moult and Age Terminology

Feathers are not permanent – they wear out and need to be replaced. Molt is simply the cyclic replacement of feathers which, for most species of birds, occurs once a year, after breeding. This single complete, or near-complete, molt is termed the prebasic molt, and it produces basic plumage. Some species of birds, but not hummingbirds, fit a second molt into their annual cycle, the prealternate molt producing an alternate plumage. Hummingbirds, then, simply molt from one basic plumage to another basic plumage, each year. The plumage in which a bird fledges is called its juvenal plumage, and birds in this plumage are termed juveniles. However, because the postjuvenal molt may start early on the throat of some birds, I use the term immature to refer to any juvenile/first-year hummingbird prior to the attainment of adult plumage.

Adult *Archilochus*, like most North American hummingbirds, undergo their complete prebasic molt on the non-breeding grounds. Immatures typically have a complete molt in their first winter and return to the breeding grounds in their first summer looking indistinguishable from adults. The increasing trend towards overwintering by many hummers in the southern USA means that moulting birds can often be studied at feeders.

Because the primaries are long and conspicuous, it is often easy to distinguish primary molt in progress, e.g., the difference between newer and blacker inner primaries and older, faded brownish outer primaries, often with a gap in sequence between the new and old feathers, where a primary has been shed or is just starting to grow. Molt of the primaries starts with P1 and progresses distally to P8, then skips to P10, with P9 replaced last, i.e., a variation on the straightforward P1-P10 sequence typical of most passerines (see Pyle 1997). The short inner primaries are often dropped in quick succession, and it is common to see large gaps in the wing from P1 or P2 through P5 or P6 (Figure 2). However, molt of the long outer primaries is quite protracted and may be suspended at times (Figure 1). Molt of the tail usually occurs during the period that P6/7 to P10/9 are growing, and the secondaries are typically moulted while P7 to P10/9 are growing.

Because of the P8-P10-P9 sequence of outer primary replacement, one could see a bird with P10 partially grown and a worn P9 retained, and mistakenly assume that P9 was the longest outer primary. This could affect judgement of “outer” primary shapes or relative wing/tail projections on perched birds, and should be borne in mind. Also consider how tail molt (usually occurring when the outer primaries molt) could affect perception of wing/tail projections.

Another potential effect of molt is that birds in active wing molt can sound different in flight from fully winged birds (Howell, pers. obs.). For example, a Ruby-throated Hummingbird in active wing molt, with one or more missing and/or growing primaries, could make a relatively loud and laboured wing rattle, unlike the faster-paced and quieter hum of a Ruby-throated not in wing molt.

Head and body molt follows a variable pattern but occurs mostly within the span of primary molt. The last feathers replaced during a hummingbird’s complete molt are usually head feathers, most obviously the gorgets of males, which are attained during or after the molt of outer primaries and tail. Thus, some midwinter immature males have adult-male-like wings and tail, but retain a female-like throat. Fall and winter molt of the gorget feathers in imma-

ture males is highly variable. Many fresh-plumaged immatures in late summer and fall have one or more iridescent throat feathers of adult gorget colour, and some individuals attain large patches of adult-like colour by early winter. Others get only a few scattered feathers before the adult gorget is attained.

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**Figure 2.** Immature male Black-chinned Hummingbird. February 12, 1993. Houston, Texas. A large gap in the middle of the wing is typical when the inner primaries are growing. P7-P10 are old. This bird has a large amount of dark in the throat, and its tail is still that of a juvenile. Late winter moult timing (versus *Calypte*) and whitish underparts (ruling out the “green-and-rufous” species) point to an *Archilochus* hummingbird. R3 being this much longer than R4-R5 indicates Black-chinned, but a view of gorget colour or primary shapes would be best to confirm the identification. (Robert A. Behrstock).

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**Figure 3.** Adult female Anna's Hummingbird. March 1, 1996. Whittier Narrows Nature Center, California. The relatively broad inner primaries without a break in width at P5-P7 are quite different from *Archilochus* and, together with the lack of rufous or buff in the plumage, point to *Calypte*. The relatively thick-necked look and green mottling on the sides are other differences from *Archilochus*. This bird can be told from Costa's Hummingbird by its more evenly dusky-spotted throat (with spots extending into the malar region) and more extensive green mottling on its underparts. Calls are also diagnostic. (Charles W. Melton)

### Getting There From Here

Having discussed important general identification criteria, the first step when attempting to separate Ruby-throated and Black-chinned hummingbirds is to make sure you are looking at an *Archilochus* – if not, then you can't get there from here. In this regard, knowledge of the characteristics of different genera is very helpful. *Archilochus*, together with the genera *Calypte*, *Stellula*, and *Selasphorus* comprise a highly migratory group of eight species that collectively can be termed "small gorgeted hummingbirds" (Pyle 1997).

Most adult males in this group can be identified fairly readily given a reasonable view (the exception being Allen's Hummingbird and some green-backed Rufous Hummingbirds *S. rufus*; see McKenzie and Robbins 1999), although confusion is possible between adult male Ruby-throated and Broad-tailed hummingbirds. The latter (Figure 8) is mainly a bird of western mountains but has occurred as a vagrant north to British Columbia in late summer (Campbell et al. 1990) and east to the southeastern USA in winter (American Ornithologists' Union [AOU] 1998). Broad-tailed is slightly larger and stockier than Ruby-throated with a magenta-rose gorget that can look red in some lights. Broad-tailed, however, has a pale face and chin quite dif-

ferent from the black face of Ruby-throated; its closed tail appears green and tapered, with R1 longest (versus the forked black tip on Ruby-throated); its spread tail looks “jaggedly squared,” with rufous edging on the inner rectrices; its inner primaries are broad; and P10 is finely attenuated to create a distinctive, high wing-trill in flight, very different from the standard wing hum of Ruby-throated. Its call is a sharp chip, distinct from Ruby-throated.

Female and immature small gorgeted hummingbirds can be broken down into four “green-and-gray species” (*Archilochus* and *Calypte*) and four “green-and-rufous” species (*Stellula* and *Selasphorus*). The green-and-gray species lack any rufous in the tail and their underparts are overall dingy whitish or grayish (but with variable buffy cinnamon on the sides of female/immature *Archilochus*). The green-and-rufous species show variable (usually distinct) rufous in the tail (except some immature female Calliope Hummingbirds) and their underparts have distinct cinnamon colouration on the sides and flanks, which usually lack any green or dusky mottling. Placing a bird in one of these groups is an important first step and is usually not too difficult, with a little experience.

The green-and-gray species comprise two genera: *Archilochus* (the “black-chinned” hummingbirds) and *Calypte* (the two “helmeted” hummingbirds, Anna’s and Costa’s *C. costae*). The best features for distinguishing all age/sex classes of these two genera are the width of the inner primaries, and call notes. While the inner primaries tend to be narrower than the outers on all hummingbirds, the inner six primaries of *Archilochus* are notably and fairly evenly narrow, and the distinct change in width between P5 and P7 is a very good field character that eliminates all other North American hummingbirds (e.g., Figures 1, 9-10). By contrast, the inner primaries of *Calypte* are relatively broad (or “normal”) and the closed wing shows no distinct change or jump in primary width (Figure 3).

Although call notes are notoriously difficult to describe, the common calls of Ruby-throated and Black-chinned are relatively soft, twangy or nasal chips, *tchew* or *chih*, and high-pitched twitters in interactions. In general, the calls of *Archilochus* lack the strongly buzzy or sharp, smacking quality of Anna’s (and *Selasphorus*) and are also very distinct from the high, tinny to liquid chips and twitters of Costa’s. The best way to appreciate these differences is to listen to recordings or to spend even a short period with Anna’s or Costa’s – the differences should be obvious if you know Ruby-throated or Black-chinned calls.

Other features helpful for separating female/immature *Calypte* and *Archilochus* are that *Calypte* hummers tend to be relatively stockier and bigger headed with a relatively short tail, and their flanks are variably mottled with green (Figure 3). Most *Calypte* (excepting a few immatures) have a summer moult schedule (versus a winter moult schedule in *Archilochus*). Thus, any green-and-gray hummer with obvious wing moult from May through August should not be an *Archilochus*.

In summary, *Archilochus* can be defined as follows. Eastern and western counterparts – Ruby-throated and Black-chinned hummingbirds – comprise this genus. These are small hummers with medium to medium-long, straightish black bills, and tails that are forked in males, slightly double-rounded in females. The inner six primaries are proportionately narrower than the outer four. Adult male gorgets are shield shaped, ruby-red to bluish violet, with chins of both species black. Females and immatures have mostly plain underparts with an indistinct to distinct buffy wash on the flanks, and their tails lack rufous. Both sexes have a white postocular spot set off by dusky auriculars, and at rest the wing tips of all ages/sexes fall slightly to distinctly short of the tail tip. Moults occur in winter.

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**Figure 4.** Adult male Ruby-throated Hummingbird. September 1996. Houston, Texas. Unmistakable in this view, note the black chin and face, and the deeply forked tail with R4 longest (cf. **Figure 5**). (*Alan Murphy*).

## DISTRIBUTION AND HABITAT

**Ruby-throated Hummingbirds** breed across much of eastern North America from eastern Texas and Florida north, mainly east of the Great Plains, to the Dakotas and eastern Canada, east to southern Newfoundland (B. Mactavish, pers. comm.) and also west across Canada to central Alberta (Robinson et al. 1996, AOU 1998). Spring migrants (males precede females by one to two weeks) arrive in the southern USA starting mainly in March and reach the northwestern and northeastern ends of their breeding range in mid- to late May or even early June. In fall, most depart the northern breeding areas by September, and transient migrants occur in the southern USA through late October and rarely into November. Ruby-throateds are rare migrants (mainly in spring) through western Texas and the Great Plains, and have occurred as vagrants west and northwest (mainly May-July) as far afield as British Columbia and Alaska, and southwest (mainly August-September) to California (Kessel 1989, Campbell et al. 1990, Robinson et al. 1996, AOU 1998). The species is a rare but perhaps increasing winter visitor (mainly November-March) at feeders in the southeastern USA, mainly along and near the Gulf of Mexico coast (Robinson et al. 1996). Most birds winter in tropical lowlands and foothills from Mexico to western Panama (Howell and Webb 1995, AOU 1998).

Ruby-throated Hummingbirds summer in a wide variety of wooded habitats, notably in deciduous and mixed woodland, parks, and gardens. During migration they are often in open and semiopen areas with hedges and flower banks, and in low coastal vegetation. In Mexico they winter mainly in humid second-growth habitats, hedges, forest edge, and weedy fields with flowers; less often are they in drier habitats where Black-chinned Hummingbirds are commoner.

**Black-chinned Hummingbirds** breed across western North America, from northern Mexico, western Texas, and southern California north to southern interior British Columbia (AOU 1998, Baltosser and Russell 2000). Spring migrants (again, males precede females by one to two weeks) arrive back in the southwestern USA starting in late February and March and reach British Columbia by late April or early May. In fall, most depart northern breeding areas by late August, with migrants in the southwestern USA through late September, rarely into October. Black-chinneds are rare migrants (in spring and fall) to coastal areas from central California north to southern British Columbia, and through the western Great Plains. Vagrants have occurred north (mainly June-July) to southern Alberta and Saskatchewan, and east and northeast (mainly late April-May, and November) as far afield as Ontario, Nova Scotia, New Jersey, and Florida (Stevenson and Anderson 1994, Crossley 1997, AOU 1998, McLaren 1999). This species is a rare but apparently increasing vagrant or winter visitor (mainly October-March) at feeders in the southeastern USA (where it is apparently more numerous than Ruby-throated, based on numbers of birds banded), but the traditional winter range is western Mexico (Howell and Webb 1995, AOU 1998, Baltosser and Russell 2000).

Black-chinned Hummingbirds summer in brushy woodland and scrub, especially in riparian groves and other mesic areas near streams within generally drier environments. They also occur in open and semiopen areas with hedges and flower banks, and in gardens. They winter in Mexico mainly in arid to semiarid second-growth habitats and thorn forest, less often in humid habitats where Ruby-throated Hummingbirds are commoner.

## STRUCTURE

*Archilochus* are typical “small” hummingbirds and relative size does not help in separating the two species (but, in direct comparison with to Black-chinned Hummingbird, Costa’s often looks noticeably smaller, Anna’s noticeably larger). Overall *proportions*, however, can be useful for distinguishing the two *Archilochus*. Ruby-throated’s bill averages shorter, sex for sex, than that of Black-chinned, and this can be a pointer for a bird of known age/sex: the longest billed Black-chinneds look distinct from the shortest-billed Ruby-throateds, as with the extremes of Long-billed *Limnodromus scolopaceus* and Short-billed *L. griseus* dowitchers. Note, though, that populations of Black-chinned Hummingbirds in southern Texas and northern Mexico are relatively short billed (Baltosser and Russell 2000), and thus more like Ruby-throated than are Black-chinneds from western North America. McLaren (1999) mentioned that the bill of Black-chinned is generally more decurved than that of Ruby-throated; there appears to be enough overlap in bill shape to make this feature of little or no use in the identification of any individual bird.

Another overall structural feature is that the tails of female and immature Ruby-throateds average longer than on Black-chinned, mirroring the more striking difference in adult males. Note that immature males average longer tailed than females. Thus the tail projection beyond the wings averages longer in female/immature Ruby-throated, taking into account age/sex, and this can be a useful pointer for observers familiar with either species. There is overlap in this feature, however, but it can be a supporting character, especially for the extremes, i.e., some immature male Ruby-throateds (with long tail projection; e.g., Figure 14) and some immature female Black-chinneds (with short tail projection).

The shape of the primaries is one of the most important identification characters for *Archilochus*, but age/sex has to be taken into account. On Ruby-throated the primaries are overall narrower and more tapered than the relatively broader and more truncate primaries of Black-chinned. This feature is most pronounced on adult males, but is mirrored by other age/sex classes (e.g., Figures 1, 6-7, 9-10, 17, 19). In particular, P10 on Ruby-throated has an evenly tapered outer web, while P10 on Black-chinned is relatively blunt-tipped and truncate with a slightly swollen outer web. This lends the wing tips of Ruby-throated an overall more tapered or pointed look, as also shown on Plate 32 of Howell and Webb (1995) and in the third edition of the National Geographic Society Field Guide (1999). On a bird in the field, note that P10 on Ruby-throated is noticeably narrower than P9, while on Black-chinned P10 is as broad as P9 (Figure 21).

The inner webs of the inner primaries on Ruby-throated have a notch or saw-tooth step, most distinct on adults but also noticeable on many immature males (cf. Figures 6, 9, 13). This feature is weak to absent on immature female Ruby-throateds, however, and these consequently look more like female/immature Black-chinneds, which lack this feature.

Tail shape and rectrix shapes are also important characters to check. On adult Ruby-throated the longest rectrix is usually R4, while on adult Black-chinned the longest rectrix is typically R3: this results in a more forked, less double-rounded tail shape on Ruby-throated. Although most obvious on adult males, this difference is mirrored by other age/sex classes (Figures 2, 4-5, 11-12), although immature Ruby-throateds often have R3 slightly longer than R4, and thus resemble Black-chinned in this regard. The shape of the outer rectrices is also useful, taking age/sex into account. Adult female and immature male Black-chinneds typically have

a distinctly pinched in, “nipple-like” tip to their outer rectrices (especially R4-R5; Figure 12), although some adult female Black-chinneds have relatively rounded outer rectrices, similar to Ruby-throated; immature male Ruby-throated has a slightly pinched-in tip, and female Ruby-throated and immature female Black-chinned have these feathers more rounded at the tip (e.g., Figure 11).

## PLUMAGE

Although some plumage features have been proposed as field marks for separating the two *Archilochus*, the only reliable character is male gorget colour. Other potential plumage differences are subtle and prone to the vagaries of lighting, plumage wear, individual and age/sex variation, and observer perception. For example, the duller crown of Black-chinned Hummingbird is sometimes mentioned as a possible identification character (e.g., Sibley 2000). However, while Ruby-throated does average greener crowned than Black-chinned, I have seen immature Black-chinneds with crowns as bright or brighter green than typical Ruby-throateds, while some adult female Ruby-throateds have dull crowns (Figures 9, 11).

In general, Ruby-throated is a more contrasting bird, being deeper green above, whiter below, and darker winged than the relatively dingy Black-chinned. Interestingly, this greater contrast in the Ruby-throated parallels that in other east-west counterparts such as Yellow-bellied *Empidonax flaviventris* and Western group *E. difficilis* and *E. occidentalis* flycatchers or the Blue-headed *Vireo solitarius* and Cassin’s *V. cassinii* vireos. As in these other cases, if you are familiar with one or other species, the relatively bold contrast of a Ruby-throated in the west, or the dinginess of a Black-chinned in the east, may draw your attention. However, any impression derived from overall plumage appearance and contrast should be confirmed by careful reference to structural characters, particularly the shape of the primaries.

## MOULT

Moult of both *Archilochus* species occurs almost exclusively on the non-breeding grounds. Moult of adult Black-chinned Hummingbirds averages about a month earlier than in adult Ruby-throated Hummingbirds, but immatures of both species can have similar moult schedules (Baltosser 1995, Pyle et al. 1997, Howell, pers. obs.).

In Ruby-throated Hummingbird, primary moult starts from October (rarely late September) to January, and ends during February to April, averaging later in immatures (Baltosser 1995, Pyle et al. 1997). Male gorgets typically are the last feathers to be moulted, mainly during February to March in adults, March to April in immatures (Pyle 1997).

The complete prebasic moult of some adult Black-chinned Hummingbirds rarely (up to 1 in 100 birds) can start with inner primaries on the summer grounds or during migration, from mid-July to August (Howell, pers. obs.). Typically, though, primary moult starts from September to January, and ends January to April, averaging later in immatures (Baltosser 1995, Pyle et al. 1997). Male gorgets are usually the last feathers to be moulted, mainly during February in adults, March in immatures (Pyle 1997). Observations of two July adults with contrastingly fresh P8-P10 (male) and P9-P10 (female), relative to distinctly worn and browner inner primaries, suggest primary moult suspends on some birds in midwinter (Howell, pers. obs.; and see Figure 1).

## BEHAVIOUR AND VOICE

While hovering to feed, Ruby-throated Hummingbirds typically hold their tail closed to slightly spread, in or near the body plane. They give occasional quivers and dips of the tail but typically do not wag the tail persistently. Black-chinned Hummingbirds often wag or pump their tail strongly while hovering, e.g., on approach to a feeder, and also may feed while wagging a spread to closed tail. Particularly in windy conditions, however, Ruby-throateds flip and spread their tail more often, and at times wag it fairly persistently, similar to a typical Black-chinned. Also, Ruby-throateds hovering (such as on approach to a feeder) and maneuvering among flowers regularly spread and flip or wag their tail. Conversely, Black-chinneds not infrequently hover to feed with their tail mostly closed and held in or near body plane, with only slight quivering, and occasional dips or flashes, mainly when maneuvering – that is, like a Ruby-throated! Thus, while persistent tail-wagging is suggestive of Black-chinned, species identification should be confirmed by unequivocal structural features.

Flight displays of both *Archilochus* species are quite similar. In general, though, the dive displays of Ruby-throated tends to be steeper and more U-shaped than the shallower, pendulum-arc dives of Black-chinned, but these displays require more critical observation and description before any possible species-specific differences can be established that might aid in field identification. One character useful for adult males in flight, both in displays and direct flight, is the relatively loud, low-pitched wing hum, or wing buzz, of adult male Black-chinneds which may suggest adult male Rufous/Allen's at times and is distinct from the softer and less noticeable wing hum of adult male Ruby-throateds.

In dive displays, male *Archilochus* climb in a shallow angle ascent and make repeated pedulum-arc to U-shaped swoops or dives over the subject (a female, another male, or some other bird); the dives are typically repeated several times in a series. At the bottom point of the dive the adult male Ruby-throated Hummingbird produces a relatively rapid, sharp series of about five or so shrill, cricket-like notes (D. A. Sibley, pers. comm., B. Palmer-Ball pers. comm.). The adult male Black-chinned produces two loud, abrupt buzzes, *zzt zzt*, at the top points of its arcs as it turns to dive down, and then makes a short, stuttering whistled *whi-whi-whi-whi-whi* or *wü-wü-wü-wü-wü-wü-wü-wü-wü* at the bottom point of the dive; the stutter comprises five to ten notes (Pytte and Ficken 1994; Rich Hoyer, pers. comm). A second type of flight display is the shuttle, in which the distinctive wing buzz of adult male Black-chinneds is strongest: in shuttles, a male flies back-and-forth rapidly in front of and over the subject in convoluted arcs of less than 1 m wavelength.

To my ears the calls of these two species are not safely distinguishable, and there appear to be no differences of a magnitude that would help in field identification for most birders dealing with a single individual – unlike the differences between the calls of *Archilochus* and both *Calypte* species. However, further study (e.g., with sonograms) might reveal useful call differences between the two *Archilochus*. The commonest *Archilochus* calls are slightly twangy or nasal chips, *chih* or *tchih* and *tchew*, given in flight and perched; note that male calls tend to be higher-pitched and buzzier than female calls. At times the chips are repeated fairly steadily by perched birds, with doubled notes interspersed. Also given, especially by feeding birds, are quick, short, slightly twittering series, *chi ti-ti* and *chi-ti ti-ti-ti*, etc. More varied and often stronger twitters are given in inter- and intra-specific interactions, e.g., *chi ti-chi-chi-chi chi-chi*, and higher pitched chase calls that often have a wiry or slightly buzzy quality, *si chi-chi-chi* and *chih si-si-si-si si-chi* and *tssir ti-ti ssir-si*, etc.

## ADULT MALES

The adult male **Ruby-throated Hummingbird** (Figures 4, 6) is relatively distinctive. Its gorget is ruby-red to orange-red with black from the chin extending back in a band under the eyes; the gorget is separated from the green-mottled underparts by a contrasting whitish forecollar. A white postocular spot (often small or lacking) contrasts on the dark face, and the crown, nape, and upperparts vary from golden green to emerald-green, being duller and darker when worn (mainly from late fall into winter). R1 is golden green to slightly bluish green; R2-R5 are blackish with variable green edging mainly on the outer webs and broadest on R2, which is almost wholly green on some birds; R3-R5 typically look entirely black in the field.

The adult male **Black-chinned Hummingbird** (Figures 5, 7) looks very much like a Ruby-throated in its overall plumage colouration and pattern but has a black throat with a broad violet to violet-blue band across the bottom, and the crown, nape, and upperparts (including R5) tend to be more bronzy or bluish green than Ruby-throated.

It can be frustratingly difficult to distinguish even adult male *Archilochus* if a gorget does not catch the light.

### **Diagnostic “non-gorget” criteria for separating adult male *Archilochus***

1) Tail length and shape (assuming a bird is not moulting). The adult male Ruby-throated has a relatively long and deeply forked tail (with R4 longest; Figure 4) while Black-chinned has a distinctly shorter and less forked tail (with R3 longest; Figure 5). On a perched bird the tail of Ruby-throated projects well beyond the wing tip, with three black rectrix tips visible from above; the tail projection on Black-chinned is distinctly shorter with only two black rectrix tips visible from above (cf. Figures 6-7, 22).

2) Ruby-throated has a tapered and pointed wing tip, Black-chinned a relatively truncate and thick wing tip (Figures 6-7). In winter beware of wear and moult when evaluating wing tip shape.

3) Adult male Black-chinneds make a distinct low wing hum or wing buzz in direct flight (but not while hovering). Ruby-throated males have a quieter and less noticeable wing noise; obviously, consider how primary moult or wear could affect this character.

**Secondary identification characters** include the following, but these should be viewed as supportive, *not diagnostic*.

1) Black-chinned averages longer billed than Ruby-throated.

2) Ruby-throated tends to be a deeper, more intense golden green above, including the crown, while Black-chinned is a duller, more bronzy green or bluish green above, with a dusky crown. Dorsal colours vary with the light, however, and worn plumage tends to be bluer than fresh plumage.

3) A hovering male Black-chinned often wags its tail strongly while feeding, while Ruby-throated's tail is usually held more stiffly and quivered, rather than wagged or pumped.

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**Figure 5.** Adult male Black-chinned Hummingbird. June 1994. Placer Co., California. Note the diagnostic tail shape versus Ruby-throated, with R3 longest (cf. **Figure 4**). (*W. E. Grenfell*)



**Figure 6.** Adult male Ruby-throated Hummingbird. April 20, 1994. Rio Hondo, Texas. With the gorget colours not visible, note the narrow P10, notched inner webs of the tapered inner primaries (which often get bunched up like this on *Archilochus*), long projection of tail beyond the tapered wing tip, and glittering green crown (cf. **Figure 7**). (Charles W. Melton)

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**Figure 7.** Adult male Black-chinned Hummingbird. July 1999. Miller Canyon, Arizona. The narrow inner primaries and dark face with white postocular spot indicate *Archilochus*. With the gorget colours not visible, note the broad and blunt-tipped P10, short tail projection beyond the truncate wing tip, and dusky crown (cf. **Figure 6**). (Brian E. Small)

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**Figure 8.** Adult male Broad-tailed Hummingbird. June 1991. Walker Ranch, Boulder, Colorado. Note the white chin and pale face (versus black-faced adult male *Archilochus*), broad primaries with diagnostic modified tips to P9 and P10, and the long tail with R1 about the same length as the other rectrices. (Charles W. Melton)

## ADULT FEMALES

Adult female *Archilochus* are “standard” small hummingbirds, iridescent green above and whitish below, with white-tipped outer rectrices. The adult female **Ruby-throated Hummingbird’s** (Figures 9, 11) crown, nape, and upperparts are relatively deep golden green to emerald-green (darker and bluer when worn), with the crown of some birds relatively dusky, especially in fall and winter; pale tips to the upperparts in fresh plumage can be retained on at least the tertials and rump through late summer. The lores are dark, and dusky auriculars offset a white postocular spot. The throat and underparts are overall dingy whitish, often with a whiter forecollar extending back into the sides of the neck. In fresh plumage the sides and flanks are variably washed with dusky buff or buffy cinnamon, which often shows as a spot on the hind flanks (worn fall and winter adults can lack buff on the flanks). The throat often has lines of indistinct, fine dusky flecks, and exceptionally can have one to a few ruby-red feathers (Pyle 1997, R. R. Sargent, pers. comm.). R1 is golden green (with a blackish tip on up to 10% of birds); R2 is green with a broad black tip (and a fine whitish tip when fresh); R3-R5 are mostly black, with a band of greenish basally, and bold white tips.

The adult female **Black-chinned Hummingbird’s** (Figures 10, 12) plumage is very similar to an adult female Ruby-throated, although the crown, nape, and upperparts, including R1, average a slightly duller and grayer green (typically the crown is dusky or dull greenish) while the underparts average dingier and grayer so the overall appearance is less contrasting than a Ruby-throated. The throat is plain on many birds, while others have lines of dusky flecks, often darkest and most concentrated on the centre of the throat and averaging stronger than on adult female Ruby-throated. Some adult females have one or more black and/or violet throat feathers (Rich Hoyer, pers. comm.).

When confronted with a problem bird in fall, determining its age is an important first step because immature Ruby-throateds can be more similar to Black-chinneds than are adult female Ruby-throateds. Look for freshness of plumage (especially distinct buff tips to the upperparts and secondaries) and a darker mask as an indicator of immatures, unlike the often duller metallic greens and more faded, browner primaries of worn-plumaged adults. Once you have identified a bird as an adult female *Archilochus*.

### Diagnostic identification criteria of female *Archilochus*

1) Look first at the outer primaries. Ruby-throated has relatively narrower and more tapered primaries throughout, often most noticeable on P8-P10 such that its wing tip appears relatively narrow and tapered, versus the broad and blunt-tipped wing on Black-chinned (Figures 9-10). With experience this difference can be seen fairly easily, but in winter beware worn or moulting birds.

2) Differences in the shape of the inner primaries also can be useful given good views and/or sharp photos: these feathers are tapered on Ruby-throated with a notch on the inner web, blunter and lacking a notch on adult female Black-chinned (Figures 9-10).

3) The longest rectrix on Ruby-throated typically is R4, versus R3 on Black-chinned, so the former’s tail often looks more notched, rather than the more strongly double-rounded shape of a Black-chinned (Figures 11-12). In addition, adult female Black-chinneds average shorter tailed and have a pinched-in, “nipple-like” tip to their outer rectrices, unlike the more rounded tips of an adult female Ruby-throated (Figures 11-12).

**Secondary identification characters** include the following, but these should be viewed as supportive, *not diagnostic*.

1) Black-chinned is longer billed than Ruby-throated and, while bill measurements do overlap, the longest-billed female Black-chinneds tend to look distinct from Ruby-throated.

2) In general, Ruby-throated is more contrasty than Black-chinned, with deeper green upperparts and whiter underparts.

3) Fresh primaries of both species may be similarly dark but, perhaps because Black-chinneds breed and moult earlier and live in more exposed and sunnier habitats, their primaries often appear browner and slightly paler than a Ruby-throated, at least from from summer into early winter.



**Figure 9.** Adult female Ruby-throated Hummingbird. July 4, 1993. Martin, Tennessee. Relatively narrow inner primaries and face pattern point to *Archilochus*. Notched inner webs to inner primaries (visible on the near wing) and a relatively narrow and tapered P10 (visible on the far wing) indicate Ruby-throated (cf. **Figures 10, 21**). In worn plumage, such as this, the upperparts often look darker and bluer than then golden green of fresh plumage. Note how similar the wing/tail projection is to **Figure 10**. (Charles W. Melton)

4) Adult Black-chinneds moult on average about a month earlier than adult Ruby-throateds, such that the point reached by primary moult could be a useful identification character. Adults moult earlier than immatures, however, so an adult female Ruby-throated might be at a similar moult stage as an immature Black-chinned, and perhaps only the most advanced adult female Black-chinneds could be identified this way. More work is needed on moult timing as a potential aid to specific identification of winter hummingbirds.

5) Black-chinned often wags and spreads its tail frequently and at times persistently when hovering and feeding. While feeding, Ruby-throated usually holds its tail rigid, quivering or flashing it only slightly.



**Figure 10.** Adult female Black-chinned Hummingbird. August 17, 2000. Madera Canyon, Arizona. Again, the relatively narrow inner primaries (with P7 distinctly broader) identify this as an *Archilochus*. The primaries are overall relatively blunt and broad, diagnostic of Black-chinned; note P10 visible on the far wing, cf. **Figures 9, 21**, and how similar the wing/tail projection is to **Figure 10**. (Charles W. Melton)



**Figure 11.** Adult female Ruby-throated Hummingbird. May 16, 1998. Carthage, Texas. Face pattern, buffy flank wash, whitish undertail coverts, and tail pattern point to *Archilochus*. Short bill and relatively rounded tips to outer rectrices, with R4 longest, indicate Ruby-throated (cf. **Figure 12**). Note the dull crown, sometimes considered more typical of Black-chinned Hummingbird. (Charles W. Melton)



**Figure 12.** Adult female Black-chinned Hummingbird. May 1997. Madera Canyon, Arizona. Face pattern and relatively long bill and tail point to *Archilochus* (versus *Calypte*), and note also the small cinnamon flank spot. Tail shape, with R3 longest, and the “nipple-like” tips to R5-R4 are diagnostic of Black-chinned (cf. **Figure 11**). Other pointers for Black-chinned (versus Ruby-throated) are the long bill, dusky spotting on the median throat, and overall dingy underparts. (*Ian C. Tait*)

## IMMATURE MALES

Immature male **Ruby-throated Hummingbirds** (Figures 13-14) resemble adult females overall but their fall plumage is fresher, the upperparts have neat, narrow buff to buffy cinnamon tips, and the auricular mask is often darker, in stronger contrast to a whiter throat. They differ from similarly fresh-plumaged immature females in throat pattern, more contrasting face pattern, longer tail, and more distinctly notched inner webs of the primaries. The throat typically has lines of distinct dark flecks; some birds have only a few lines of indistinct, fine dusky flecks, while others have overall whitish, unflecked throats but with relatively large splotches of ruby-red. Most, but not all, birds with flecked throats have one or more ruby-red feathers scat-

tered, or concentrated, on the lower throat. The sides and flanks are often quite bright buffy cinnamon in fresh plumage, but by September can be relatively dull, dusky vinaceous. The tail is slightly longer and more forked than an adult female, the rectrices slightly narrower and more tapered with a slightly narrower and less contrasting blackish median band, and slightly smaller white tips to R3-R5. Adult plumage is attained by a complete moult over the winter, ending with the gorget in late winter and spring.

Immature male **Black-chinned Hummingbirds** (Figures 2, 15-16) look much like immature Ruby-throateds, and similarly resemble adult female Black-chinneds but with fresher plumage in fall. They differ from similarly fresh-plumaged immature female Black-chinneds in throat pattern, more contrasting face pattern, and slightly longer tail. Their upperparts have neat pale feather tips ranging from narrow to broad (averaging broader and paler than Ruby-throated), which are often heaviest on the head where they can appear as buff to whitish blotches; the auricular mask is often darker than on adult females, in stronger contrast to a whiter throat. Pale tips on the head and upperparts range from cinnamon-buff to whitish, some of the heaviest-veiled birds having relatively floury-looking upperparts, unlike Ruby-throated but more like some immature Costa's Hummingbirds. On others, narrow pale tips soon abrade to reveal bright emerald-green upperparts. The throat typically has lines of distinct dark flecks, varying from heaviest at the sides to concentrated down the centre. One or more black and/or violet feathers are often scattered, or concentrated, on the lower throat. Exceptionally heavily marked birds have the whole throat and auriculars dark with heavy whitish scalloping, creating a "hooded" effect. The tail is slightly less rounded relative to an adult female, the rectrices slightly narrower and more pinched-in at the tips, with a less contrasting blackish median band and slightly smaller white tips to R3-R5. Adult plumage is attained by a complete moult over the winter, ending with the gorget in late winter and spring.

When confronted with a problem bird in fall, determining its age is an important first step (see under adult females). Immature male *Archilochus* can be distinguished to species by much the same combination of characters discussed for adult females, and note that immature male Ruby-throated has a proportionately longer tail than an adult female, so its wing tips usually fall shorter of the tail tip. Beware that some immature male Black-chinned Hummingbirds in fall can be deceptively bright emerald-green above, with a green crown, relatively bright buffy-cinnamon flanks, and a relatively short bill that all suggest Ruby-throated.

### **Diagnostic identification criteria for immature male *Archilochus***

1) As in other age/sex classes the shape of the outer primaries is the most useful feature: the wing tip is relatively narrow and tapered on Ruby-throated, relatively blunt and broad on Black-chinned (e.g., Figures 14-16). While differences in primary shape can be obscured in mid-to late winter by feather wear, by such time most birds show patches of diagnostic throat colour – ruby-red in Ruby-throated, black and bluish violet in Black-chinned.

2) Differences in the shape of the inner primaries also can be useful given good views and/or sharp photos: as on adult females, these feathers are tapered with a notch on the inner web on Ruby-throated, blunter and lacking any obvious notch on Black-chinned (Figures 13, 15).

3) Black-chinned Hummingbird has a proportionately slightly shorter tail, with R3 longest, while Ruby-throated typically has R4 closer in length to R3 and sometimes longer; birds with a long tail projection beyond the closed wing tip should be Ruby-throated although there is much overlap in this feature (and note the caveats about judging tail projection). Un-

like the adult female, immature male Ruby-throated's outer rectrices tend to be somewhat notched, or "nipple-like," at the tip, although averaging less strongly so than immature male Black-chinned.

4) Most immatures in fall (from August onwards) have one or more throat spots of diagnostic male gorget colour.

**Secondary identification characters** include the following, but these should be viewed as supportive, *not diagnostic*.

1) Black-chinned averages longer billed than Ruby-throated.

2) In general, Ruby-throated is more contrasty than Black-chinned, with deeper green upperparts and whiter underparts.

3) Tail-wagging differences can be a useful clue, as noted for adult females.



**Figure 13.** Immature male Ruby-throated Hummingbird. September 2000. Houston, Texas. Face pattern and relatively long tail point to *Archilochus*, confirmed by the relatively broad outer four primaries and narrow inner primaries. Fresh plumage in fall points to an immature and the dark-flecked throat with two ruby-red feathers indicates an immature male Ruby-throated. Note also that the notched inner webs of the inner primaries and narrow, tapered outer web of P10 can be seen in this photo, both diagnostic of Ruby-throated. Structural features such as these are more important than field marks such as crown colour – dull on this bird, a feature often associated with Black-chinned Hummingbird. (Alan Murphy)



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**Figure 14.** Immature male Ruby-throated Hummingbird. September 1999. McAllen, Texas. Fresh plumage (buff-tipped upperparts, buff wash to sides) in fall indicates an immature, and dark-spotted throat and relatively long tail with narrow and tapered outer rectrices an immature male. Short bill and long tail projection (at about its maximum on this bird) beyond tapered wing tips indicate Ruby-throated. (*Larry Ditto*)



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**Figure 15.** Immature male Black-chinned Hummingbird. July 5, 2000. Portal, Arizona. A combination of face pattern, buffy flanks, tail length, and, most importantly, narrow inner primaries, indicate *Archilochus*. Fresh plumage at this season indicates an immature, and the heavily spotted throat and relatively long tail point to a male. The relatively blunt primaries and wing tip identify this bird as Black-chinned. (*Larry Sansone*)

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**Figure 16.** Immature male Black-chinned Hummingbird. September 1976. Madera Canyon, Arizona. In fall, fresh buff tipping to upperparts indicates an immature; dark on the throat indicates a male; and face pattern and narrow inner primaries point to *Archilochus*. The relatively blunt primaries, especially P10, indicate Black-chinned. Compare this male's relatively short bill with **Figure 19**, and note how the raised primaries accentuate the tail projection. (*John H. Hoffman*)

## IMMATURE FEMALES

Immature female **Ruby-throated Hummingbirds** (Figures 17-18) resemble adult females but their fall plumage is fresher, the upperparts with neat, narrow buff to buffy-cinnamon tips, and the throat typically plain or with lines of very faint dusky flecks. They differ from similarly fresh-plumaged immature males in throat pattern, less contrasting face pattern, shorter tail, and indistinctly notched inner webs of the primaries. The sides and flanks are often quite bright buffy cinnamon, at least in fresh plumage (through August). The tail is similar to an adult female although the rectrices average slightly broader and more rounded at their tips. Adult plumage is attained by a complete moult over the winter.

Immature female **Black-chinned Hummingbirds** (Figure 19) resemble adult females but their fall plumage is fresher, the upperparts with neat buff tips ranging from narrow to bold, as on immature males. They differ from similarly fresh-plumaged immature males in throat pattern, less contrasting face pattern, and slightly shorter tail. The throat is plain or shows indistinct lines of faint dusky flecks. The sides and flanks can be quite bright buffy cinnamon. The tail is similar to an adult female except for the outer rectrices, which are broader and more rounded at the tips, and thus much like a female Ruby-throated Hummingbird.



**Figure 17.** Immature female Ruby-throated Hummingbird. September 9, 1997. Yorktown, Texas. Fresh plumage (e.g., buff tips to upperparts and vinaceous wash to sides) indicates age, and evenly narrow inner primaries point to *Archilochus*. The plain throat and vestigial notches on the inner webs of the inner primaries (cf. **Figures 13-14**) indicate a female. Note the overall tapered look to the wing (cf. **Figure 20**), although the exact shape of P10 is shadowed; in particular the inner primaries are relatively narrow and tapered, cf. **Figures 19-20**. The wing/tail projection is best judged with the wings held like this, but note how similar the projection is to **Figure 20**, an immature female Black-chinned Hummingbird in similar pose, and also note the birds' similarly dull crowns. (Charles W. Melton)

When confronted with a problem bird in fall, determining its age is an important first step (see under adult females). Immature female *Archilochus* are the most problematic age/sex class in which to distinguish between species, because the inner primaries and rectrices of both species are most similar in shape.



**Figure 18.** Immature female Ruby-throated Hummingbird. September 1996. McAllen, Texas. Bright cinnamon flanks could suggest *Selasphorus* but note narrow inner primaries (with striking change in width from P5 to P7) diagnostic of *Archilochus*, and unmarked whitish throat. The short bill and relatively narrow and tapered P10 (look carefully) indicate Ruby-throated; fresh buff tipping to upperparts, short tail, and unmarked whitish throat indicate immature female. (Larry Ditto)



**Figure 19.** Immature female Black-chinned Hummingbird. October 1990. Sonoita, Arizona. In fall, fresh buff tipping to upperparts, tertials, and primary coverts indicates an immature, and face pattern and relatively narrow inner primaries point to *Archilochus*. The relatively long bill and short tail, in combination with a plain throat, point to a female. The long bill also suggests Black-chinned, but the blunt primaries and widening outer web to P10 clinch the identification. Note how the slightly drooped and spread wings appear relatively close to the tail tip. (John H. Hoffman)



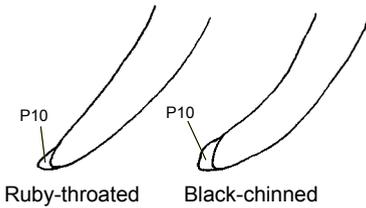
**Figure 20.** Immature (apparently female) Black-chinned Hummingbird. August 14, 2000. Miller Canyon, Arizona. Fresh plumage in fall and narrow inner primaries point to an immature *Archilochus*. The overall broad and blunt primaries are diagnostic of Black-chinned, and note also the poorly contrasting face and relatively broad and pale upperpart edgings, two features more typical of Black-chinned than Ruby-throated. The poorly contrasting face, plain throat, and relatively long bill point to a female. (Charles W. Melton)

### **Diagnostic identification criteria for immature females**

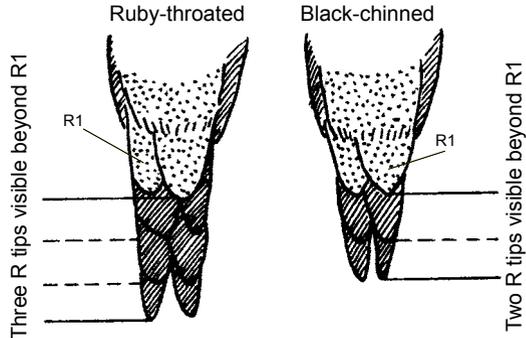
1) As in other age/sex classes the shape of the outer primaries is the most useful feature to focus on: the wing tip is relatively narrow and tapered on Ruby-throated, relatively blunt and broad on Black-chinned. The outer web of P10 is narrow and evenly tapered on Ruby-throated but swells distally on Black-chinned, accentuating the broad wing tip (Figures 17-19). Beware of moult and wear in winter, but by such time some inner primaries may have been replaced and show the diagnostic shapes of adult females.

2) Differences in the shape of the inner primaries also can be useful given good views and/or sharp photos: these feathers are more tapered on Ruby-throated and often show the hint of a notch on the inner web, blunter and lacking a notch on Black-chinned (Figures 17, 19).

3) As on adult females, the average shorter tail of Black-chinned usually has  $R3 > R4$ , while on Ruby-throated  $R4$  is relatively longer, ranging from slightly shorter than  $R3$  to slightly longer. Unlike adult females, the immature female Black-chinned has relatively rounded-tipped outer rectrices similar to an immature female Ruby-throated. Immature females with wing tips falling close to the tail tip are most likely Black-chinned.



**Figure 21.** Comparison of P9-P10 shapes on immature female Ruby-throated and Black-chinned hummingbirds, viewed in profile. These differences are more pronounced on other age/sex classes. (Steve N. G. Howell)



**Figure 22.** Comparison of closed tail shapes of adult male Ruby-throated and Black-chinned hummingbirds, viewed from above. (Steve N. G. Howell)

**Secondary identification characters** noted below are the same as for immature males and should be viewed as supportive, *not diagnostic*. Other possible features that have been mentioned for immature females (e.g., by McLaren 1999) include the duskier crown and less heavily spotted throat of Black-chinned relative to Ruby-throated. I find these features equivocal, and probably not of substantive use in specific identification.

- 1) Black-chinned average longer billed than Ruby-throated.
- 2) In general, Ruby-throated is more contrasty than Black-chinned, with deeper green upperparts and whiter underparts.
- 3) Tail-wagging differences can be a useful clue.

## SUMMARY

Field identification of hummingbirds usually requires at least a reasonable view of the bird in question. Given this starting point, the following points should be considered when distinguishing between Ruby-throated and Black-chinned hummingbirds.

- 1) Make sure the bird in question is an *Archilochus*.
- 2) Determine its age and sex.
- 3) Check structural characters of the wings and tail.
- 4) Take into account fundamentals such as lighting, plumage wear, and moult.
- 5) Note secondary characters such as overall colour and contrast, and behaviour.
- 6) Some birds simply can't be identified in the field and have to be "let go."

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