Anna's Hummingbird
Calypte anna
Order
APODIFORMES
– Family
TROCHILIDAE
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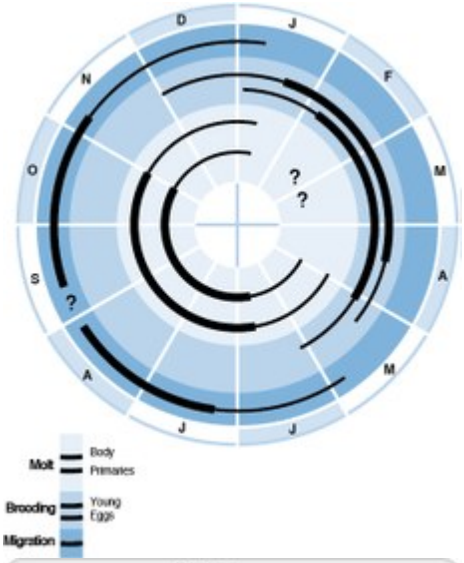
Articles

Appearance



Enlarge

Figure 5. Annual cycle of Anna's Hummingbird in coastal California.

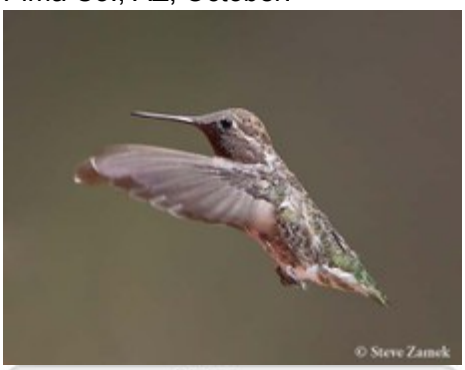
Enlarge

Male Anna's Hummingbird, Pismo State Beach, San Luis Obispo County CA, Nov.

Enlarge Adult female Anna's Hummingbird, CA, April

Enlarge First-year Male Anna's Hummingbird. Scottsdale, AZ. June

Enlarge Anna's Hummingbird juvenile male; Madera Canyon, Pima Co., AZ; October.



Enlarge Molting male Anna's Hummingbird, CA, June

Male leucistic Anna's Hummingbird on perch. Emeryville, Alameda Co, CA, March

Anna's Hummingbirds have 10 full-lengthen primaries, 6 secondaries, and 10 rectrices.. Wings are pointed and tail is slightly forked. Geographic variation in appearance slight. Little or no geographic variation in appearance (see Systematics: Geographic Variation) or geographic or sex-specific variation in molt strategies reported; see below for slight reported differences in timing and duration of molts according to sex.

Molts

General

Molt and plumage terminology follows Humphrey and Parkes (1959) as modified by Howell et al. (2003, 2004). Anna's Hummingbird reported to exhibit a Complex Basic Strategy (*cf.* Howell et al. 2003, Howell 2010), including complete prebasic molts and a complete preformative molt but no prealternate molts (Woods 1940, Williamson 1956, Stiles 1973, Oberholser 1974, Baltosser 1987, Pyle 1997, Pyle et al. 1997, Howell 2002; Fig. 5). However, discovery of an apparent prealternate molt of body and gorget feathers in Ruby-throated Hummingbird (*Archilochus colubris*) by Ditmann and Cardiff (2009) suggests the possibility that a similar molt may have gone undetected in Anna's and other hummingbird species (see Definitive Prealternate Molt, below); should this molt occur, it would exhibit a Simple Alternate Strategy. Study is needed on the molts of hummingbirds in consideration of molt and plumage nomenclature (see below).

Prejuvenal (First Prebasic) Molt

Complete, Mar-Jul, in the nest. No detailed information on timing or sequence of pennaceous feather irruption and development. Quills erupted by d 7; feather tracts apparent on back by d 8–9; feathered tracts on head pronounced by d 13–14; remiges grown and molt largely completed by fledging at d 19-24 (Kelly 1955). See Breeding: Young Birds for more information

Auxiliary Preformative Molt

"Presupplemental Molt" according to Thomspon and Leu (1994) and Pyle (1997); see revision by Howell et al. (2003) regarding such unique first-cycle molts. Males and probably females can replace some throat feathers, at least, in May-Jul, before the first complete molt during which these feathers are replaced again. Traditionally first complete molt considered a Preformative Molt (see below), in which case this replacement of throat feathers in first spring/summer would be an Auxilliary Preformative Molt. See Second Prebasic Molt and Definitive Prealternate Molt (below) for other nomenclatural possibilities.

Preformative Molt

"First Prebasic" or "Prebasic I" Molt according to Humphrey and Parkes (1959) and later authors; see revision by Howell et al. (2003). Traditionally, complete molt in Apr-Feb of first year regarded as a Preformative Molt (see Second Prebasic and Definitive Prealternate Molts for other nomenclatural possibilities). Location of this molt relative to natal grounds

unknown. Almost always complete but a small proportion of individuals (6 of 345 specimen examined by Pyle et al. 1997) can retain up to 4 juvenal rectrices and 2-3 juvenal secondaries during this molt.

In Male, Preformative Molt begins at about 3–4 mo of age; 4–5 mo (occasionally longer) are required to complete molt. Begins over sternum shortly before it commences in the anterior portion of the dorsal (spinal) tract; molt spreads in both areas anteriorly, posteriorly, and laterally (Williamson 1956). Primary molt begins with innermost feather (p1) and moves distally, after ventral and dorsal areas are well progressed and before secondaries and rectrices drop. At the time the p1-p3 (sometimes p1-p5) are new, dorsal molt has progressed to the posterior (occipital and coronal) regions of the head, and the uppertail coverts are incoming; rectrices are usually still old, but innermost (r1) on each side may be sheathed. When p1–p6 are grown and p7 incoming, most of the ventral and dorsal tracts are complete (may still be some sheathed feathers, especially on head), most or all of upperwing coverts are fresh, innermost (s1) and outermost (s6) secondaries are incoming, and r1–r2 are growing or new. Molt continues smoothly in primaries to include p7–p8; ventral and dorsal body molt may be complete (but there may be some pin feathers in cervical, frontal, and interramal areas); s2 usually being replaced and r1–r2 are fully grown. When primary molt is complete (p10 is replaced before p9 and only after p8 is completely grown), body molt is limited to interramal, frontal, and malar regions, s3-s5 may be growing or not replaced, and rectrices are typically all fresh, but occasionally juvenal rectrices among r3-r5 may be retained.

In Female, Preformative Molt takes about 4 mo and commences at about 3 (or more) mo old. The sequence of feather replacement in the female is very much as in the male, except that molt in the ventral sternal region is followed immediately by molt in the interramal, coronal, anterior dorsal, and frontal regions in that sequence (Williamson 1956). Molt of the head is completed by the time other body molt is done.

First Prealternate Molt
Not known to occur in Anna's Hummingbird but replacement of some gorget feathers before complete (Preformative) Molt could be considered a First Prealternate Molt, especially if Definitive Prealternate Molt of gorget feathers occurs as in Ruby-throated hummingbird (Dittmann and Cardiff 2009), or it could be considered a Preformative Molt. See Second Prebasic Molt (below).

Second Prebasic Molt
Traditionally, second complete molt at 15-20 mo of age considered the Second Prebasic Molt. However, an alternate interpretation would be that the first complete molt (now considered the Preformative Molt) evolved from a Second Prebasic Molt in ancestral species that has been "pulled forward," occurring at 3-8 mos of age instead of the 8-14 mos of age in which this molt typically occurs in birds, and should thus be considered the Second Prebasic Molt (P. Pyle, pers. comm.). Such a strategy could have resulted from the evolution of a more-rapid molt, plumage, and breeding cycle in ancestral tropical hummingbirds due to more-rapid metabolism and shorter life span than in most birds, necessitating shorter cycles for population-size maintenance. Should this be the case the limited replacement of throat feathers in May-Jul, now considered the Auxiliary Preformative Molt could be considered the Preformative or the First Prealternate Molt.

Definitive Prebasic Molt
Complete, May-Sep (Fig. 5); location of molting grounds relative to breeding grounds unknown. Occasional individuals may retain one or more secondaries and/or rectrices as

during Preformative Molt but this appears rare at best during Definitive Prebasic Molt (Pyle et al. 1997).

Molt in Male begins May-early Jun; most molting by Jul and finished by Oct-Nov, but some noted in last stages of molt in Jan (Williamson 1956). This molt requires 3–3.5 mo. Sequence similar to that of Preformative Molt (above): molt begins with the loss of p1–p2; p3–p5 then replaced as body molt begins in ventral and dorsal tracts (sternal, anterior dorsal, coronal, and postocular regions); secondary and rectrix molt does not typically begin until the p6 is grown; r1 and r2 may emerge almost simultaneously; s1 and s6 are usually sheathed at about the same time, with molt preceding centripetally within secondaries. Most body molt except gorget feathers complete by the time p8 has been replaced; p10 replaced before p9. Replacement of the metallic rose "gorget" (including crown feathers) is the last phase and may represent the only molt in progress; replacement of gorget estimated to take no more than 10–15 d with the feathers at the base of the bill replaced last (Williamson 1956). *Females* molt in only 2.5 mo, but some molting birds may be found throughout Jun-Oct, apparently somewhat earlier than in males. Sequence of molt much as in adult males except that head molt not delayed until the end.

Definitive Prealternate Molt

Not known to occur in this species but apparent Definitive Prealternate Molt of body and gorget feathers during Jun-Aug in Ruby-throated Hummingbird (Dittmann and Cardiff 2009) suggest possibility that similar molt may be occurring in other small hummingbirds, including Anna's, although prealternate molts are more common in long-distant migratory species such as Ruby-throated Hummingbird than it is in less-migratory species such as Anna's (Howell 2010). In Anna's Hummingbird such an inserted molt might be expected in Mar-May, following breeding but before onset of Complete Prebasic Molt. Another nomenclatural explanation for Ruby-throated could be that the body and gorget molt of Jun-Aug be aligned with the wing-feather molt of Oct-Mar to form the Definitive Prebasic Molt whereas the second molt of gorget feathers in Feb-Mar might be considered the Definitive Prealternate Molt (P. Pyle, pers. comm.). More study is needed on molting patterns of all North American hummingbirds to address these nomenclatural possibilities.

Plumages

Following based primarily on detailed plumage descriptions of Ridgway (1911), Oberholser (1974), Howell (2002), and Williamson (2002); see also Stiles (1971) and Kaufman (1990) for plumage criteria useful in field identification, and see Baltosser (1987), Wells et al. (1996), and Pyle (1997) for age/sex-related criteria. The following plumage descriptions follow traditional molt and plumage nomenclature, in which the first complete molt at 3-8 mos of age is considered the Preformative Molt (see Second Prebasic and Definitive Prealternate Molts, above, for alternate nomenclatural possibilities). Color names and number designations from Smithe 1975. Sexes differ slightly in appearance in juvenal plumage and markedly in subsequent plumages. Definitive Plumage typically assumed at Formative Plumage.

Natal Down

Present primarily Jan-Mar, in the nest. Row of 11 pairs of mid-dorsal neossoptiles (Collins 1978); described as “black grubby caterpillars, with smoky fuzz in 2 lines down the back" (D. R. Dickey *in* Woods 1940). Well covered with grayish down 6 and 7 d after hatching (Kelly 1955).

Juvenal (First Basic) Plumage

Present primarily Mar-Jul. Males and females similar in appearance to females in Formative and Definitive Basic Plumages but feathers of upperparts narrowly fringed buffy grayish when fresh; fringing disappears rapidly with wear. Throat and crown lack rose-colored gorget feathers; in male throat feathers tipped with bronze forming rows of fine spots; in females these spots are smaller or lacking, creating plainer throat. In males, black of the rachis enters grayish-white tip of juvenal r4 and r5 more so than in females. Outer primaries and outer rectrices also broader than in Formative and Definitive Basic Plumages, sex for sex (Pyle 1997). Shape of secondaries, more rounded in juvenal feathers than formative and definitive feathers, proposed as age criterion (Williamson 1956, Baltosser 1987) but subtlety of difference and wear make this difficult to use (SMR, Pyle 1997). See Bill And Gape (below) for additional age-determination criteria related to striations on upper mandible.

Auxiliary Formative Plumage
"Supplemental Plumage" according to Thomspon and Leu (1994); see revision by Howell et al. (2003). Present primarily Apr-Aug. Similar to Juvenal Plumage but most males (and some females) acquire scattered red feather tips to throat. Study needed on whether or not other body feathers replaced at this time.

Formative Plumage
"First Basic" or "Basic I" plumage according to Humphrey and Parkes (1959) and later authors; see revision by Howell et al. (2003). Present primarily Aug-Jul. Indistinguishable from Definitive Prebasic Plumages, sex for sex, in most birds following complete Preformative Molts. Some males in Formative Plumage can be identified by having one or more retained juvenal rectrices with white tips, incomplete throat and (especially) crown gorget feathering, and/or reminents of white in the tips of the formative rectrices (Pyle 1997, Pyle et al. 1997). Females may also retain rectrices but similarity in color patterns make it difficult to confirm if retained feathers juvenal or not.

First And Definitive Alternate Plumages
Prealternate Molts not documented in this species (see Definitive Prealternate Molt); if occurring, Alternate Plumages similar to Formative and Basic Plumages.

Definitive Basic Plumage
Present primarily Aug-Jul. *Male:* Entire head except occiput and auricular region iridescent brilliant rose (#9), sepia (#119), or true purple (#101) depending on lighting. Reflectance spectra of the gorget are provided by Doucet & Meadows (2009) and Meadows et al. (2011). Throat feathers elongated laterally and posteriorly; small white spot or streak behind eye. Nape parrot green (260); back, scapulars, wing-coverts, and rump parrot green (160); uppertail coverts and middle pair of rectrices (r1) dark green (262); remainder of tail (r2-r5) fuscous (21), the outer rectrices (r5) slightly stiffened and curved at about 30% down length; freshly molted rectrices sometimes have a white fringe on the tip that is rapidly worn away. Remiges sepia (#219), faintly glossed with purplish; edges of chest feathers smoke gray (#44) or glaucous (#80), most with tear-shaped parrot green (#160) subterminal spot resulting in an overall mottled appearance to underparts, the feathers darker sepia (#119) on basal portion; femoral tufts and tuft on either side of rump white; exposed portion of undertail coverts smoke gray (#45) with small faint spots of parrot green (#160).

Female: Above iridescent lime green (#159) glossed with yellow-green (#58), duller on crown, the forehead sometimes dark grayish brown (20). Middle pair of rectrices (r1) dark green, sometimes Vandyke brown (#121) terminally, the next pair (r2) similar but with terminal portion (broadly) blackish; third pair (r3) similar to second, but more extensive

blackish terminally and narrowly tipped with white; 2 outer pairs (r4-r5) with basal half (more or less) dark drab (119B) the tip drab-gray (#119D) or dull grayish white (broader on outermost rectrix), the intermediate (subterminal) portion black. Remiges Vandyke brown or dark grayish brown, faintly glossed with spectrum violet (72); chin and throat smoke gray (#45) or drab-gray, the center of throat usually with some speckling of rose feathers, but sometimes with a considerable patch of rose; lower throat with drab (#27) spots or streaks of drab or parrot green (160) remainder of underparts as in adult male, but slightly paler and less extensively glossed with metallic greenish. Definitive and Formative outer primaries and outer rectrices also narrower than in Juvenal Plumage, sex for sex (Pyle 1997).

Plumage Variants
Partially or completely leucistic adult males and females are occasionally spotted or collected (McGregor 1900, Banks 1963; Howell 2001; Williamson 2001; CJC); many or all feather tracts are white (including gorget) but eye and bill are dark, indicating that the individuals still produce melanin; white plumage is the result of failing to deposit melanin in feathers [Photos in multimedia]. Multiple skins of leucistic Anna's Hummingbird are present in the MVZ.

Bare Parts

Bill
Sepia (#119) and smooth (<10% corrugated) in adults; bill softer in Juvenile and with disto-lateral corrugations on base (Ortiz-Crespo 1972), extending to 75% of base of bill post fledging, gradually diminishing (through wear and bill-hardening process) to <10% of bill by Aug-Jan of first cycle; corrugations often lost before the first Prebasic molt is complete but some first-year birds can retain striations at base of bill (> 10%) allowing age-determination through Jan, after completion of molt (Pyle 1997, Yanega et al. 1997).

Iris
Sepia (#219).

Legs And Feet
Sepia (#119).

Measurements Conservation and Management
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