

Molt & Ageing Passerines



Cyndi Smith
CBBS 12 March 2020

Molt & ageing passerines

- Some definitions
- How to use plumage & molt to age birds
 - Calendar year & WRP age classification systems
- Characteristics to look for in plumage
- How to use Pyle
- Look at wing photos for some common species but different age/sex classes

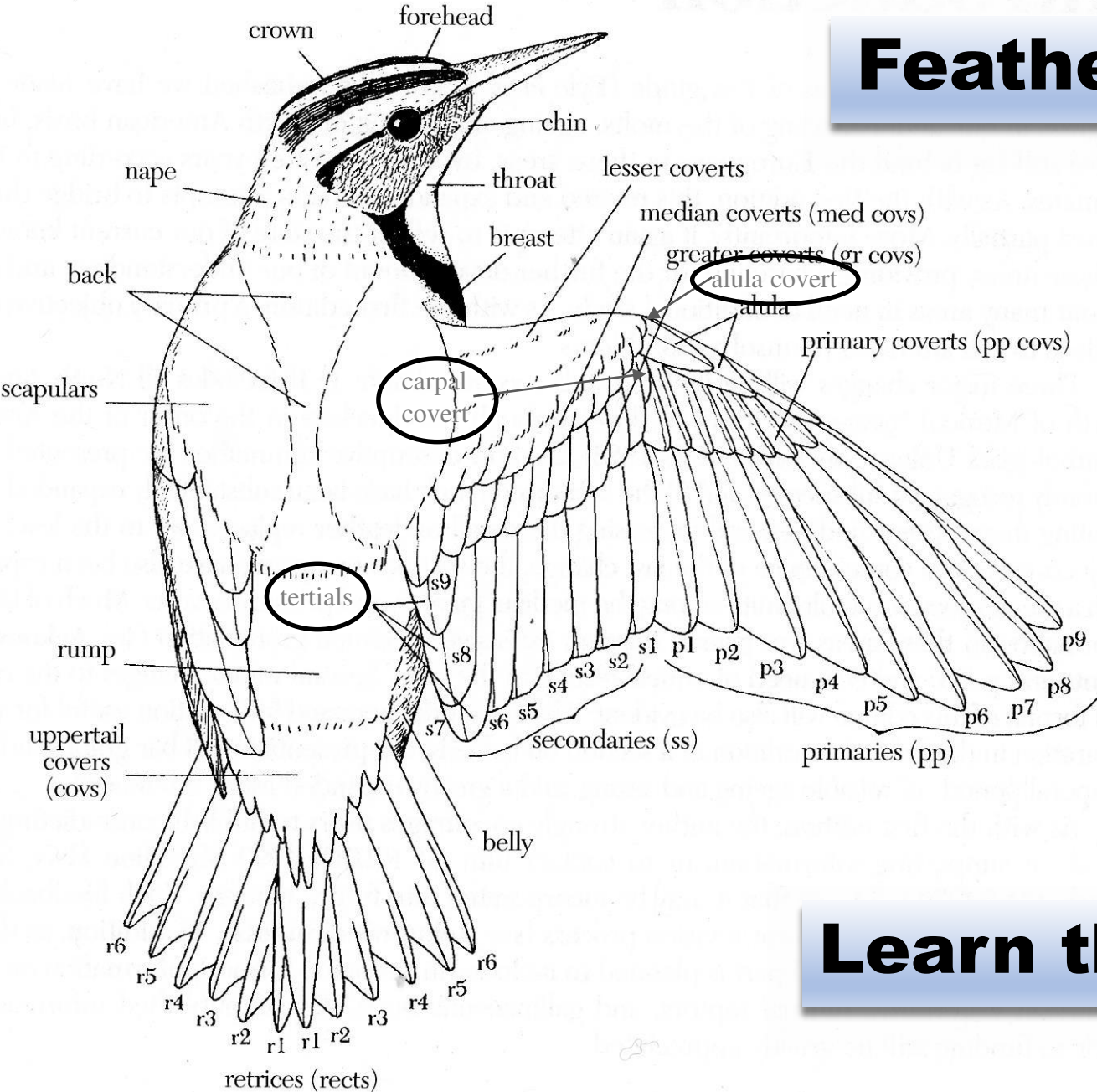
ASK QUESTIONS THROUGHOUT

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Feather tracts



Learn these!!

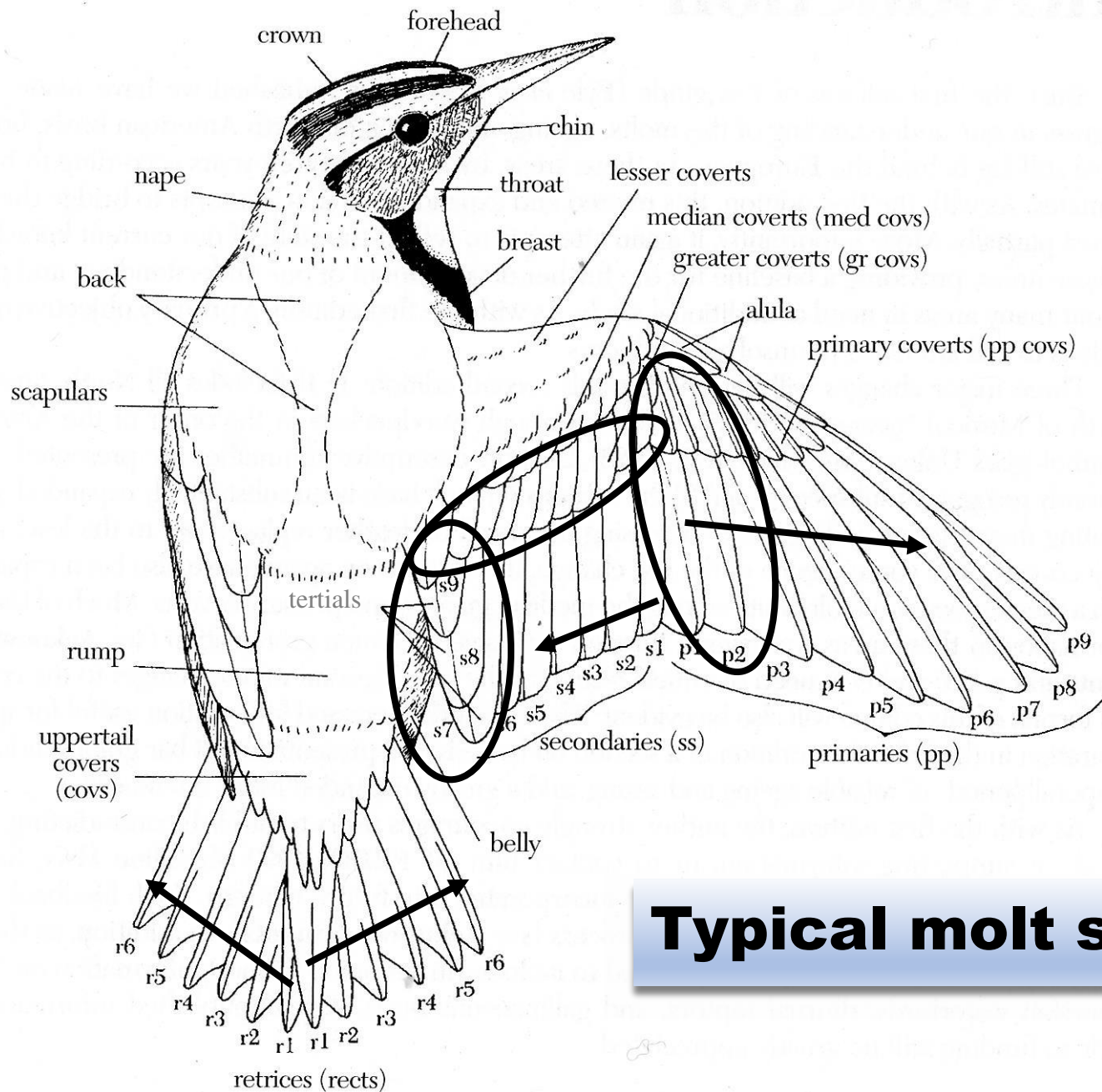
FIGURE 1. Terms used in this guide for feather tracts and anatomical areas. See Figure 13 for more details on wing feather terminology.

- Plumage:
 - Feathers that cover a bird & the pattern, colour & arrangement of those feathers
- Juvenal plumage:
 - First feathers grown for leaving the nest
- Formative plumage:
 - Feather generation between juvenal & adult
- Definitive basic plumage:
 - Adult plumage which does not discernably change further with age
- Molt:
 - The regular, ordered growth & replacement of feathers
 - The name of the molt indicates the next plumage
 - E.g., pre-formative molt leads to formative plumage

- Extent of molt (what is replaced):
 - *Complete*: all feathers
 - *Incomplete*: most to all body feathers & coverts & some flight feathers
 - *Partial*: most to all body feathers & some to all coverts
 - *Limited*: some body feathers but no covert or flight feathers
- Molt limit:
 - boundary between replaced & retained wing & tail feathers
- Pseudolimit:
 - A gradient or change in colour in a feather tract that looks like a molt limit but is not

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Typical molt sequence

FIGURE 1. Terms used in this guide for feather tracts and anatomical areas. See Figure 13 for more details on wing feather terminology.

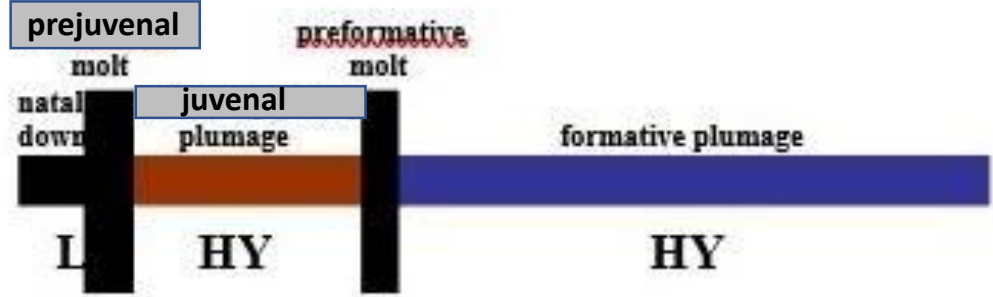
Complex Basic Strategy (CBS)

JAN.

APR.

AUG.

DEC.



Complex Alternate Strategy (CAS)

JAN.

APR.

AUG.

DEC.



YRWA

prejuvenal molt

preformative molt

natal down

juvenal plumage

formative plumage

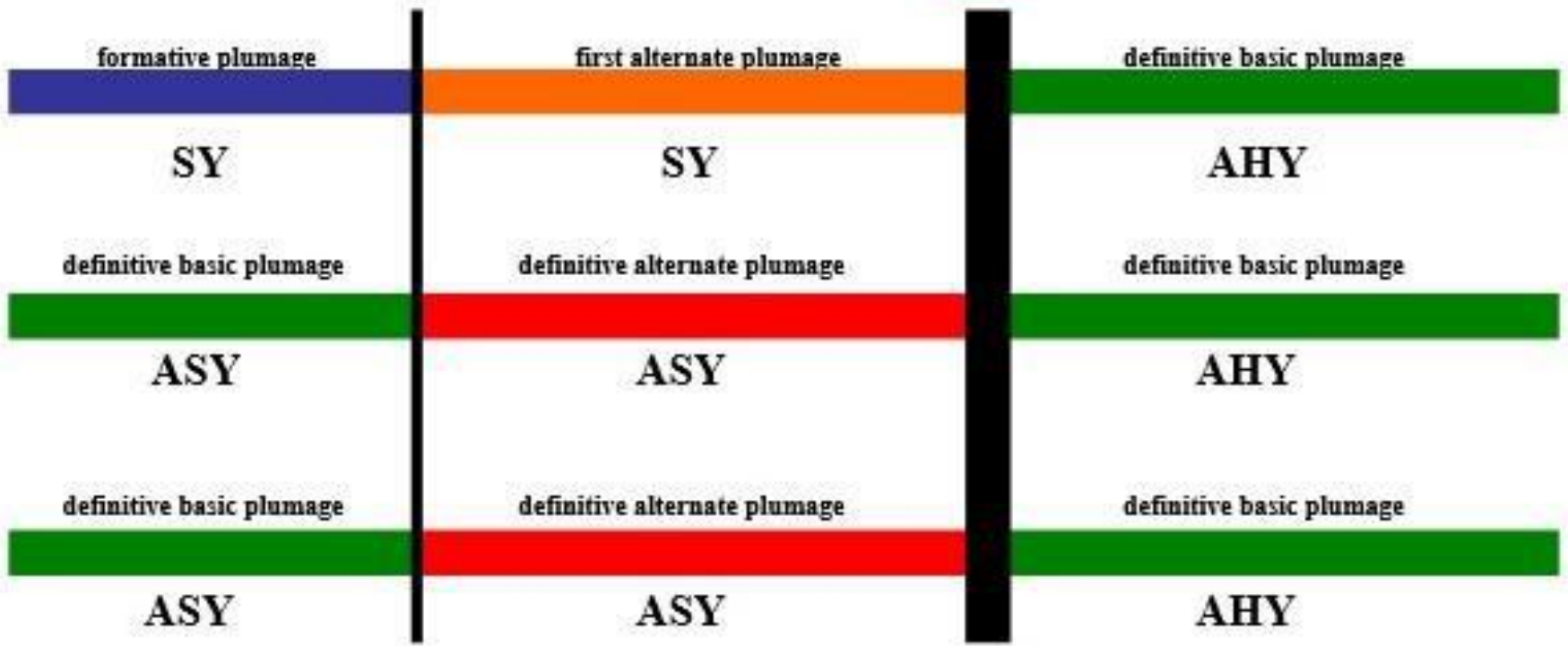
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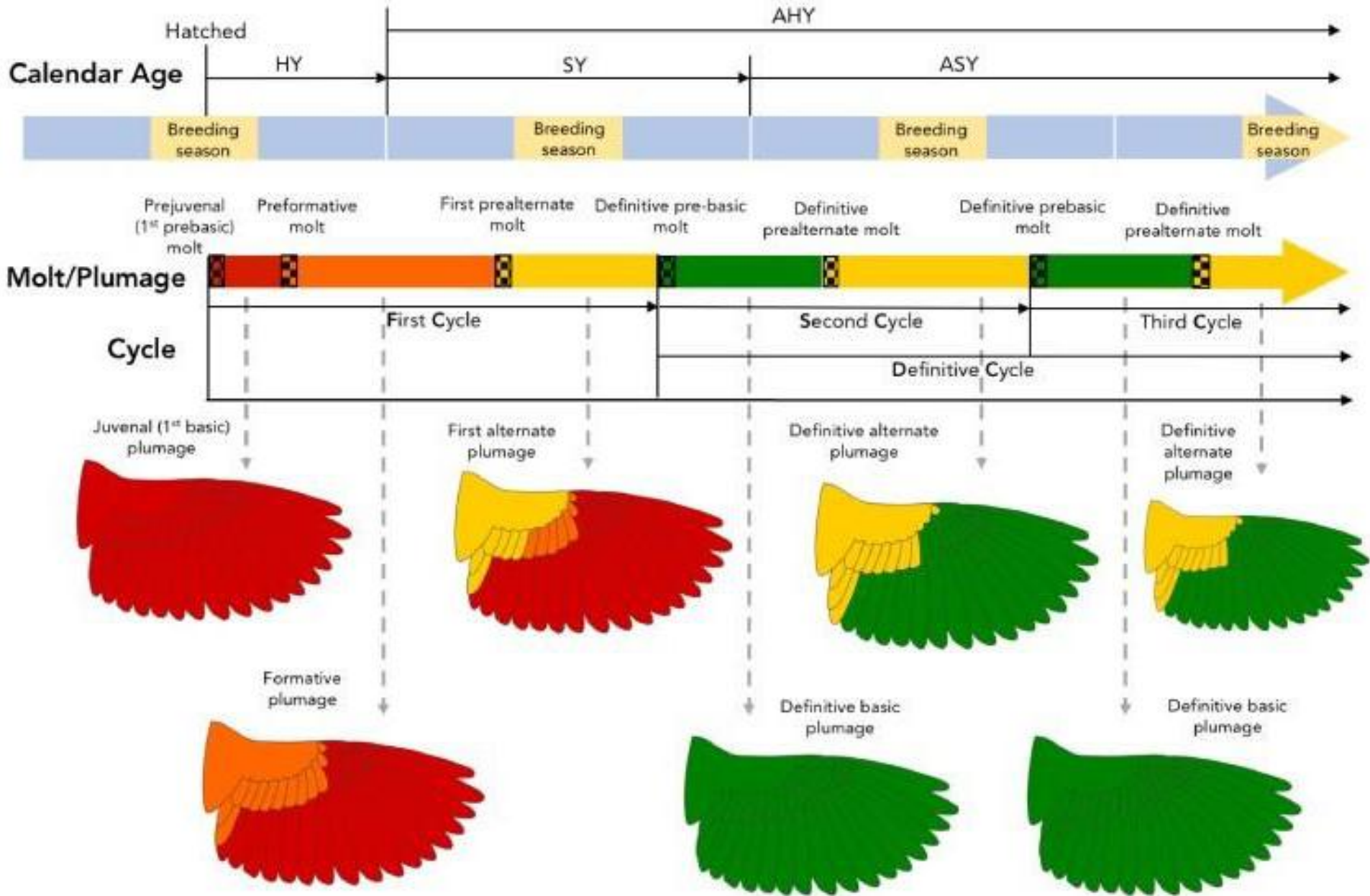
HY

HY

prealternate molt

adult prebasic molt





1. Determine the cycle

2. Determine the stage within the cycle (molting or not,)

3. Determine the molt or plumage type

First = F

Undergoing molt (Pre...) = P

Juvenal (J)

Second = S

Underwent molt (in Cycle) = C

Formative (F)

Third = T

After a given plumage (e.g. nonjuvenal plumage of unknown cycle) = A

Basic (B)

Fourth = 4

Alternate (A)

Definitive = D

Unknown (U)

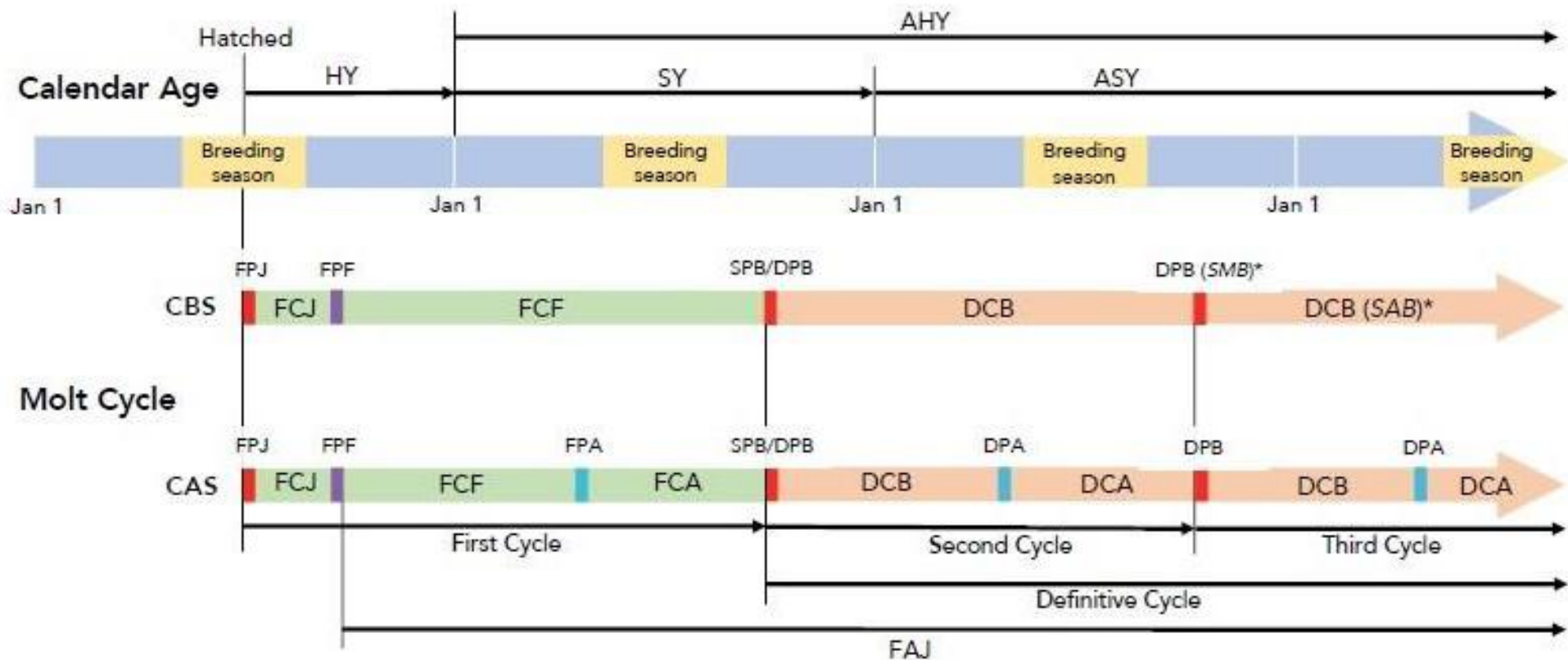
Unknown = U

NOTE on using P code

P = bird in molt. For HYs bird can be in body-feather molt; for AHYs it should be in primary molt.

Heavyside & Kennedy 2019

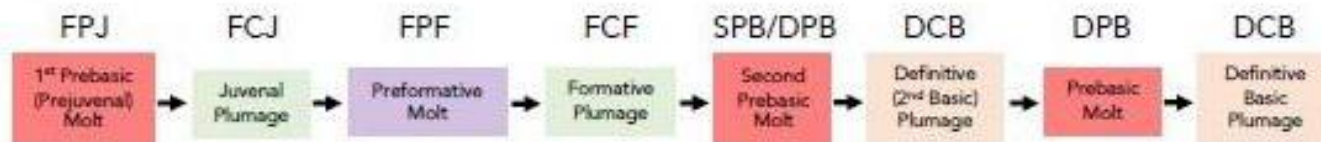
e.g. A bird in its first cycle (F) molting (P) into its formative plumage (F) = FPF



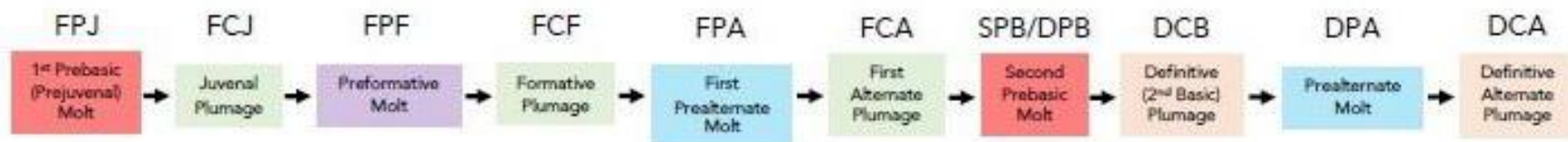
Molt and Plumage Sequence

(not to scale with timelines above)

Complex Basic Strategy (CBS)



Complex Alternate Strategy (CAS)



Heavyside & Kennedy 2019

Molt & ageing passerines

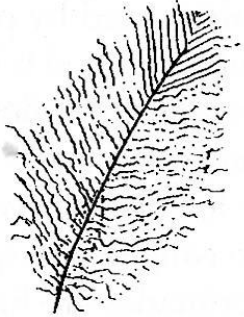
- Some definitions
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- How to use Pyle
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What to look for ...

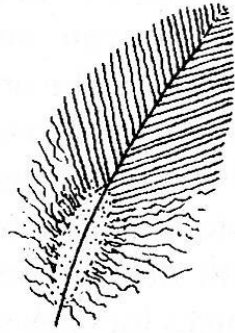
- Difference in feather quality between juvenal & adult
- Shape of feathers: juvenal vs adult
- Fault bars vs growth bars in rectrices
- Molt in alula feathers
- Change in colour of feathers
- Difference in shaft colour
- Feather wear
- Step in secondary coverts
- Look at partially closed wing as well as open wing

Feather texture

Pyle 1 pg. 19



Juvenal



Non-juvenal

FIGURE 14. Juvenal and non-juvenal body feathers. The differences are most apparent with the undertail coverts and feathers of the nape and back.

HOWR juvenal



Rectrix shape

Pyle I
pg. 210

juvenal

adult

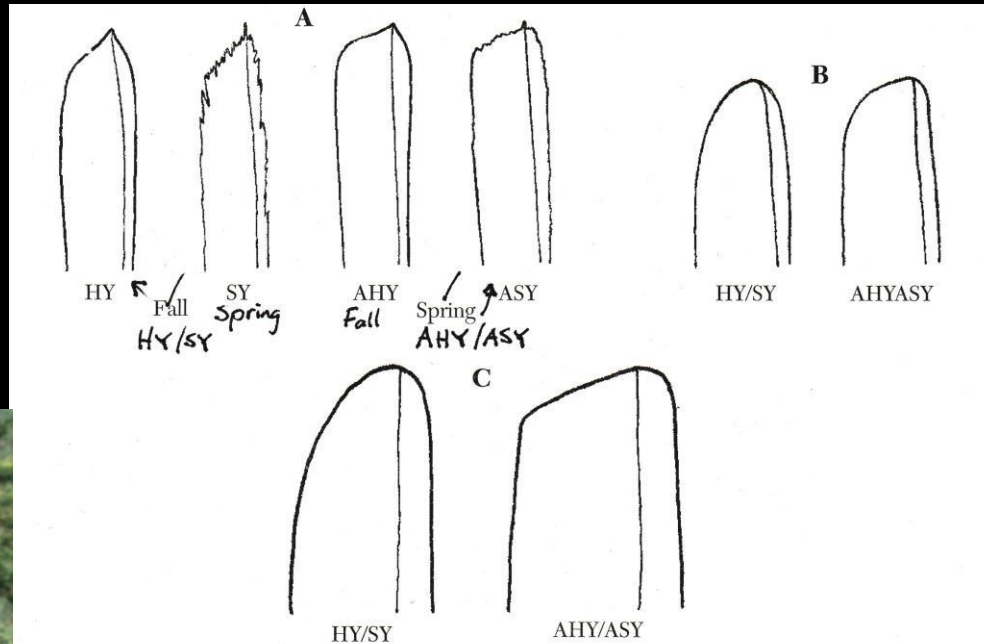


FIGURE 139. The shape of the outer rectrices (r4-r6) by age, as found in many passerines of different sizes. Note the "corner" effect on the inner webs of AHY/ASY feathers, absent or reduced in HY/SY feathers. Also note that the juvenal feathers of SY typically become more abraded by spring than the adult feathers of ASY (as shown in illustration A), although many adults, especially nesting ♀♀ of arid habitats, can also show extremely abraded rectrices.



YRWA

Primary shape

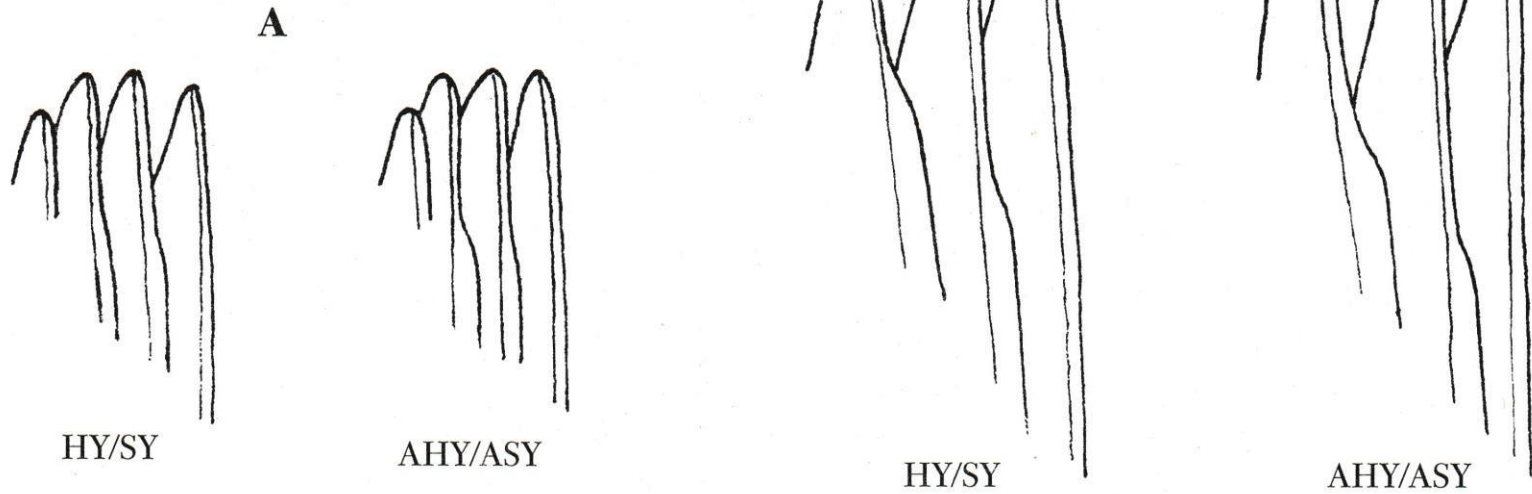


FIGURE 140. The shape of the outer primaries (p7-p10) as is found in passerines of different sizes.



juvenal

Pyle I pg. 211

WIWA



adult

Primary covert shape

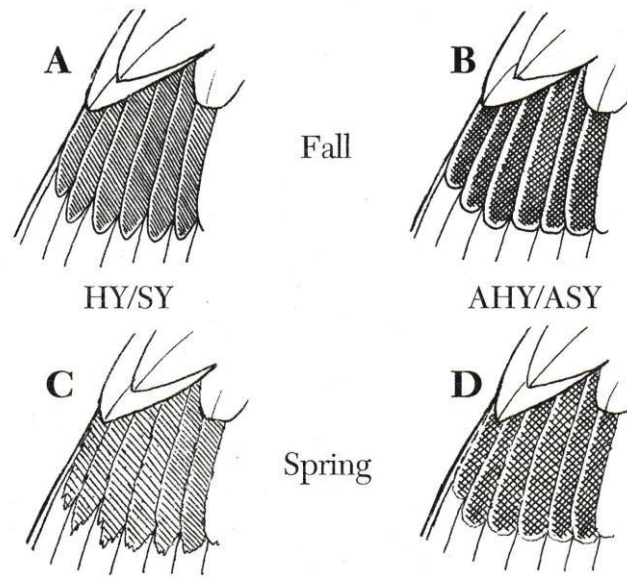


FIGURE 138. The shape and relative condition of the primary coverts in HY/SY (A & C) and AHY/ASY (B & D) birds.

Pyle 1 pg. 210



juvenal

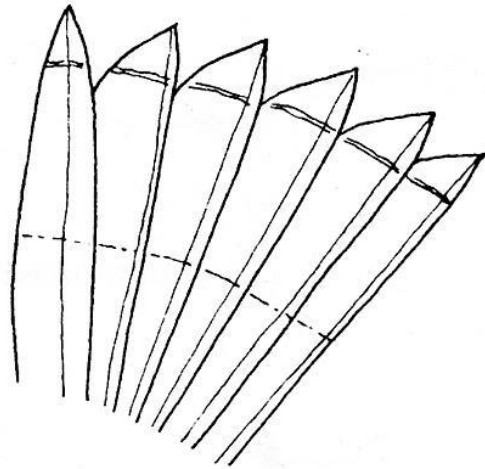
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AMGO

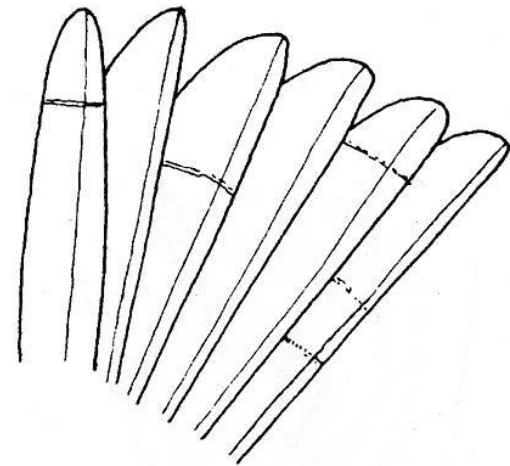


adult

Fault bars & growth bars



Juvenal



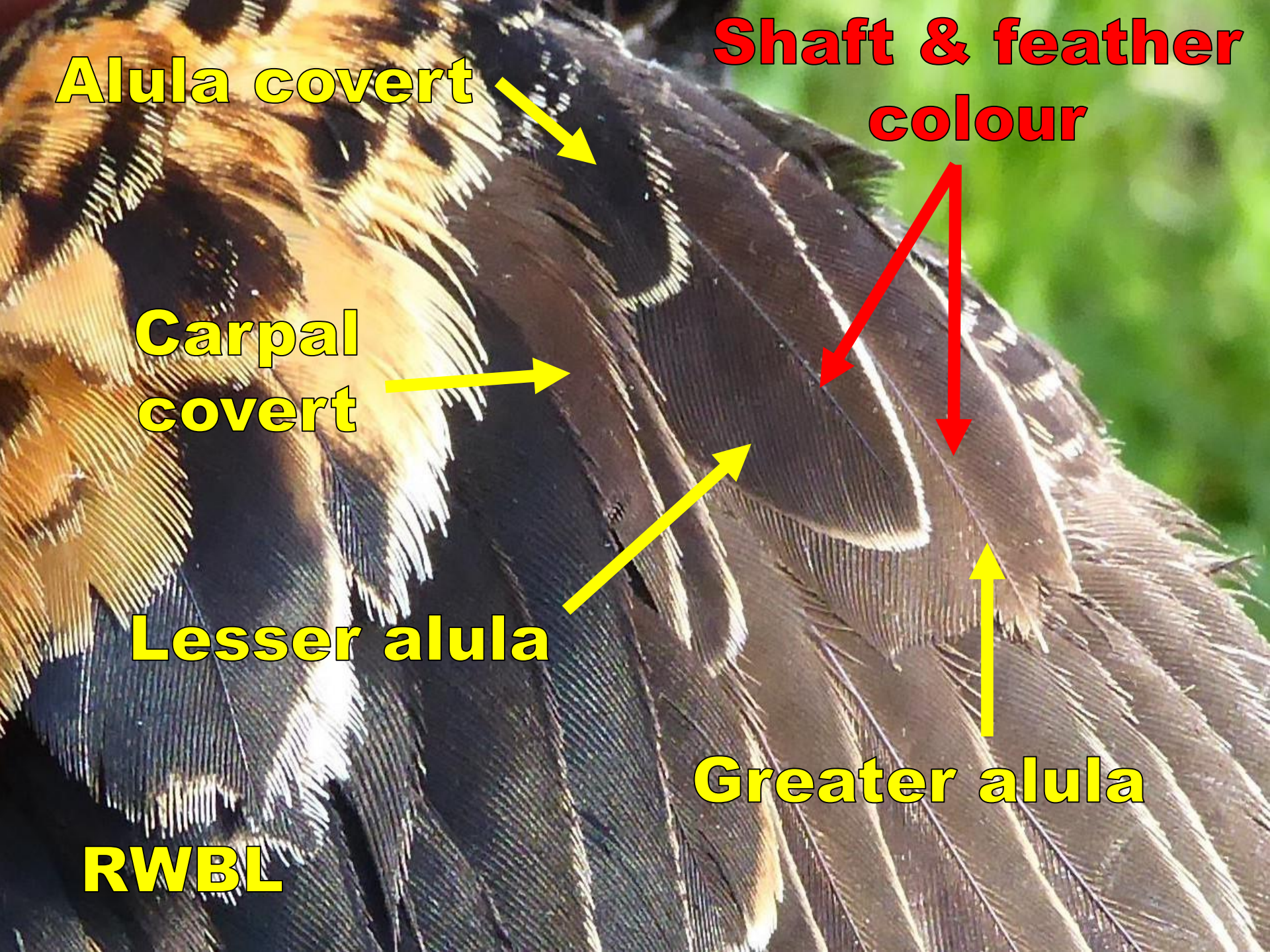
Adult

FIGURE 19. Patterns of growth bars in juvenal and adult rectrices. Breaks in the feather vein, such as the upper bar on the juvenal rectrices, are known as fault bars.

Pyle I pg. 23



YEWA HY



Alula covert

**Shaft & feather
colour**

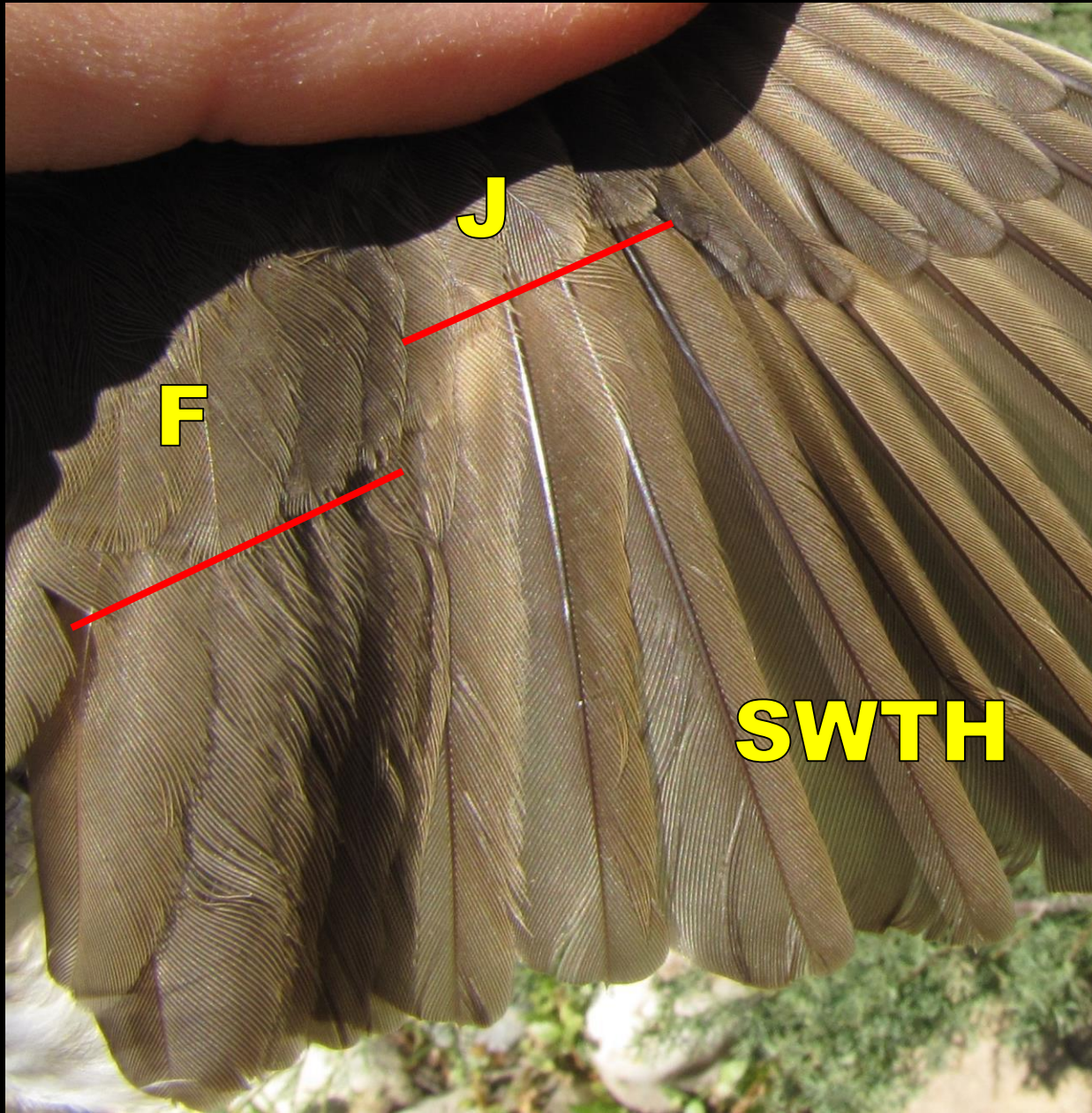
**Carpal
covert**

Lesser alula

RWBL

Greater alula

“Step” in secondary coverts



Closed wing

ASY

YEWA

SY



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BALTIMORE ORIOLE

Icterus galbula

BAOR

Species # 5070

Band size: 1A

Species—♀♀ and HY/SY ♂♂ from most other orioles by medium size and relatively short tl (wg 83-96, tl 64-75; see **Age/Sex**); bill short, straight, and stout (Fig. 336; exp culmen 15.8-18.9, depth at tip of nares 5.3-6.6); back feathers olive with slight dusky markings (Fig. 337), not forming distinct streaks; throat usually with at least some orange; lower mandible pale horn to bluish. ♀♀ and juv-HY ♂♂ from Bullock's Oriole, with caution, by upperparts relatively dark brownish orange, scapulars and back feathers with more distinct dusky centers by age (Fig. 337); auricular olive, not contrasting markedly with the crown (Fig. 336; a capped appearance is reduced or absent); med covs with less white and more yellow by age/sex (see **Age/Sex**); throat and underparts fairly uniformly yellowish orange, the belly and flanks sometimes buffy whitish. See also differences in molt strategies for further identification clues. Beware of hybrids.

Geographic variation—No subspecies are recognized.

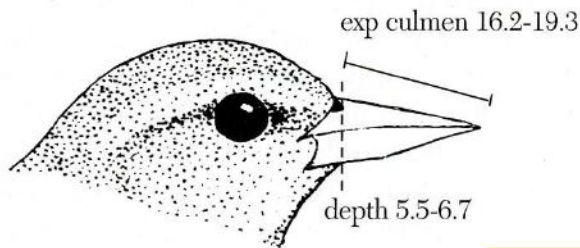
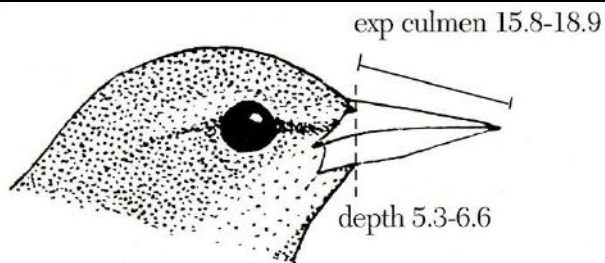


FIGURE 336. The bill shape and size, and head pattern in ♀♀ and HY Baltimore Orioles.

FIGURE 338. The bill shape and size, and head pattern in ♀♀ and HY Bullock's Orioles.

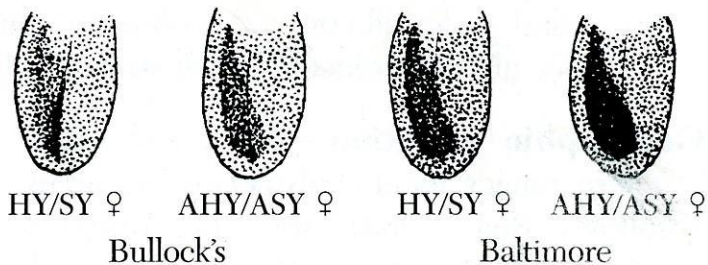
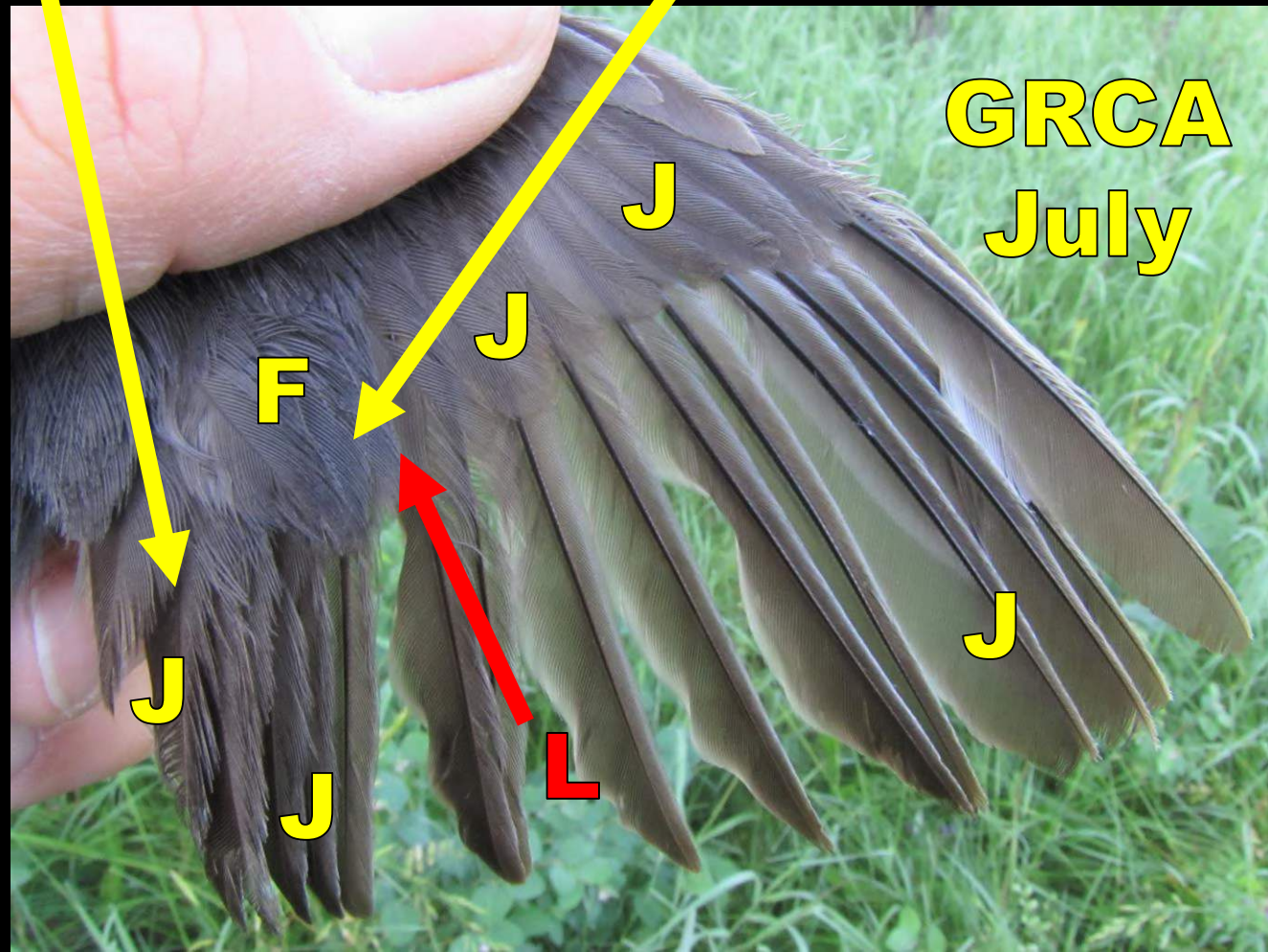


FIGURE 337. The pattern of the scapulars by age in Baltimore and Bullock's orioles.

Pyle I pg. 656-658

Molt—**PF**: HY partial (Jul-Oct), ^{PF=}AHY complete (Jul-Sep); PA absent-limited (Feb-May). The PBs occur primarily on the summer grounds, although they can complete on the winter grounds. The 1st PF includes 0 (~4%) to 10 (~12%) inner gr covs occasionally (in ~19% of birds) 1-2 terts and occasionally (in ~10% of birds) 1-2 central rectx (r1). Abnormal retention of the juvenal undertail covs through the 1st PF has also been recorded. More study is needed on the occurrence and extent of the PA, which at most includes a limited amount of body plumage only.

Pyle 1 pg. 408



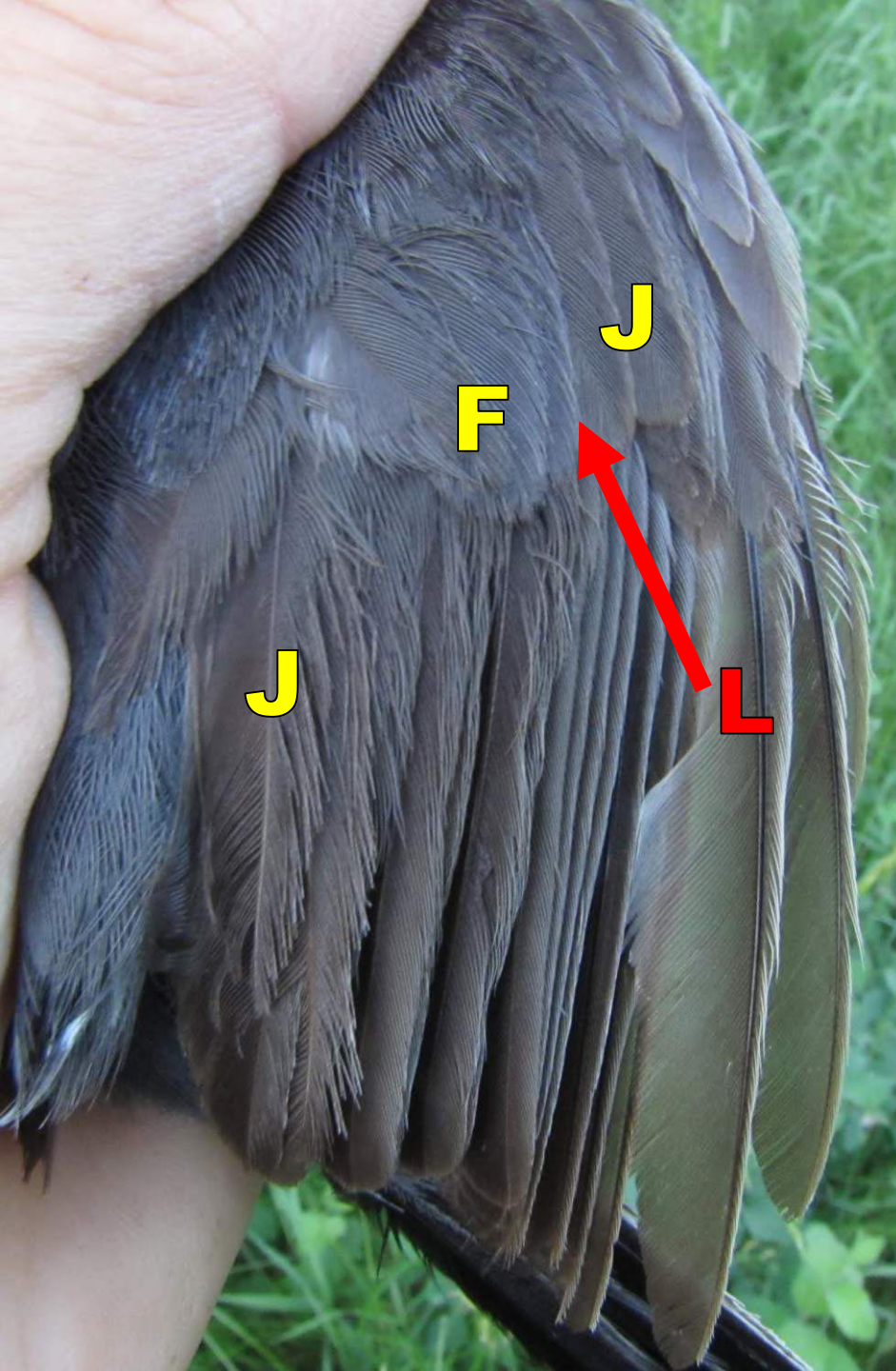
GRCA July

Age—Juv (Jun-Aug) has the upperparts with a brownish wash, undertail covs pale rufous to grayish and loosely textured, iris gray to gray-brown, mouth lining extensively whitish, and tongue yellowish; juv ♀ = ♂.

HY/SY (Aug-Jul): Crown sometimes with retained, grayish juvenal feathers; molt limits usually occur among the gr covs (Fig. 133B-E; see **Molt**), the retained outer covs worn and brownish gray with indistinct, rusty tips (when fresh), contrasting with the fresher, dark pearly gray, and untipped replaced inner covs; 1-2 terts occasionally replaced, contrasting with the older, juvenal middle ss (s4-s6; Fig. 132); outer pp covs narrow, tapered, relatively abraded, and brownish with indistinct, relatively narrow, or no brownish-gray edging (Fig. 138); 1-2 central rects (r1) occasionally replaced and contrastingly fresh; outer rects tapered (Figs. 139B) and relatively abraded; iris grayish brown to reddish brown (through Dec-May); tongue and mouth lining primarily whitish, pinkish, and/or pale gray mixed with black (through Nov-May). **Note: Some intermediate individuals may not be reliably aged, especially in May-Jul; also, beware of abnormal AHY/ASYs with gray irises.**

See Suthers & Suthers (1990) for a discriminant function analysis, based on live migrants in NJ, using the above and other characters, that separated 88.5% of SYs from ASYs.

AHY/ASY (Aug-Jul): Crown usually uniformly black; wing covs uniformly adult (Fig. 133F) and pearly gray, without rusty tips; outer pp covs broad, truncate, relatively fresh, and dusky with distinct, relatively broad, grayish edging (Fig. 138); rects uniformly blackish, the outer rects truncate (Fig. 138) and relatively fresh; iris dark maroon; mouth lining primarily black, paler at the base. **Note: See HY/SY.**



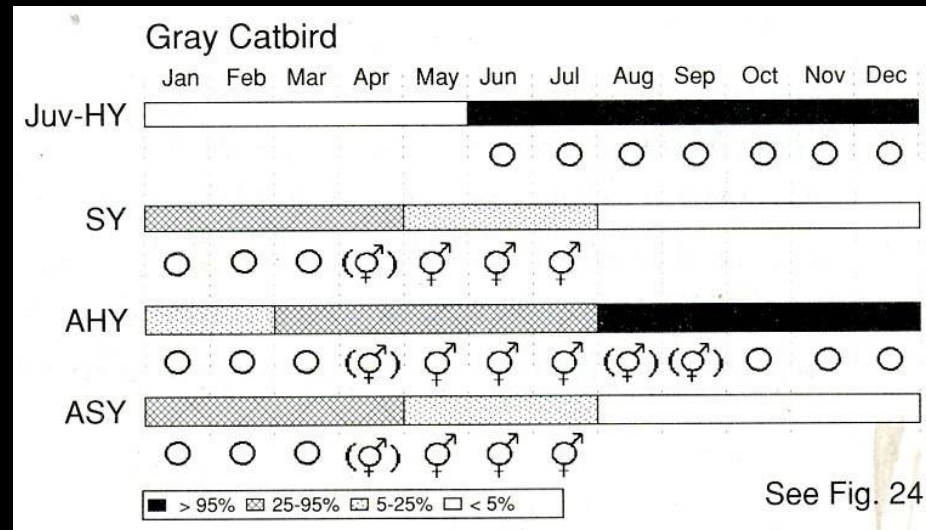
Calendar age = SY or 5

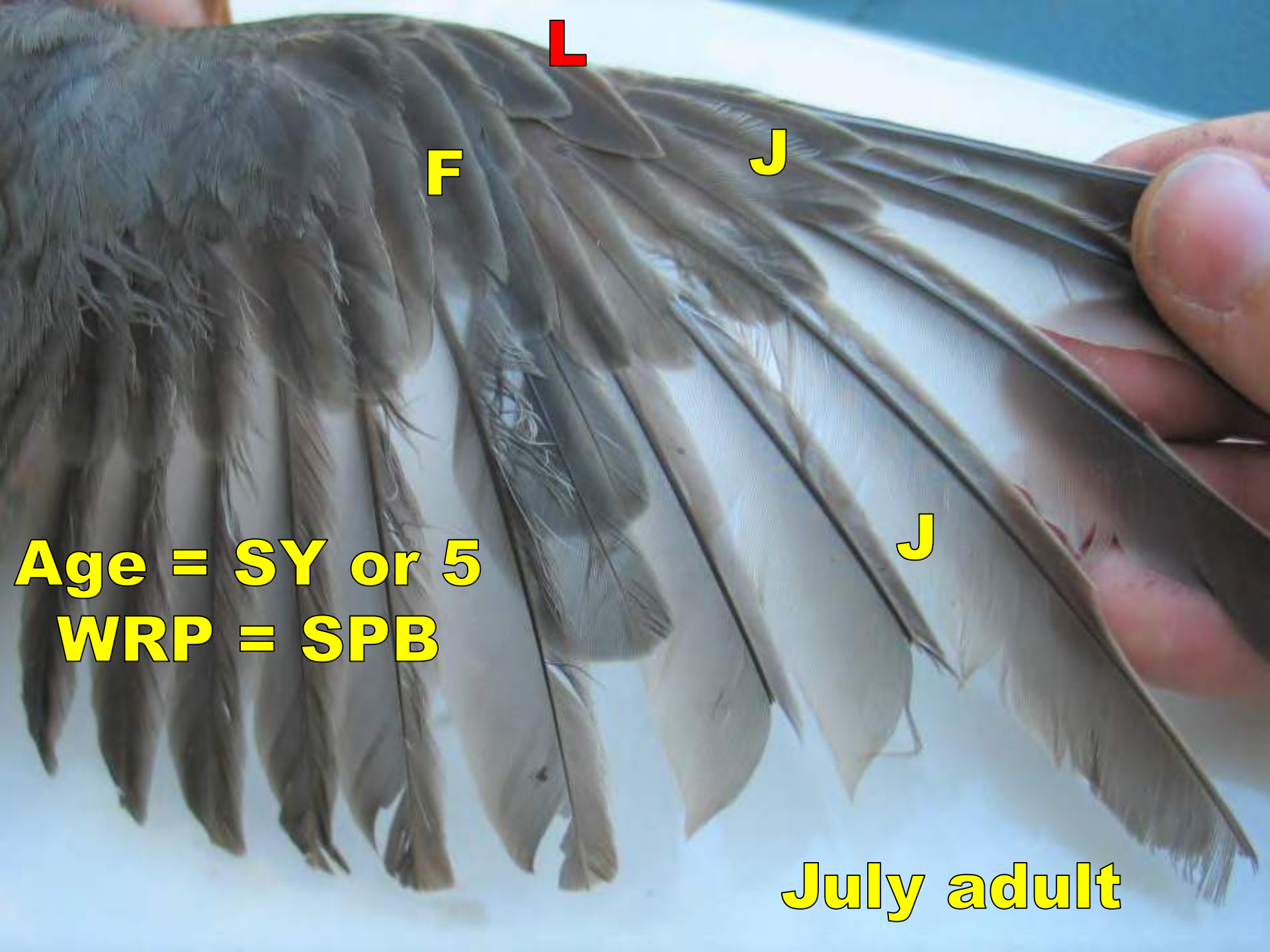
WRP = FCF

First Cycle

Mid-Cycle

Formative





L

F

J

J

Age = SY or 5
WRP = SPB

July adult

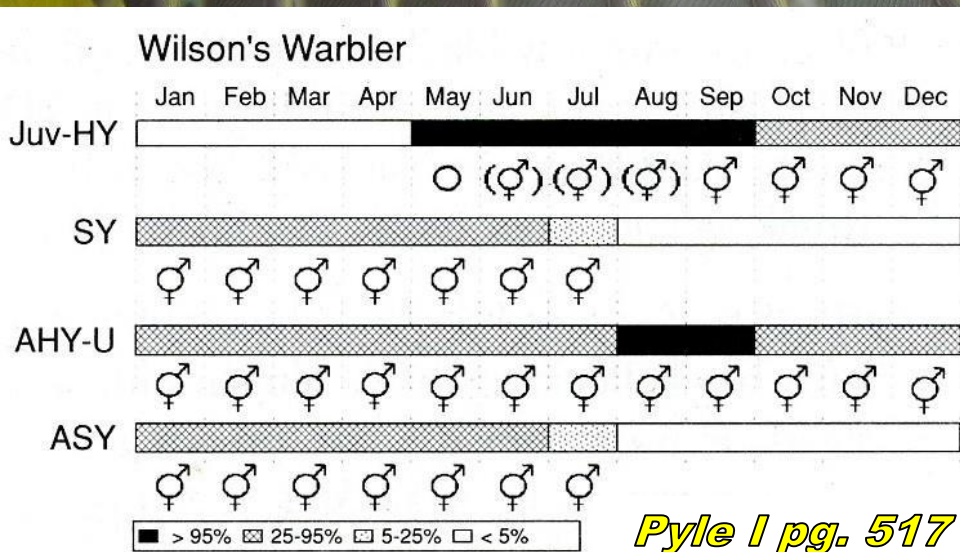


YEWA
early
July

Age = HY or 2
WRP = FPJ

Age = AHY or 1
WRP = DCB

all B



WIWA male
28 Aug

Body plumage WIWA



HY

female

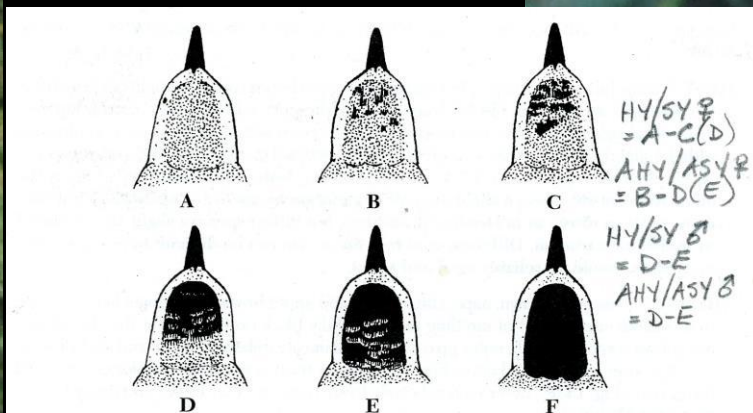
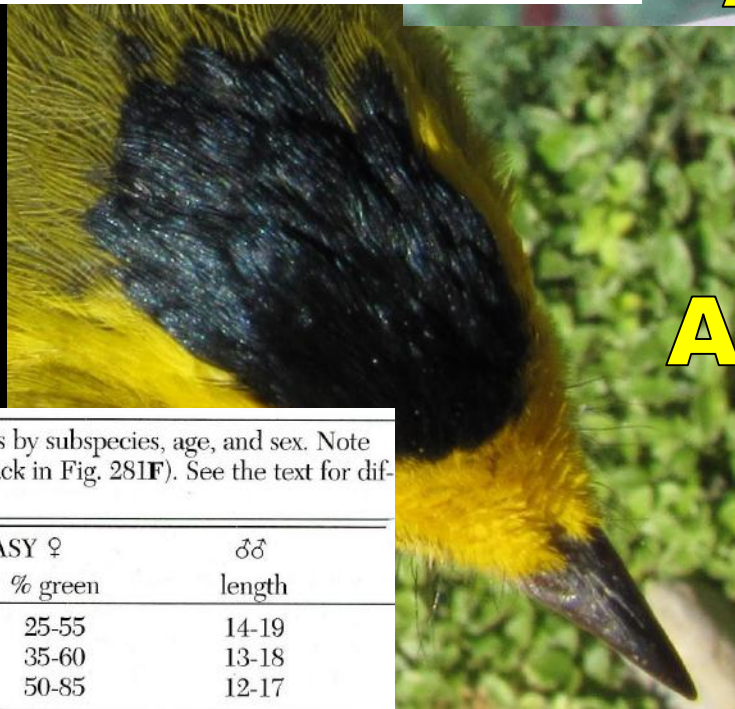


FIGURE 281. Variation in the extent of the crown patch, by subspecies, age, and sex, in Wilson's Warbler; see text and Table 9. The crown patch measurement is the length along the median axis of the crown, between the anterior and posterior points of the crown patch coloration, these points not necessarily being along the median axis.



ASY/AHY

female



ASY/AHY

male

Pyle 1 pg. 516

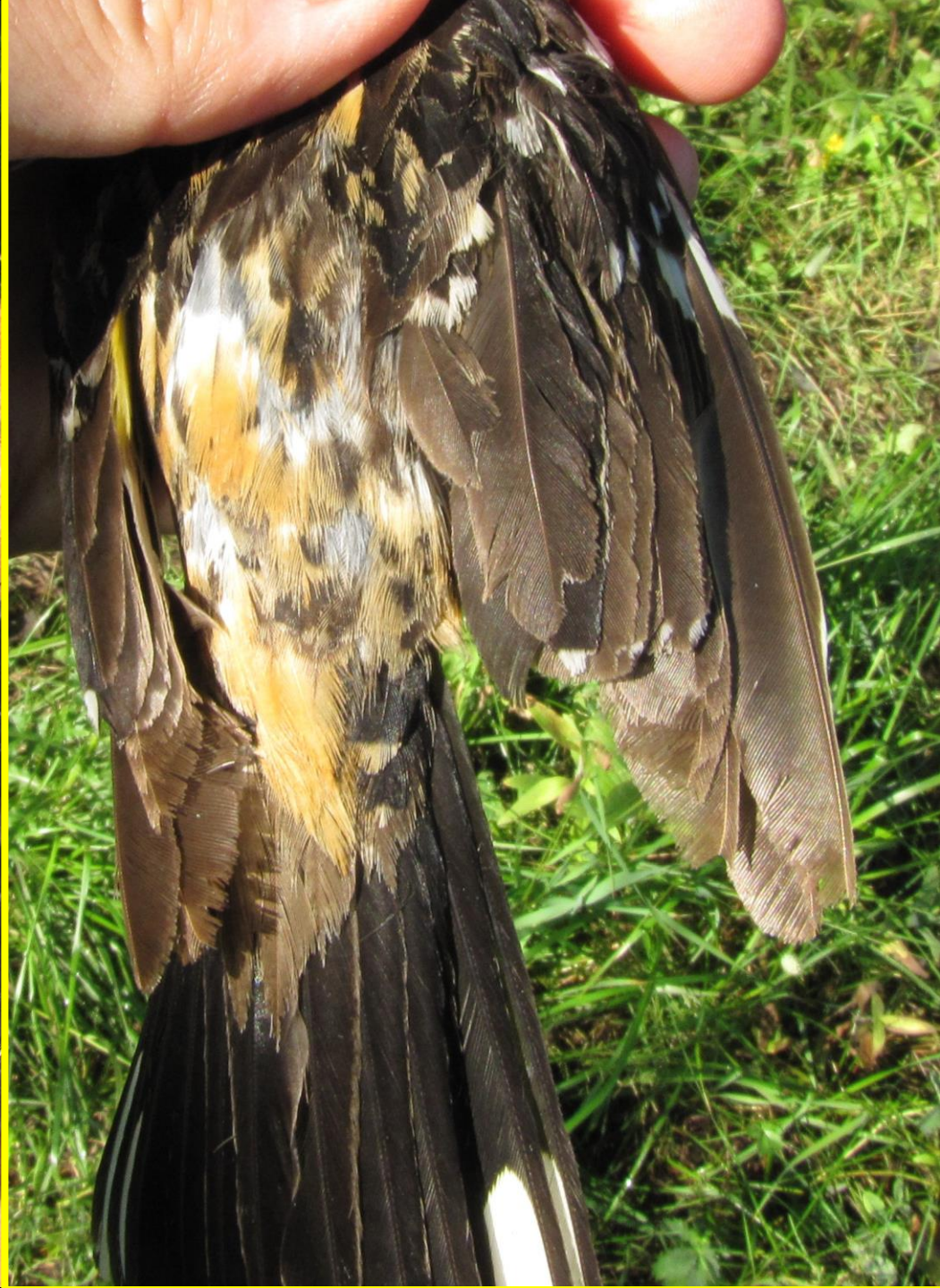
TABLE 9. The amount of black in the caps of Wilson's Warblers by subspecies, age, and sex. Note that % green refers to the entire area of crown (that which is black in Fig. 281F). See the text for differences in the cap length by age in ♂♂.

Subspecies	HY/SY ♀		AHY/ASY ♀		♂♂
	length	% green	length	% green	length
<i>W.p. chryseola</i>	7-10	60-90	9-15	25-55	14-19
<i>W.p. pileolata</i>	0-9	85-100	7-13	35-60	13-18
<i>W.p. pusilla</i>	0-5	90-100	5-12	50-85	12-17

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BHGR May





Age = SY or 5
WRP = FCF

Molt—PS(?)/~~PF~~^{PB=} HY partial (Jul-Nov), AHY complete (Jul-Oct); PA: HY/SY partial-incomplete (Dec-May), ASY absent-limited (Jan-May). A presupplemental molt (see p. 16) may occur in HYs, with the body plumage being replaced once on stopover and/or the winter grounds in Aug-Sep and again (during the ~~1st PF~~^{1st PB}) on the winter grounds in Oct-Nov. The PS includes no to some med covs and 0 (~86%) to 2 inner gr covs, but no tert or rect. Molt of HY/SYs on the winter grounds (~~1st PB~~^{1st PB} and PA combined) includes no to some med covs, usually all gr covs, occasionally (~8-13%) 1-3 tert, and 0 (~15%) to 12 (~8-12%) rect. The replacement of the gr covs possibly is protracted, from Sep-Apr. Replacement of the tert and rect appears to occur in Jan-Apr, along with the body plumage again(?), as part of the 1st PA. The adult PB occurs primarily on the summer grounds, although 1-4 ss (among s3-s6) occasionally can be retained until the winter grounds, and rarely until the next PB. More study is needed; it is possible that no PAs occur, just protracted PBs.

Pyle 1 pg. 612

BHGR June

Age = ASY or 6
WRP = DCB

all B



BHGR
August



Age = ASY or 6
WRP = DCB

all J

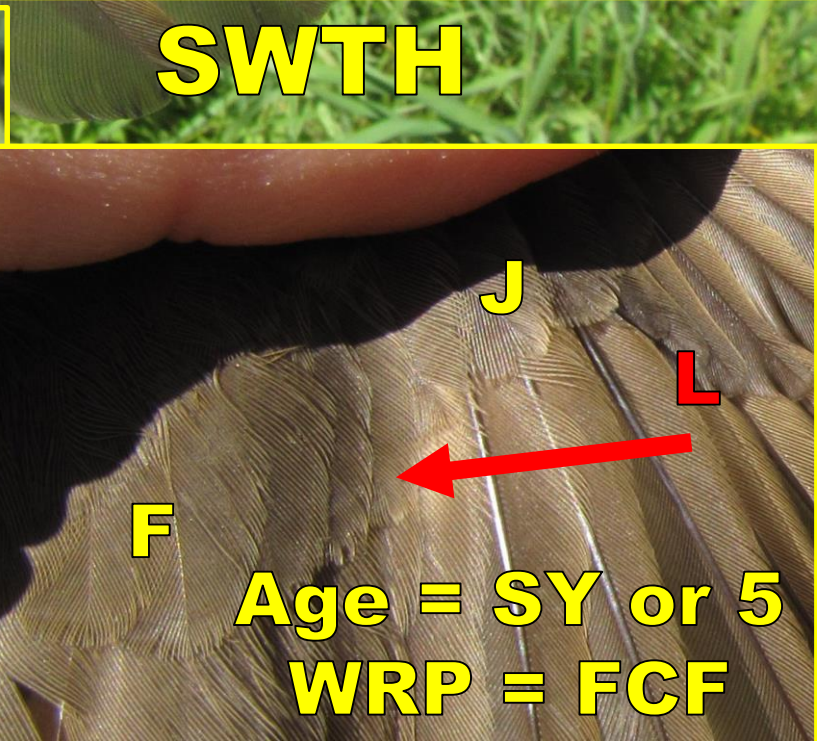
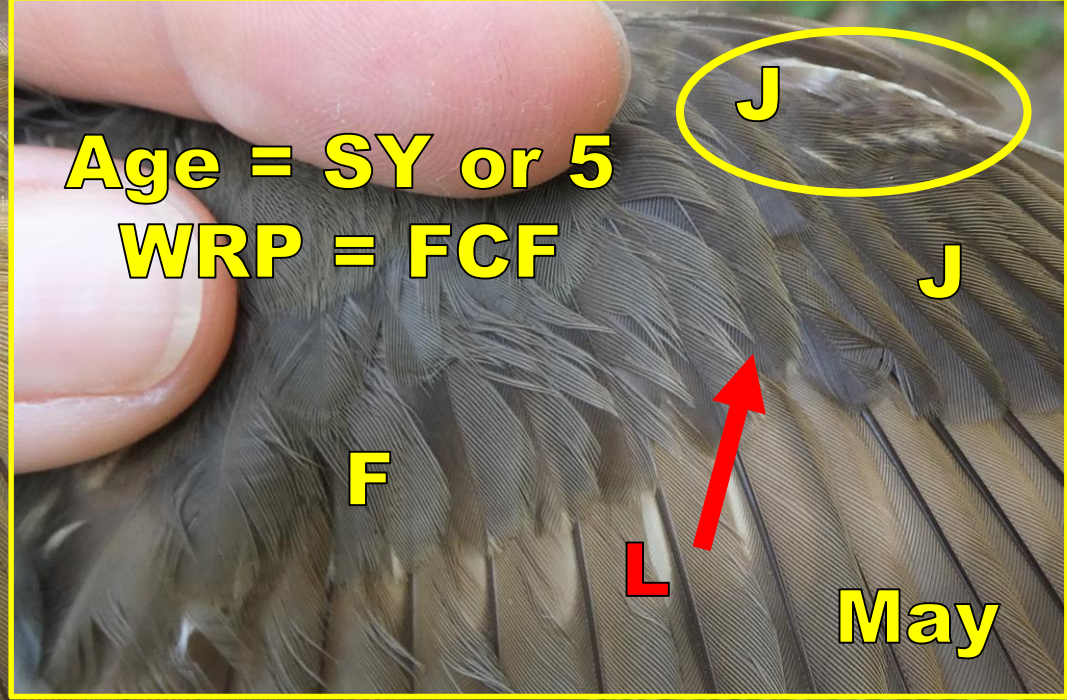
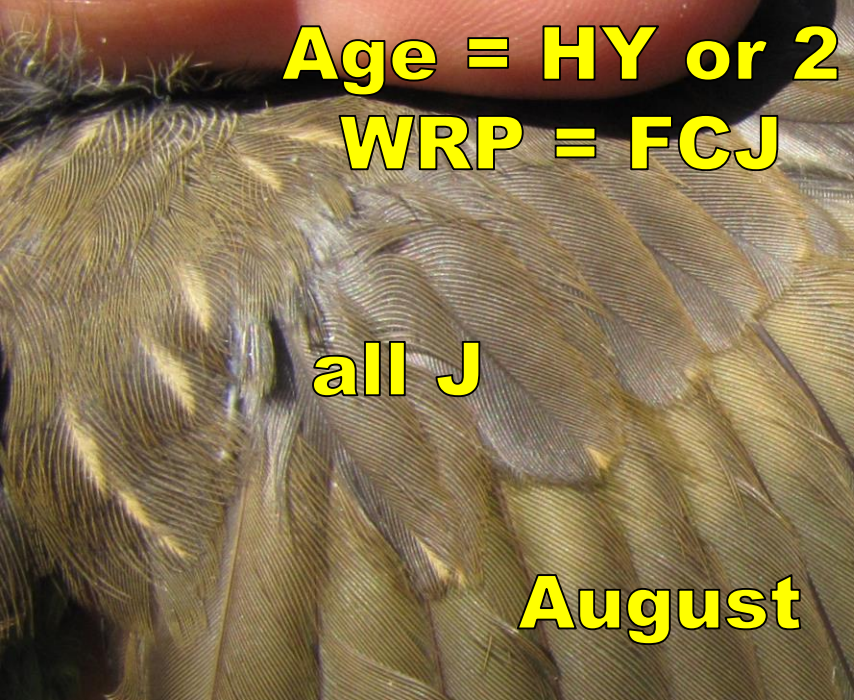
Age = HY or 2
WRP = FCJ



BHGR female



RBGR HY male



Molt—^{PB-} **PB**: HY partial (Jul-Sep), ^A **AHY** complete (Jul-Sep); PA absent. The **PBs** occur on the summer grounds and/or during the early part of fall migration. The ^{1st} **PB** includes some to all m covs and 0 (~4%) to 5 inner gr covs, but no tert or rects.

Skull—Pneumatic
Some SYs retain
ital triangle; see
windows (< 3 m

Age—Juv (Jun-Aug)

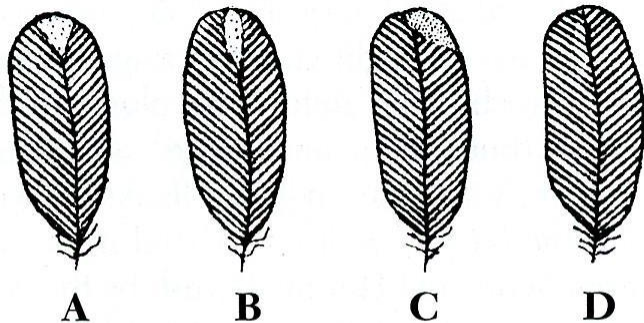


FIGURE 233. Variation in the pattern on juvenal and adult greater coverts (see text) in *Catharus* thrushes.

(as early as 1 Oct in birds of CA).
the rear of the skull (above the occip-
ber and some ASYs can retain small
a buff tipping; juv ♀ = ♂.

HY/SY (Sep-Aug)
retained outer

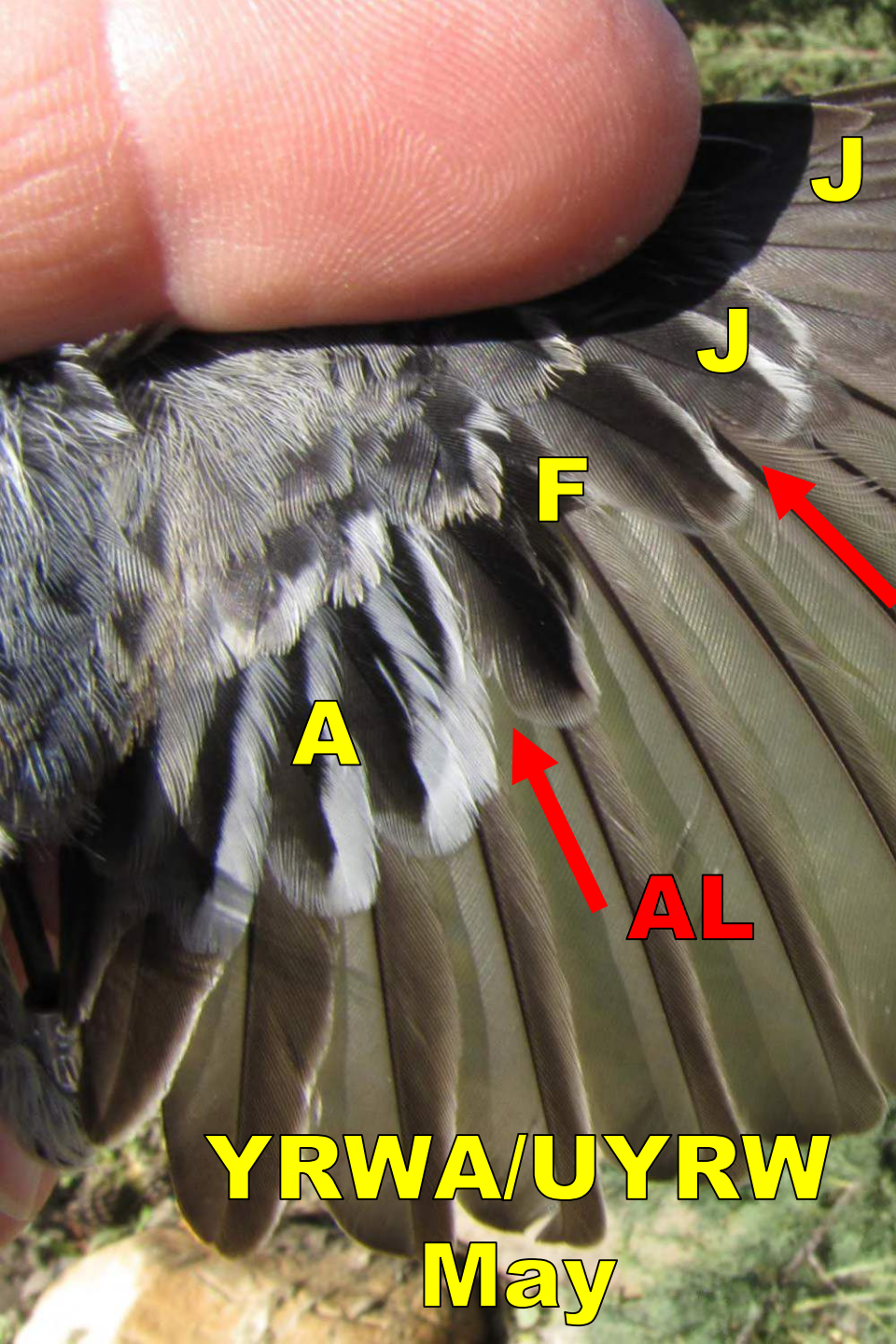
gr covs (Fig. 133A-C; see **Molt**). the
birds) with buff tips when fresh (Fig.

p. 393-233A-C) contrasting with the fresher, darker (and usually without buff tips), replaced inner covs; outer pp covs narrow, tapered, relatively abraded, and brownish with indistinct and relatively thin or no pale brownish edging (Fig. 138); p10 broad, rounded, and measuring -1 to 6 mm shorter than the pp covs (see Fig. 234); rects and pp tapered (Figs. 139B & 140B) and relatively abraded. **Note: See Veery regarding the buff tips to the gr covs.**

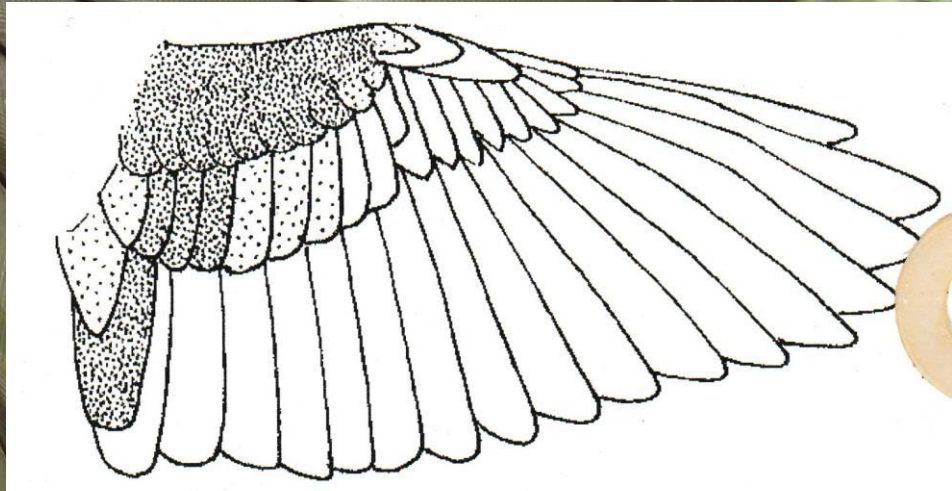
AHY/ASY (Sep-Aug): Med and gr covs uniformly adult (Fig. 133F), the gr covs without distinct, buff tips (occasionally with an indistinct pale spot at the tip when fresh; Fig. 233C-D); outer pp covs broad, truncate, relatively fresh, and dusky brown with distinct, relatively broad, brownish olive or pale brownish edging (Fig. 138); p10 narrow, tapered, and measuring 4-9 mm shorter than the pp covs (see Fig. 234); rects and pp truncate (Figs. 139B & 140B) and relatively fresh. **Note: See HY/SY.**



YRWA/UYRW
May



Age = SY or 5
WRP = FCA



YRWA/UYRW
May

FIGURE 135. An example of molt limits in SY passerines that have partial first prebasic and first prealternate molts, and thus can show three generations of feathers (juvenile, first basic, and first alternate). Most ASYs of these species show only two generations of feathers after the adult prealternate molt, with limits similar to those shown in Figure 133. Figure from Pyle (1997c).

Age = ASY or 6
WRP = DCA

all B

AL

YRWA/UYRW
May



SY



ASY



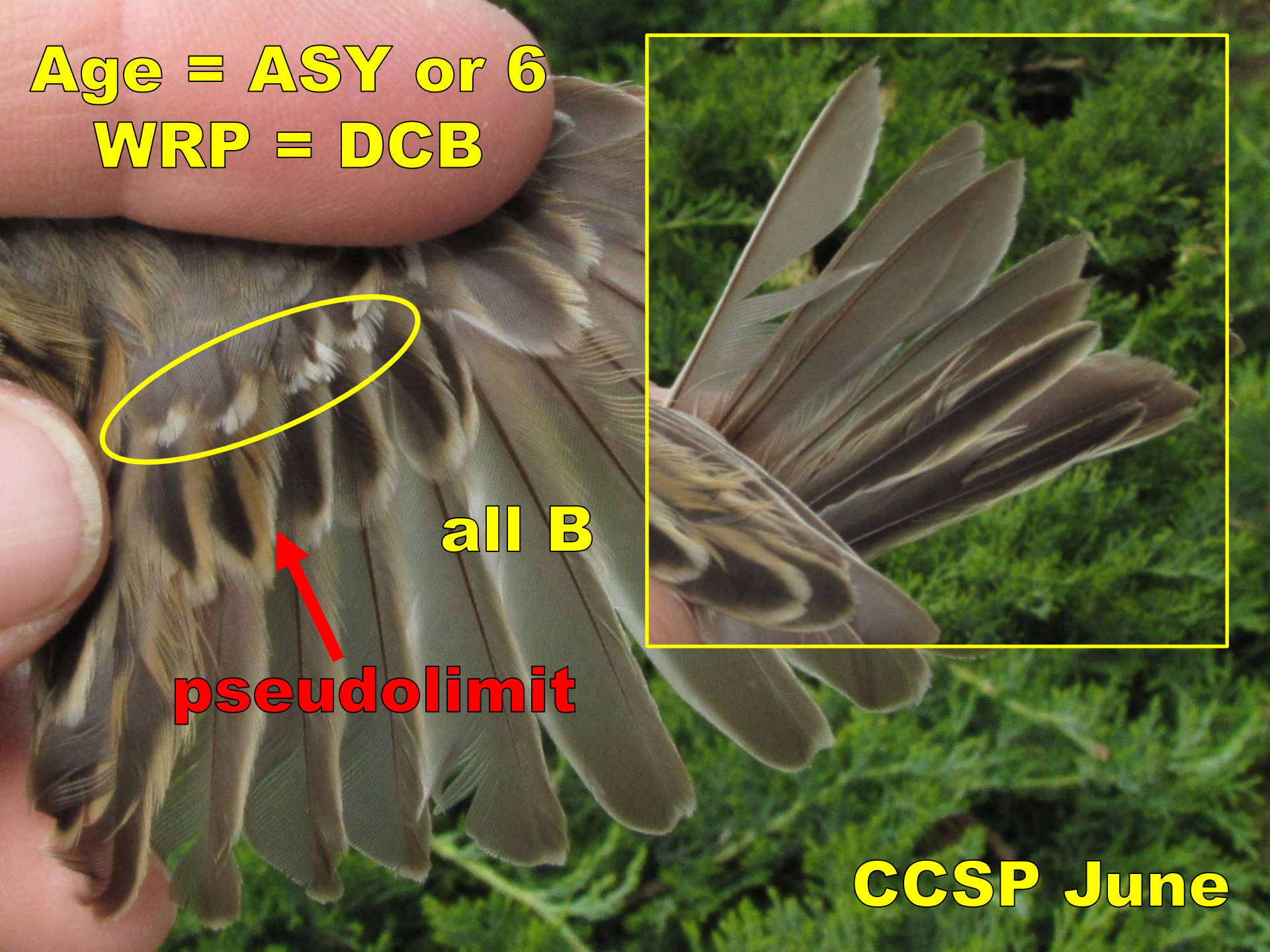


ASY



SY

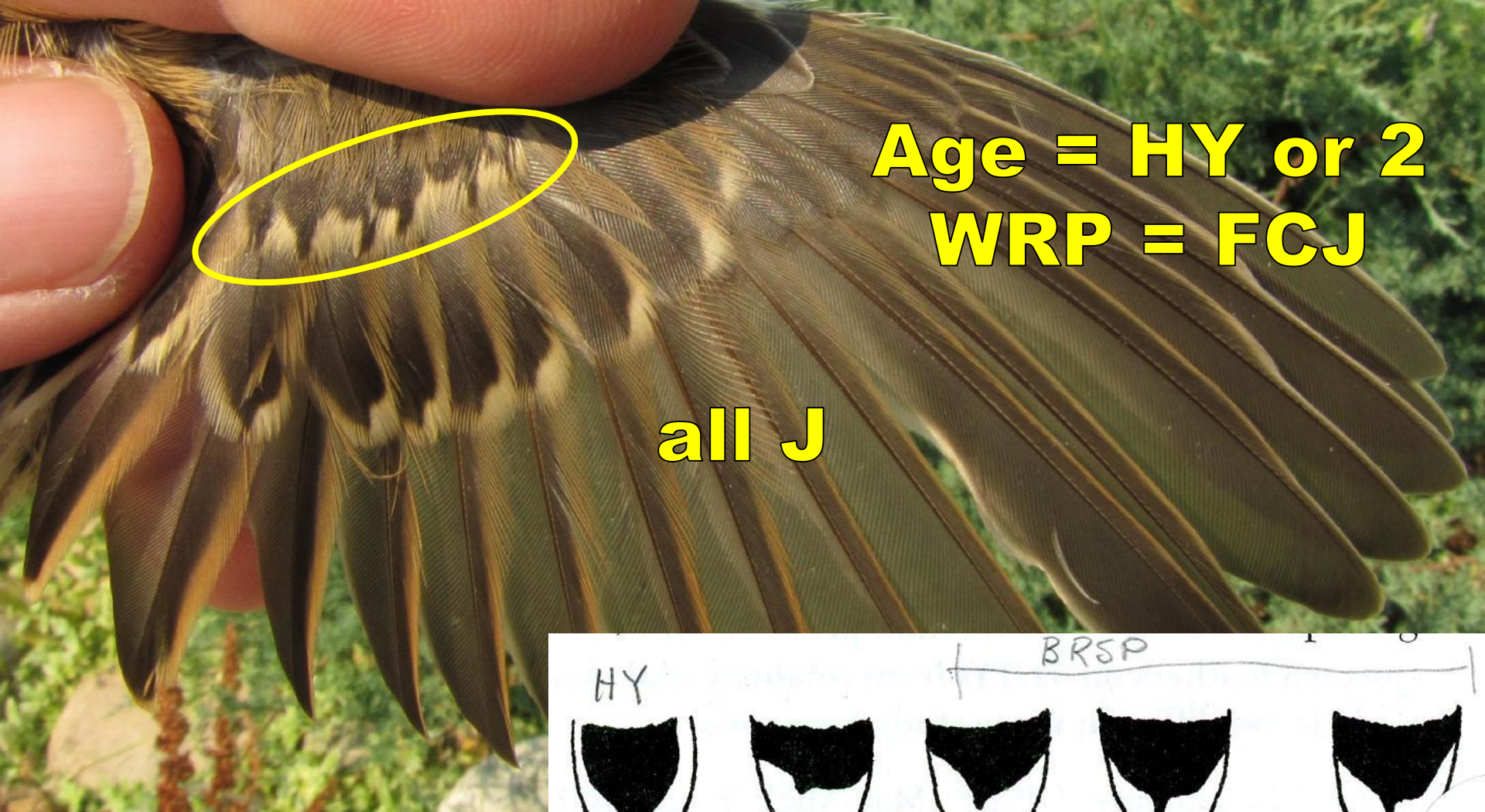
Age = ASY or 6
WRP = DCB



all B

pseudolimit

CCSP June



Age = HY or 2
WRP = FCJ

all J

CCSP
August

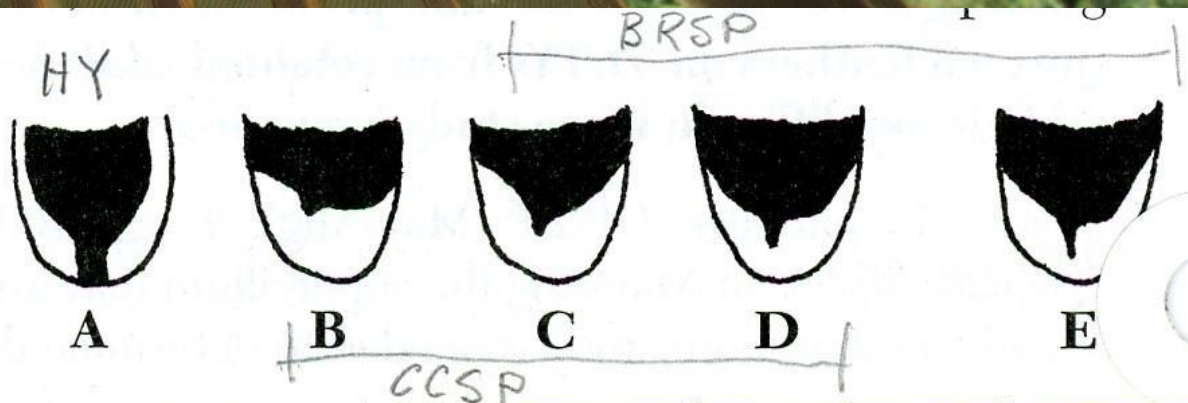


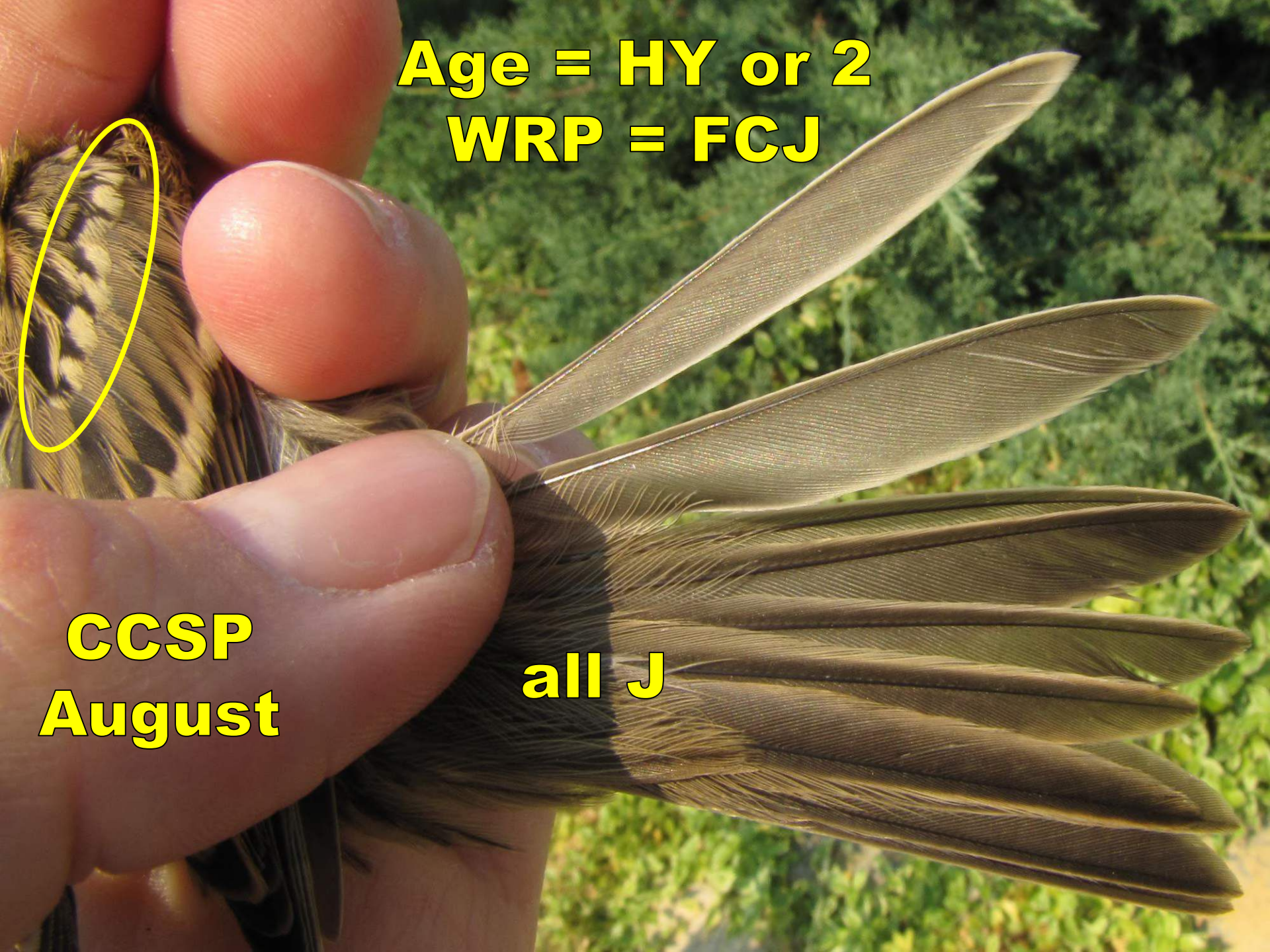
FIGURE 290. The pattern to the median and greater coverts by species and age in Clay-colored and Brewer's sparrows. See text for details. Juvs of both species have coverts as in illustration A. From Pyle and Howell (1996).

Age = HY or 2
WRP = FCJ



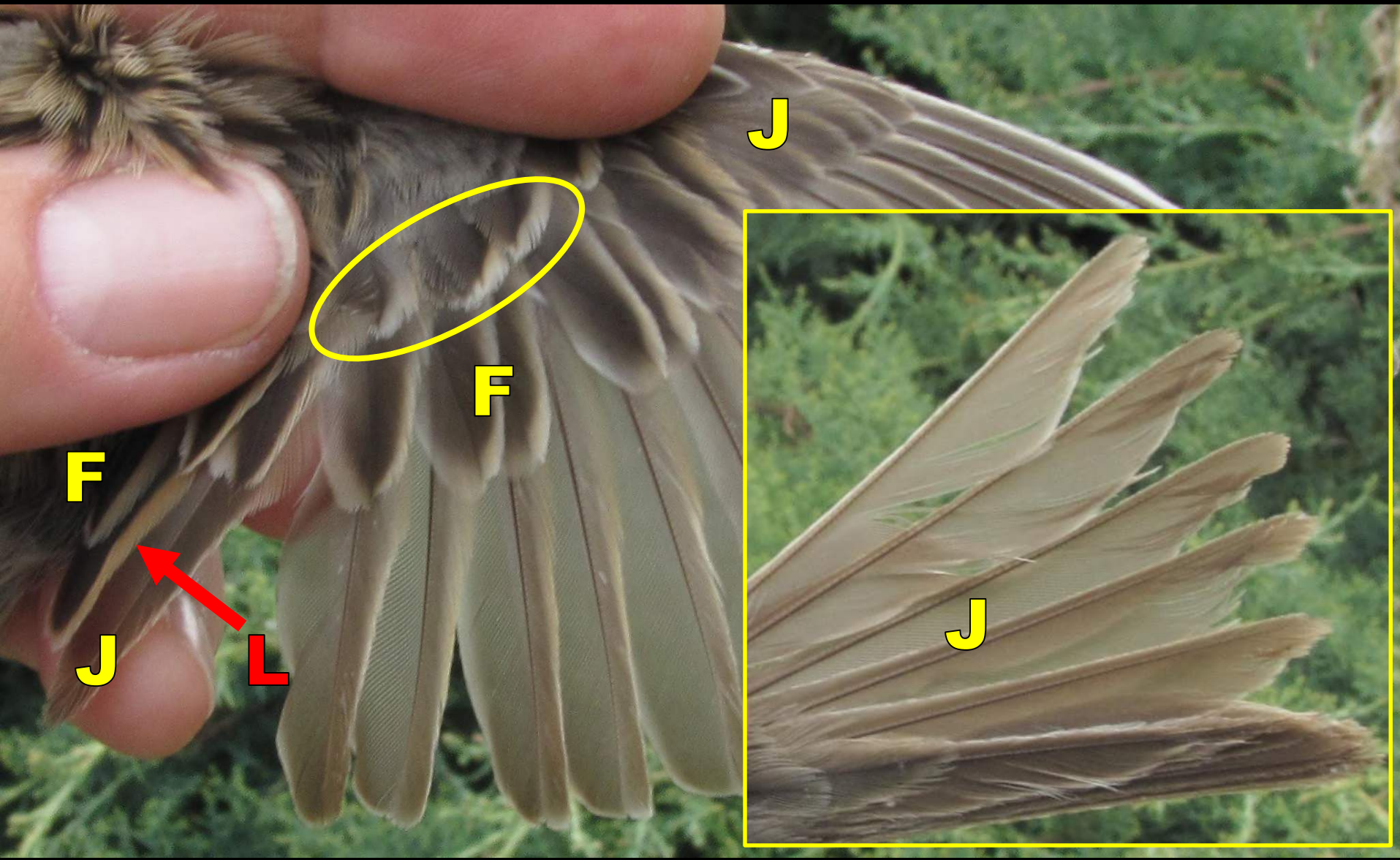
CCSP
August

all J



CCSP
June

Age = SY or 5
WRP = FCF



YEWA June

Age = SY or 5

F J WRP = FCA

A

B

A

L
AL

AL



Age = ASY or 6
WRP = DCA

When in doubt ... take photos

Taking open wing images – PYLE - 2011



BAOR_ASY_M_20140607_WISH_800177661_wing



BAOR_SY_F_20130623_WISH_800177642_wing

- Study your photos
- Compare to websites such as Piranga
- Check with other BICs