CUCKOOS, ROADRUNNERS, AND ANIS *CUCULIDAE*

Six species. Family characters include relatively short and broad wings, long tails, and zygodactylous feet (two toes forward and two toes back), with the outer front toe reversed. New World species have 10 primaries (the 10th reduced and the 9th shortened), 10 (to 11 in some roadrunners) secondaries, and 8 (most anis) to 10 rectrices. The first prebasic molt is incomplete to complete, and protracted throughout the winter; a few flight feathers (especially secondaries and rectrices) can occasionally be retained until the second prebasic molt. No prealternate molts occur. Adult molts usually are complete, although some flight feathers can occasionally be retained in cuckoos. Primary coverts are replaced with their corresponding primaries. The sequence of flight-feather replacement is irregular, in cuckoos at least. Primaries are replaced distally from p1 to p4, and proximally from p10 to p5, every other feather often being replaced (*i.e.*, the sequence can be p10-p8-p6-p9-p7-p5). Secondaries are replaced proximally from s6 to s9, and centripetally (inward from the outsides) within s1 to s5. The rectrices also are replaced in an irregular and almost random sequence. Skull pneumaticization probably does not complete; if not, the percentage of completion may be useful for age determination (see Fig. 88; more study is needed). The skin is blackish, however, which makes skulling difficult. Sexes tend to be similar, with measurements showing substantial overlap (averaging larger in females of most species), and brood patches developed by both sexes.

BLACK-BILLED CUCKOO

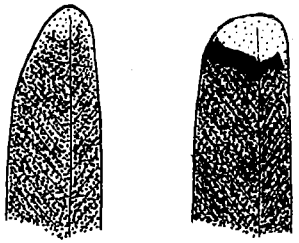
Coccyzus erythropthalmus

BBCU
Species # 3880
Band size: 2

Species—From Yellow-billed Cuckoo by tl – wg 5-24 mm; inner webs of pp warm brown with little or no rufous; underside of rects primarily gray; outer rects (r2-r5) with black subterminal bands (AHY/ASYs) and small (3-10 mm), relatively indistinct, whitish tips (Fig. 32); orbital ring greenish to dusky (HY), or red (AHY); lower mandible black, sometimes (juvs) with a restricted (< 20%) bluish-gray base; juvs with whitish tipping to the feathers of upperparts; down of nestlings white. Juv from juv Mangrove Cuckoo by the pattern of the rects (Fig. 32); base of bill black or bluish gray.

Geographic variation—No subspecies are recognized.

Molt—PB: HY/SY incomplete-complete (Aug-May), AHY/ASY incomplete-complete (Aug-Mar); PA absent. A presupplemental molt (see p. 16) possibly occurs; otherwise, the 1st PB begins on the summer grounds and resumes on the winter grounds, the replacement of pp, ss, and rects occurring through the winter. Adult PBs occur primarily on the winter grounds. A few ss (often including s3-s4) and rects (rarely 1-2 pp and pp covs) occasionally can be retained during both the 1st and the adult PBs. See p. 39. The sequence of flight-feather replacement is irregular (see Family account).



HY/SY AHY/ASY

FIGURE 32. The shape and pattern of the outer rectrices (r3-r5) in Black-billed Cuckoo for identification and ageing.

Skull—Pneumaticization patterns possibly are useful for ageing (see Family account), but the skull may be difficult to see through the blackish skin.

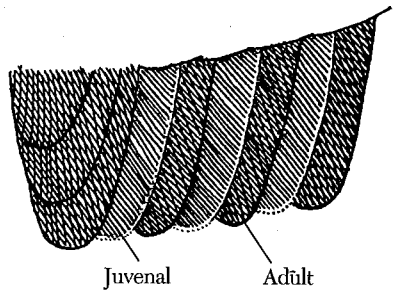
Age—Juv (Jun-Sep) has the orbital ring dull greenish and feathers of the upperparts with grayish-white to buff tips; juv ♀=♂.

HY/SY (Aug-May): Orbital ring greenish or dusky (through winter); unreplaced juvenal pp covs and ss tipped buff (Fig. 33); unreplaced juvenal rects narrow, tapered, and dull brownish gray, with indistinct or reduced, pale tips on r2-r5 (Fig. 32). **Note: More study is needed on the timing of orbital-ring color changes in winter/spring. Also, on the winter grounds, check for the roof of the mouth (upper mandible lining) color to be gray (possibly with white spots) in HY/SY (through Jan?) and black in AHY/ASY.**

AHY/ASY (Apr-Mar): Orbital ring red; adult pp covs and ss without buff tips (see Fig. 33); adult ss uniform in color and wear (Fig. 25**B**); adult rects uniform in wear, broad, truncate, and dark grayish, with relatively large and distinct, whitish tips on r2-r5 (Fig. 32). **Note: See HY/SY.**

SY/TY (May-Mar): Like AHY/ASY, but 1-5 juvenal ss (among s2-s6) retained, buff-tipped, and contrastingly faded and worn (Fig. 33); and/or 1-3 juvenal rects retained, contrasting with the replaced, first-basic (adult) rects in wear and color (see Fig. 32). **Note: Also, look for some SY/TYs with retained pp and buff-tipped pp covs. Only a small proportion of birds can be aged SY/TY.**

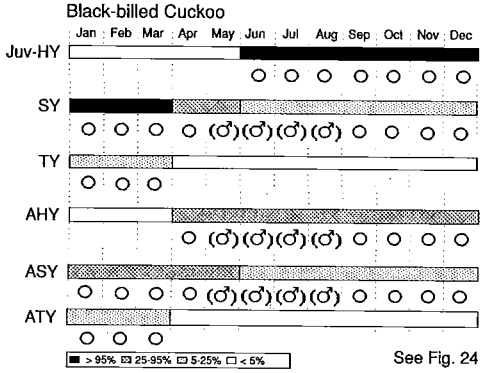
ASY/ATY (Apr-Mar): Like AHY/ASY, but 1-3 adult rects retained, contrasting with the replaced, adult rects in wear but not pattern (see Fig. 32). **Note: Beware of birds with adventitiously replaced rects. ASY/ATYs also can retain 1-5 ss (Fig. 25D) that lack buff tips (*cf.* Fig. 33); however, the tips of the juvenal ss on SYs can wear off by Mar, so the presence of older, uniformly brown ss does not necessarily indicate ASY/ATY. The relative wear or position of retained ss may be helpful in ageing some ASY/ATYs (see Yellow-billed Cuckoo).**



Juvenal Adult

FIGURE 33. The pattern of retained secondaries in some HY/SY Black-billed and Mangrove cuckoos. Note the buffy tips to the retained juvenal feathers, which can wear off by spring. Similar patterns occur in some AHY/ASYs and in both age groups of Yellow-billed Cuckoos, although the retained feathers lack buffy tips.

Sex—♀=♂ by plumage. The CP is not well developed, but may be useful for sexing some ♂♂ in May-Aug, with experience; the BP, which occurs in both sexes, is unreliable for sexing. ♀ wg(n35) 137-147, tl(n35) 146-167; ♂ wg(n42) 133-144, tl(n42) 142-161.



Hybrids reported—Yellow-billed Cuckoo.

References—Stone (1896), Ridgway (1916), Forbush (1927), Bent (1940), Roberts (1955), Jehl (1959), Wood (1969), Oberholser (1974), Nolan (1975), Parkes (1984), Cramp (1985), Pyle (1995a).

YELLOW-BILLED CUCKOO

Coccyzus americanus

YBCU
Species # 3870
Band size: 2

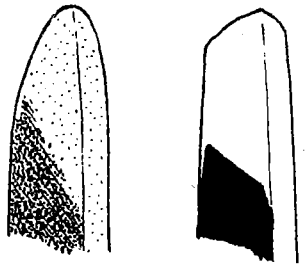
Species—From Black-billed Cuckoo by tl – wg -5 to 6 mm; inner webs of the pp with substantial rufous; underside of the rects black; outer rects (r2-r5) with wide (14-30 mm) and distinct, white tips (Fig. 34); orbital (eye) ring pale yellow (HY) to gray (AHY); lower mandible bicolored, with > 40% of the base yellow (except some juvs; see **Geographic variation**); juvs without whitish tipping to the feathers of the upperparts; down of nestlings dusky gray. Juv from juv Mangrove Cuckoo by the lack of white tipping to the feathers of the upperparts; pp with extensive rufous; outer rects with distinct and more extensive white to the outer webs (Fig. 34).

Geographic variation—Weak, and clinal in the limited area where the ranges meet. Subspecies taxonomy follows Franzreb & Laymon (1993); see also Ridgway (1916), Todd & Carriker (1922), Swarth (1929), Mees (1970), Oberholser (1974), Banks (1988a, 1990). No other subspecies occur. Note that the following measurement formulae were based upon specimens and may differ, to some extent, on live birds.

C.a. occidentalis (br CA-CO to w.TX): Large; bill averages large (nares to tip 18.1-22.5, upper mandible depth at tip of nares 5.8-7.7); juvs with the lower mandible dark. ♀ wg(n100) 141-159, tl(n53) 137-160; ♂ wg(n100) 136-154, tl(n86) 130-157. The following formulae separate 75-90% of known-sex birds to subspecies: ♀♀, 10.5013 + (wg × -0.0195) + (tl × -0.0268) + (bill nares to tip × -0.1279) + (upper mandible depth at tip of nares × -0.0836) < 0.5; ♂♂, 8.8315 + (wg × -0.0184) + (tl × -0.006) + (bill nares to tip × -0.1606) + (upper mandible depth at tip of nares × 0.2399) < 0.5. In each case *americanus* should be > 0.5.

C.a. americanus (br ND-NB to w.TX-FL): Small; bill averages small (nares to tip 17.3-21.1, upper mandible depth at tip of nares 5.7-7.2); juvs often with a yellow base to the lower mandible. ♀ wg(n100) 135-152, tl(n100) 129-152; ♂ wg(n100) 131-149, tl(n100) 129-148. See *occidentalis* for formulae separating 75-90% of known-sex specimens. Birds of the W.Indies (*"julieni"*), which could occur as vagrants to FL, average smaller and slightly darker, but differences are weak and obscured by individual variation.

Molt—PB: HY/SY incomplete-complete (Aug-May), AHY/ASY incomplete-complete (Sep-Mar); PA absent. A presupplemental molt (see p. 16) possibly occurs; otherwise, the 1st PB begins on the summer grounds and resumes on the winter grounds, the replacement of pp, ss, and rects occurring through winter. Adult PBs occur primarily on the winter grounds. Some ss and rects (and rarely 1-2 pp and pp covs) occasionally can be retained during both the 1st and adult PBs. See p. 39 The sequence of flight-feather replacement is irregular (see Family account).



HY/SY AHY/ASY

FIGURE 34. The shape and pattern of the outer rectrices (r3-r5) in Yellow-billed Cuckoo for identification and ageing.

Skull—Pneumaticization patterns possibly are useful for ageing (see Family account), but the skull may be difficult to see through the blackish skin.

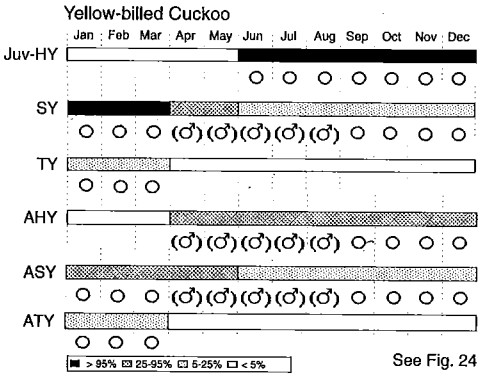
Age—Juv (Jun-Sep) is similar to HY/SY, but has thin, pale tips to the outer gr covs and inner pp, and a duskier (to all dark in *C.a. occidentalis*) base to the lower mandible; juv ♀=♂.

HY/SY (Aug-May): Orbital ring pale yellow (through winter); unreplaced juvenal rects tapered and dull blackish to grayish, with the whitish tips to r2-r5 less sharply defined (Fig. 34). **Note: On the winter grounds, check for timing of the roof of the mouth (upper mandible lining) and orbital ring color changes (see Species and Black-billed Cuckoo).**

AHY/ASY (May-Apr): Orbital ring dusky (sometimes yellow?); adult rects uniform in wear, truncate, and black, with sharply defined white tips on r2-r5 (Fig. 34). **Note: See HY/SY.**

SY/TY (May-Mar): Like AHY/ASY, but 1-3 juvenal rects retained, contrasting with the replaced, first-basic (adult) rects in wear and pattern (see Fig. 34). **Note: See ASY/ATY. Only a small proportion of birds can be aged SY/TY.**

ASY/ATY (Apr-Mar): Like AHY/ASY, but 1-3 adult rects retained, contrasting with the replaced, adult rects in wear but not pattern (see Fig. 34). **Note: Both SY/TYs and ASY/ATYs also can retain 1-5 ss, but distinctions between juvenal and adult feathers are difficult to infer. Relative wear or position of the retained ss may be helpful in ageing some ASY/ATYs. Retained juvenal ss probably average slightly narrower and more tapered than adult ss, and would contrast more markedly with replaced feathers in spring than would retained adult ss (see Fig. 25C–D). More study is needed. Only a small proportion of birds can be aged ASY/ATY.**



See Fig. 24

Sex—♀=♂ by plumage. The CP is not well developed, but it may be useful for sexing some ♂♂ in Apr-Aug, with experience; the BP, which occurs in both sexes, is unreliable for sexing. ♀ wg(n100) 135-159, tl(n100) 129-160; ♂ wg(n100) 131-154, tl(n100) 129-157; see **Geographic variation**.

Hybrids reported—Black-billed Cuckoo.

References—Stone (1896), Ridgway (1916), Forbush (1927), Bent (1940), Roberts (1955), Jehl (1959), Wood (1969), Oberholser (1974), Nolan (1975), Sheppard & Klimkiewicz (1976), Potter (1980), Parkes (1984), Cramp (1985), Banks (1988a, 1988b), Pyle (1995a); E.J. Fisk (*in litt.* to the BBL); IBP (MAPS) data, PRBO data.

MANGROVE CUCKOO

Coccyzus minor

MACU
Species # 3860
Band size: 2

Species—Juv (which lacks the distinct, blackish auricular of adult) from juv Black-billed and Yellow-billed cuckoos by the combination of whitish tipping to the feathers of the upperparts; pp without rufous; pattern of the outer rects (r2-r5) unique (Fig. 35); base of the lower mandible with substantial yellow (> 40%).

Geographic variation—Subspecies taxonomy follows Banks & Hole (1991), who considered the species monotypic (synonymizing up to 13 previously recognized subspecies); see also Ridgway (1916), van Rossem (1934a). Birds from s.FL (*"C.m. maynardi"*) may average slightly smaller (see Sex) and paler underparts than other birds, especially *"nesiotes"* and *"continentalis"*, which may occur as vagrants to s.FL Is and n.FL-TX, respectively. More study is needed.

Molt—Little known, but molt likely parallels that of Black-billed Cuckoo (which see). In northern, partially migratory birds, the PBs probably commence on the summer grounds and complete on

the winter grounds. Molt may occur year-round in resident birds south of N.Am; more study is needed. The sequence of flight-feather replacement is irregular (see Family account).

Skull—Pneumaticization patterns possibly are useful for ageing (see Family account), but the skull may be difficult to see through the blackish skin.

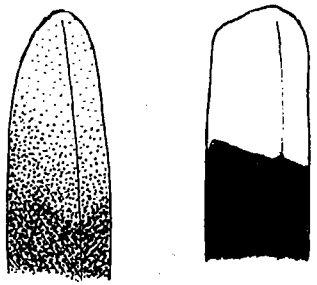


FIGURE 35. The shape and pattern of the outer rectrices (r3-r5) in Mangrove Cuckoo for identification and ageing.

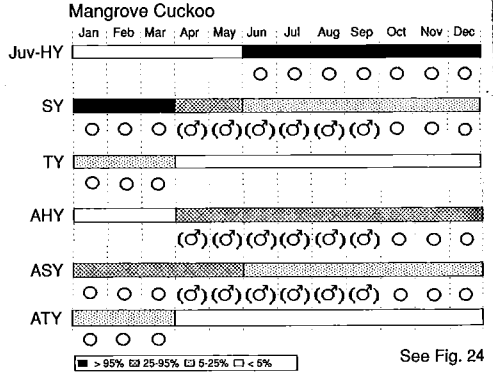
Age—Juv (Jun-Nov?) lacks the distinct, black auricular of non-juvs and has feathers of the upperparts (especially ss and pp covs) tipped buff or cinnamon; juv ♀ = ♂. The following month ranges may not apply south of N.Am, where breeding may occur year-round.

HY/SY (Aug-May): Orbital ring dusky (through winter); unreplaced juvenal pp covs and ss tipped buff or cinnamon (see Fig. 33); unreplaced juvenal rects tapered and grayish, with the pale tips of r2-r5 less sharply defined (Fig. 35). **Note: On the winter grounds, check for timing of the roof of the mouth (upper mandible lining) and orbital ring color changes; see Species and Black-billed Cuckoo.**

AHY/ASY (Apr-Mar): Orbital ring yellow; adult ss without buff or cinnamon tips (see Fig. 33) and uniform in color and wear (Fig. 25**B**); adult rects uniform in wear, truncate, and black, with sharply defined white tips on r2-r5 (Fig. 35). **Note: See HY/SY.**

SY/TY (May-Mar): Like AHY/ASY, but 1-5 juvenal ss (among s2-s6) retained, buff-tipped or cinnamon-tipped, and contrastingly faded and worn (Fig. 33); and/or 1-3 juvenal rects retained, contrasting with the replaced, first-basic (adult) rects in wear and pattern (see Fig. 35). **Note: Also, look for some SY/TYs with retained pp and buff-tipped or cinnamon-tipped pp covs. Only a small proportion of birds can be aged SY/TY.**

ASY/ATY (Apr-Mar): Like AHY/ASY, but 1-3 adult rects retained, contrasting with the replaced, adult rects in wear but not pattern (see Fig. 35). **Note: ASY/ATYs also can retain 1-5 adult ss (Fig. 25D); however, retained ss alone do not necessarily indicate ASY/ATY (see Black-billed Cuckoo).**



Sex—♀ = ♂ by plumage. The CP is not well developed, but it may be useful for sexing some ♂♂ in Apr-Sep, with experience; the BP, which occurs in both sexes, is unreliable for sexing. ♀ wg(n30) 128-145, tl(n30) 147-169; ♂ wg(n30) 127-142, tl(n30) 144-169; measurements are from birds of FL only (see **Geographic variation**).

References—Ridgway (1916), Bent (1940), Howell & Webb (1995), Pyle (1995a).

GREATER ROADRUNNER

Geococcyx californianus

GRRO
Species # 3850
Band size: 5

Geographic variation—Subspecies taxonomy follows Browning (1990), who considered the species monotypic (synonymizing a previously recognized subspecies); see Oberholser (1974), Browning (1978, 1990); Rea (1983), Hughes (1996). Birds of e.TX-s.AR ("*G.c. dromicus*") may average slightly smaller, darker, and with larger white tips to the outer rects (r3-r5) than western birds, but differences are weak and broadly clinal.

Molt—PB: HY incomplete(?)-complete (Jun-May), AHY incomplete(?)-complete (Jun-May); PA absent(?). Molt in this species is highly irregular and asymmetrical. The PBs possibly suspend over the winter, and body feathers and terts possibly are replaced twice per year (Jun-Oct and Mar-May), in which case a PA would be involved. Juvenal (and probably adult) rects and ss possibly can be retained during the PBs. See p. 39. Adventitious replacement and anomalous retention of flight feathers are common. More study is needed on molts in this species; the sequence of flight-feather replacement possibly follows that of the cuckoos (see Family account).

Skull—Pneumaticization patterns possibly are useful for ageing (see Family account), but the skull may be difficult to see through the blackish skin.

Age—Juv (Apr-Sep) is like HY/SY, but the plumage is loosely textured and white tips of the natal down can be present shortly after fledging; juv ♀ = ♂.

HY/SY (Aug-Jul): Iris brownish to bluish (through Oct?); unreplaced juvenal pp covs dull brownish, with the white tips divided by rounded black shaft streaks (Fig. 36); unreplaced juvenal ss tapered and dull greenish dusky; unreplaced juvenal rects tapered and dull blackish to grayish, with the white tips on r2-r5 indistinctly defined and usually with uneven, straight, or descending borders to the black (Fig. 37). **Note: More study is needed on variation in iris color by age. See also Sex for age-related variation in the color of the orbital apterium.**

AHY/ASY (May-Apr): Iris yellow to orange; unreplaced adult pp covs dark green, with the white tips divided by pointed black shaft streaks (Fig. 36); unreplaced adult ss relatively broad and glossy green; unreplaced adult rects truncate and black, with the white tips on r2-r5 sharply defined, and usually with even and ascending borders to the black (Fig. 37). **Note: See HY/SY. AHYs with uniformly adult flight feathers possibly are reliably aged ASY through**

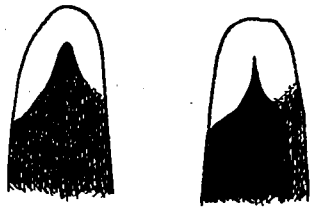


FIGURE 36. The shape and color pattern of the outer primary coverts by age in Greater Roadrunner. Figure from Pyle (1995a).

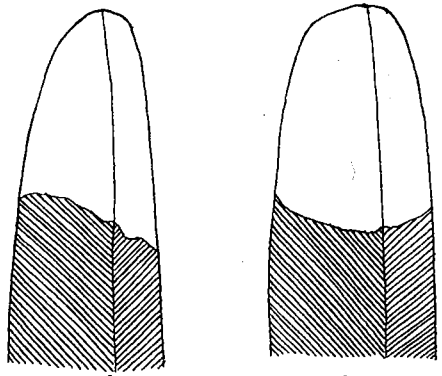


FIGURE 37. The shape and color pattern of the outer rectrices (r3-r5) by age in Greater Roadrunner. Figure from Pyle (1995a).