

A TAXONOMIC REVIEW OF *DENDROICA PETECHIA* (YELLOW WARBLER) (AVES: PARULINAE)

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Abstract.—The taxonomy and nomenclature of *Dendroica petechia* (Yellow Warbler), last discussed from the entire range of the species about 57 years ago, is reviewed. There are 43 recognizable subspecies based on geographic variation of plumage color and pattern of about 2500 specimens examined. Two new subspecies are named from populations of the migratory *aestiva* subspecies group of North America. New subspecies are also named that represent populations of the resident subspecies groups *erithachorides* of Middle and South American and *petechia* of the West Indies.

The Yellow Warbler, *Dendroica petechia*, comprises three groups of subspecies: the *aestiva* group is migratory and breeds in the Nearctic; the *petechia* group is resident in the West Indies; and the *erithachorides* group is resident on both coasts of Middle America and northern South America (A.O.U. [American Ornithologists' Union] 1983). The three groups were treated as separate species until Hellmayr (1935) combined the *petechia* and *erithachorides* groups, and Aldrich (1942) combined the *petechia* and *aestiva* groups. The A.O.U. (1944, 1945) combined all three groups as *D. petechia*. Lowery & Monroe (1968) recognized 34 subspecies in the combined groups of *D. petechia*. Olson (1980) named three additional subspecies from the *erithachorides* group.

Relatively recent discussions of geographic variation and taxonomy of *Dendroica petechia* have been limited to regional studies in North America (e.g., Phillips et al. 1964, Oberholser 1974, Raveling & Warner 1978, Godfrey 1986), Mexico (e.g., Parkes & Dickerman 1967), the Pacific coast of Middle America (Olson 1980), Panama (Wetmore et al. 1984), and islands off northern South America (e.g., Voous 1957, Phelps & Phelps 1950). Reviews of the entire species that discussed subspecific characters include Ridgway

(1902) and Hellmayr (1935). These studies usually characterized subspecies of *D. petechia* on the basis of variation in plumage color and pattern; measurements were used secondarily in characterizing only a few subspecies. Peter's (1927) review of the subspecies of the *petechia* group included standard measurements, and Hellmayr (1935) provided measurements for some subspecies. Hellmayr usually characterized size in terms of such as "smaller," "averages slightly larger," and "slenderer." Raveling & Warner (1978) reported statistical differences in some measurements of specimens from North American populations, but, as with Hellmayr's measurements, means differed only 2–3 mm and ranges overlapped considerably. Broad patterns of geographic variation in size within the subspecies groups (Wiedenfeld 1991) suggest that measurements are of little use in identifying most subspecies.

The purpose of this study of *D. petechia* is to evaluate geographic variation and to determine the morphological limits of the subspecies. Color and pattern of breeding plumages of adult males and females form the basis for subspecific identifications. Other plumages, when known, are described, but these are less useful in characterizing populations than breeding plumages and are poor-

ly represented in collections. Additional collecting is essential (see Winker et al. 1991) to document migration and winter distribution of subspecies of *D. petechia*.

Methods

About 2500 specimens from the breeding grounds of *D. petechia* were examined for variation in color. Measurements reported in the accounts include standard measurements of flight feathers, tarsi, and bill length (anterior edge of the nostril to the tip). Measurements are discussed where size is a useful taxonomic character. Evaluation of colors was by comparison of specimens in daylight conditions. Seasonally similar plumages were compared when possible. The color of the crown (excluding the chestnut or rusty color), back, and rump is described as darker (= more black), greener (less yellow), or the opposite, more yellow (= nearest Spectrum Yellow of Smithe [1975]). The yellow of the underparts is described according to observed intensity (brightness) and purity; the yellow of some subspecies is relatively dull (more white) while in some others it exhibits a greenish cast. The chestnut markings on the head and the ventral streaks on the underparts are characterized as dark or pale. The extent of chestnut markings was characterized on the basis of the relative amount on the head, throat, and breast, the relative width (wide vs. narrow) and density of ventral streaks. The character "chestnut areas" refers to all chestnut parts of the plumage. Color and pattern were determined subjectively and were characterized in terms relative to the populations being compared. This method served to verify many previously published taxonomic conclusions on *D. petechia*.

Each subspecies account includes its author, year and type locality. Locations of holotypes, when known, are indicated by abbreviation of museums (see Acknowledgments); abbreviations in parentheses indicate holotypes I examined. Other locations are indicated by a reference. The section

"Subspecific characters" includes breeding plumages of adult male and female, with comparisons to geographically adjacent or morphologically similar subspecies. Non-breeding plumages, when known, are mentioned for migratory species. "Distribution" includes breeding and winter ranges and localities of intergradation between adjacent subspecies. Winter ranges are included when they differ from those in Lowery & Monroe (1968). Maps show the breeding distributions of the subspecies in the *aestiva* group (Fig. 1) and in the *petechia* and *erithachorides* groups (Fig. 2). Use of subspecies groups in this paper is not meant to reflect historical relationships. "Specimens examined" are included as an abbreviated list by general locality and number examined. Few specimens were needed to characterize subspecies represented by populations with insular or linear ranges (e.g., *petechia* and *erithachorides* groups). The "Remarks" section includes discussions on nomenclature, synonymies, and geographic variation. The sequence of subspecies is only slightly modified from that by Lowery & Monroe (1968). A synopsis of the pattern of variation is presented at the end of each of the three subspecies groups.

Dendroica petechia aestiva subspecies group

Subspecies in the *aestiva* group differ from members of the *petechia* and *erithachorides* groups in generally lacking chestnut on the head except on the crown, where, if present, it is diffuse or concentrated on the feather shafts. Individuals in the *aestiva* group have more pointed wings than birds of the other groups.

Dendroica petechia rubiginosa (Pallas)

Motacilla rubiginosa Pallas, 1811:496 ("in insula Kodiak" = Kodiak Island, Alaska).

Subspecific characters. — Males nearest Yukon subspecies (named below) but darker and greener above. Compared with Mac-



Fig. 1. Approximate breeding ranges of subspecies in the *Dendroica petechia aestiva* subspecies group.

kenzie subspecies (see account below), males paler and more yellowish above; bill longer (see below). Compared with all subspecies in the *aestiva* subspecies group, males usually with greenish forehead. Females with greener (less yellow) crown and rump than Yukon subspecies; slightly greener above than Mackenzie subspecies.

Distribution.—Breeds from Unimak Island to Alaska Peninsula, Kodiak Island, and coastal British Columbia. Intergrades with Yukon subspecies along coastal Alaska (see below); intergrades with *morcomi* in British Columbia (Bella Coola, Vancouver Island and adjacent mainland). Migrates rarely east of the Rocky Mountains; individuals identified from Pennsylvania,

Washington, D.C., Mississippi, and Florida (Parkes 1968).

Specimens examined.—Coastal Alaska (31); British Columbia (29).

Remarks.—Some migrants that were identified in the literature as *rubiginosa* may represent intergrades between *rubiginosa* and the next subspecies, or birds from Mackenzie District, Northwest Territories (named below). Further collecting and study of specimens in nonbreeding plumages from these northern populations are needed.

Dendroica petechia banksi,
new subspecies

Holotype.—USNM 468183, adult male, Old Crow Village, Yukon Territory, Cana-



Fig. 2. Breeding ranges of subspecies of *Dendroica petechia* in the *petechia* and *erithachorides* subspecies groups: 1, *castaneiceps*; 2, *rhizophorae*; 3, *phillipsi*; 4, *xanthotera*; 5, *aithocorys*; 6, *iguanae*; 7, *aequatorialis*; 8, *jubaris*; 9, *peruviana*; 10, *aureola*; 11, *oraria*; 12, *rufivertex*; 13, *bryanti*; 14, *erithachorides*; 15, *gundlachi*; 16, *flaviceps*; 17, *eoae*; 18, *solaris*; 19, *chlora*; 20, *albicollis*; 21, *barthomelica*; 22, *melanoptera*; 23, *ruficapilla*; 24, *babad*; 25, *petechia*; 26, *alsiosa*; 27, *rufopileata*; 28, *aurifrons*; 29, *obscura*; 30, *cienagae*; 31, *paraguanae*; 32, *chrysendeta*; 33, *flavida*; 34, *armouri*.

da, collected 7 June 1957 by L. Irving and L. Peyton (original number 291).

Subspecific characters.—Males more yellow above, especially rump and forehead, than *rubiginosa*. Males paler and more yellow above than Mackenzie District subspecies (named below). Males similar to *ammicola* but more yellow above; slightly greener above than *morcomi*; chestnut streaks average darker and more prominent than *rubiginosa*, *ammicola* and *morcomi*. Females most similar to *ammicola* from central Canada but average slightly greener above. Males in fall plumage more yellow above than *rubiginosa*. Compared with *rubiginosa* and Mackenzie subspecies, females more yellow (less green) above.

Distribution.—Breeds (or probably breeds) from Old Crow to Selkirk, Yukon Territory, and in Alaska, along Yukon River (Charley

River, Circle, Galena), north of the Arctic Circle (Kuguruok [= Canning] River, Umiat, Anaktuvuk, Sheenjek and Alatna rivers, Siruk Creek, Bettles), along Tanana River (Minto Lakes, Fairbanks, Tetlin), Kuskokwim River (Napaskiak, Bethel), interior Nushagak Peninsula, Lake Iliamna, and Anchorage. Intergrades with *rubiginosa* at Napaskiak (lower Kuskokwim River), Nushagak, New Iliamna, and near Anchorage. Migrant in southwestern Oregon (see Remarks).

Etymology.—For Richard C. Banks, colleague and friend, in recognition of his contributions to ornithology.

Specimens examined.—Alaska (21); Yukon Territory (34).

Remarks.—Oberholser (1897) characterized a specimen from Nushagak and one from Yukon River as slightly more yellow

above than specimens from Kodiak Island, and Raveling & Warner (1978) remarked that the population from Arctic interior Alaska may represent an unnamed subspecies.

Dorsal color of breeding males ranges from brighter and more yellow in specimens from the Porcupine and upper Yukon rivers to duller and greener in birds from localities west and south of Fairbanks, Alaska. The duller and greener birds are still more yellow above than *amnicola* and neighboring subspecies. Males from north of the Brooks Range are still duller. Males from the type locality and Lake Iliamna have darker and more prominent ventral streaks than from elsewhere in the range of *banksi*. Specimens from Lake Iliamna that I identified as intergrades between *banksi* and *rubiginosa* were identified as intergrades between *amnicola* and *rubiginosa* by Williamson (see Williamson & Peyton 1962).

A specimen (UAM) from Tvativak Bay, Nushagak Peninsula, Alaska, collected 16 June, if actually breeding, is at the southwestern limit of the breeding range of *banksi*. The northern limit of *banksi* is based on specimens from north of the Brooks Range at Umiat (West & White 1966), Anaktuvuk (Irving 1960), the upper Sheenjok River (Kessel & Schaller 1960), and middle Notatak River (Kessel & Gibson 1978). Specimens from those localities are duller than most examples of *banksi* collected south of the Brooks Range. Additional specimens are needed to better determine the breeding range of *banksi*.

A migrant male (USNM 592840) from Brownsboro, Oregon, collected 13 May 1920, resembles breeding specimens of *banksi* in dorsal and ventral color.

Dendroica petechia parkesi,
new subspecies

Holotype.—CM 129401, adult male, Richards Island, Mackenzie Delta, Northwest Territories, Canada, collected 4 June 1942 by Arthur C. Twomey (original number 9864).

Subspecific characters.—Males darker green above than all other subspecies in the *aestiva* group. Compared with *banksi*, males much darker and greener above; chestnut streaks less prominent. Males near *rubiginosa* but greener above; forehead averaging more yellow. Compared to *amnicola*, males greener above; average duller yellow below; chestnut streaks average darker. Females greener than *banksi* and *amnicola*; average slightly paler yellow below in fall plumage. Bill, in males shorter (6.9–7.9, mean 7.55, $n = 24$) than *rubiginosa* (7.6–8.6, mean 8.29, $n = 10$), and similar to *banksi* (7.5–8.3, mean 7.84, $n = 11$).

Distribution.—Breeds in Northwest Territories from Mackenzie River Delta to Arctic Red River, Ft. Simpson, Ft. Providence, Ft. McPherson, Ft. Norman, Rae, Reliance, Ft. Resolution, Hay River, and provisionally, northeastern Manitoba (Ft. York). Intergrades (?) with *amnicola* at Ft. Providence and Hay River south of Great Slave Lake. Parkes (1968) identified a specimen from Massachusetts with the Mackenzie Delta population (= *parkesi*).

Specimens examined.—Northwest Territories (21); Manitoba (6).

Etymology.—For Kenneth C. Parkes, who first discussed the distinction of the new subspecies.

Remarks.—Parkes (1968) commented that birds from the interior of Alaska to the west coast of Hudson Bay represented an unnamed subspecies. Ramos & Warner (1980) believed that the range given by Parkes (1968) included two unnamed subspecies, one from Alaska (= *banksi*) and the other from Northwest Territories and prairie provinces.

There is some geographic variation in *parkesi*, with a reduction of green color from northwest to southeast. Specimens from the Mackenzie River Delta are the darkest above, with about one-half having greenish foreheads. Males from Ft. Simpson are slightly more yellow above, and females are paler above than specimens from the Mackenzie River Delta. Two of five specimens

from Ft. Providence resemble *amnicola* in dorsal color; specimens from Hay River, south of Ft. Providence, are, however, greener above. Males from the west coast of Hudson Bay are slightly more yellow above but are definitely greener above than *amnicola*. Specimens from the northern prairie provinces are clearly *amnicola*.

Dendroica petechia amnicola Batchelder

Dendroica aestiva amnicola Batchelder, 1918:82 (Curslet, Newfoundland). MCZ

Subspecific characters.—Males near *parkesi* but more yellow and paler above; usually brighter yellow below. Compared to *banksi*, males darker (greener) above. Compared with *aestiva*, males darker and greener above, usually with greener foreheads. Females more yellow above than *parkesi* and greener above than *aestiva*. Males in fall plumage slightly paler above than those of *rubiginosa* and *parkesi*.

Distribution.—Breeds from northeastern British Columbia to central prairie provinces, Manitoba (Norway House), central Ontario, southeast to southern Quebec, New Brunswick, Newfoundland, and central Labrador. Intergrades (?; see above) with *parkesi* in southern District of Mackenzie (Ft. Providence). Intergrades with *aestiva* from central-northern Alberta to southern Manitoba, southern Quebec, and Nova Scotia.

Specimens examined.—Northwest Territories (7); British Columbia (5); Alberta (30); Saskatchewan (11); Manitoba (8); Ontario (43); Quebec (21); and Newfoundland (30).

Remarks.—Originally proposed for populations in Newfoundland, the name *amnicola* was generally considered a synonym of *aestiva* until Oberholser (1938), followed by the A.O.U. (1944), recognized *amnicola* for the subspecies occurring in most of Canada. Contrary to Oberholser (1974), the original description of *aestiva* was based on the pale southeastern subspecies, not the dark northeastern population now in *am-*

nicola (Browning 1990b). Oberholser (1974) also believed that *carolinensis* Latham, a name synonymized with *aestiva* by Hellmayr (1935), was a synonym of the northern subspecies, but *carolinensis* is indeterminate; it is doubtfully an example of *D. petechia*.

Geographic variation in back color of *amnicola* ranges from the brightest and most yellowish specimens from Newfoundland to greener birds from northeastern British Columbia, southern Mackenzie, and northern Alberta. Differences between the colors of the forehead and back of males vary geographically; both characters are greenish in 13% of the specimens from Newfoundland ($n = 15$), 17% of the birds from the southern Hudson Bay region, and about 25% of males from the prairie provinces. Raveling & Warner (1978) concluded that 90% of the males from the southern parts of the prairie provinces were "readily distinguishable" in back and head color from all other samples, and referred the prairie birds to *aestiva*. I concur.

Dendroica petechia aestiva (Gmelin)

Motacilla aestiva Gmelin, 1789:996 (in Gmelin, *aestate* in Canada = Québec, Québec).

Sylvia flava Vieillot, 1809:31, pl. 87, (on migration in the United States = New York, New York; fide Oberholser 1974: 1000)

Sylvia childrenii Audubon, 1831:180, (near Jackson, Mississippi).

?*Sylvia rathbonia* Audubon, 1831:333, (Gulf states, Mississippi, Louisiana, or Tennessee).

Dendroica aestiva ineditus J. C. Phillips, 1911:85 (Matamoros [Tamaulipas, Mexico]) fide A. R. Phillips (in litt.) and Ramos & Warner (1980). MCZ

Subspecific characters.—Both sexes, in all plumages, more intensely bright yellow below than other subspecies in the *aestiva* group. Compared with *amnicola*, both sexes paler (less greenish, more yellowish) above.

Compared to *morcomi*, both sexes more yellow above and below; males brighter yellow below. Compared with *sonorana*, both sexes greener above and brighter (not pale) yellow below; chestnut streaks more prominent. Paler males in fall plumage brighter with more yellowish rumps and crowns than other northern subspecies and *morcomi*.

Distribution.—Breeds from south-central Alberta to central Saskatchewan and southern Manitoba, southern Quebec, Prince Edward Island, Nova Scotia; east of Rocky Mountains from Montana to Colorado east to Kansas, central Oklahoma, all but western Texas, northern Arkansas, central Alabama, central Georgia, and central South Carolina. Intergrades with *ammicola* in central Alberta, southern Manitoba, southern Quebec, and Nova Scotia.

Specimens examined.—Alberta (7); Saskatchewan (6); Manitoba (21); Nova Scotia (31); Montana and Wyoming (16); Colorado (10); North and South Dakota (18); Nebraska (49); Oklahoma (8); Minnesota (41); New England (42); New York (54); New Jersey (11); Pennsylvania (11); Maryland and Virginia (25); Georgia and Carolinas (34); others (34).

Remarks.—Oberholser (1974) believed the name *aestiva* was based on the darker northern subspecies (*ammicola*) and used the name *flava* Vieillot for the paler southern subspecies. However, the basis of the earlier name *aestiva* clearly applies to the pale population (Browning 1990b). Based on Audubon's plates and descriptions (the types are missing), the name *childrenii*, and most probably *rathbonia*, are synonyms of *aestiva*. The name *inedita* was based on specimens collected in August and September. Griscom & Crosby (1926) and Hellmayr (1935) recognized *ineditus*, but Miller et al. (1957) and Lowery & Monroe (1968) synonymized the name with *morcomi*. A. R. Phillips (in litt.), who has examined the type of *ineditus*, concluded that the holotype is a migrant example of *aestiva*, and that the species does not breed west of Matamoros (contra Griscom & Crosby 1926). Paratypes

(MCZ) from the original series of *ineditus* resemble specimens of *aestiva*.

Dorsally dark and greenish birds breed in southeastern Canada to Pennsylvania. There is a gradual north to south cline in reduction of dorsal green color and increased amount of yellow on the foreheads and backs of birds from Virginia to Georgia. Specimens from Nebraska, Kansas, and western Oklahoma are slightly brighter and less greenish above than specimens from the northeastern part of the breeding range and represent the end of a cline in coloration. A similar cline is represented by specimens from the northeast west to the prairie provinces and states. Specimens from Georgia resemble birds from Nebraska in reduction of green in their upper parts. Birds from Nebraska, collectively, are generally more intensely bright yellow above and have more yellowish rumps than do specimens of *morcomi*, *sonorana*, and *aestiva* from northeastern populations (Browning in Wetmore et al. 1984). Such specimens resemble the "*sonorana*" type characterized by Sutton (1967). A gradual west to east cline is also apparent from a large series of specimens collected at several localities across Nebraska, with specimens from northeastern Nebraska being less green above than birds from northwestern Nebraska. The Nebraska series, collectively, is slightly more yellowish above, with more yellow than green on the head, and resemble specimens from the southern prairie provinces in Canada and western Minnesota. Specimens from Nebraska resemble birds from Georgia in dorsal color. Geographic variation in *aestiva*, though considerable, is clinal and thus not diagnostic in recognizing additional subspecies in its range.

Johnston (1964) identified specimens from western Kansas as *morcomi* but specimens from western Kansas and eastern Colorado represent the end of a cline toward *morcomi*, with males being more greenish above and less yellow on the forehead than birds from other localities of the prairie states. Specimens of *aestiva* from central

Montana and Wyoming are also slightly paler and less greenish above than are those from the northeastern United States.

Dendroica petechia morcomi Coale

Dendroica aestiva morcomi Coale, 1887:82 (Fort Bridger, Utah [= Fort Bridger (Camp Scott), Uinta Co., Wyoming] fide Deignan 1961)]. (USNM)

Subspecific characters. — Males near western populations of *aestiva* but greener above; duller yellow below. Compared to *brewsteri*, males darker and greener on back and rump; chestnut streaks average wider. Compared to *sonorana*, males greener above; ventral yellow with a greenish cast. Chestnut streaks average narrower than *parkesi*, *yukonensis*, and *amnicola*. Ventral yellow in males usually paler than *aestiva* and with a greenish cast compared to *sonorana*. Females dorsally paler yellow than *aestiva*, darker (less yellow) than *sonorana*, and less green than *aestiva*; ventrally brighter yellow than *sonorana* and *rubiginosa*. Specimens in fall plumage dorsally intermediate between *amnicola* and *aestiva* but nearer the latter; greener above than *sonorana*.

Distribution. — Breeds from interior British Columbia to eastern Washington, western Montana south to eastern California, Nevada (except extreme southern), northern Arizona, central New Mexico, and northwestern Texas. Intergrades with *rubiginosa* at Bella Coola, Vancouver Island, and adjacent mainland, western British Columbia; intergrades with *sonorana* in the Southwest (see beyond).

Specimens examined. — British Columbia (59); Washington (9); Oregon (30); California (7); Idaho/Wyoming (15); Nevada (5); Utah (18); northern Arizona and central New Mexico (20).

Remarks. — Specimens of *morcomi* from the northern Rocky Mountains, Utah, and the interior of British Columbia average slightly brighter yellow above than *morcomi* from elsewhere, but are greener above than

brewsteri. Males from Vancouver Island and adjacent mainland (e.g., city of Vancouver) of British Columbia average slightly duller and greener on the back and forehead than other specimens of *morcomi*. The average dorsal color of males from Bella Coola, British Columbia, is intermediate in color between specimens from the Vancouver Island region and *morcomi* from central British Columbia. Females from most of British Columbia resemble others from the range of *morcomi*. I conclude that the populations from the Vancouver Island are intermediate in dorsal color between *morcomi* and *rubiginosa* but are closer to the latter, while birds from Bella Coola are likewise intermediate but are closer to *morcomi*.

Males from the northern Great Basin (e.g., Utah) are slightly more yellow (less greenish) above than most specimens of *morcomi* from the same latitudes or from higher elevations (e.g., east slopes of Sierra Nevada Mountains). Geographic variation is generally clinal from north to south, with darker and greener birds breeding to the north (Phillips et al. 1964). The zone of intergradation between *morcomi* and *sonorana* is wide and identifying specimens to either subspecies or as intergrades between them have been interpreted in different ways (see Behle 1948, Oberholser 1974, Behle 1985).

Dendroica aestiva brewsteri Grinnell

Dendroica aestiva brewsteri Grinnell, 1903: 72 (Palo Alto, California). (MVZ)

Subspecific characters. — Males near *morcomi* but definitely more yellow on the back; rump and forehead average more yellow; edges of secondaries and tertiaries more yellow (less greenish); chestnut streaks averaging thinner and sparser. Compared with western populations of *aestiva*, males greener above; chestnut streaks usually thinner and sparser. Many females resemble *morcomi*, but brightest yellow individuals more yellow than bright yellow examples of *morcomi*. Adult males in fall plumage, com-

pared to *morcomi*, usually with ventral streaks absent or narrower; some fall males average more yellow above.

Distribution.—Breeds from western Washington to western Oregon, California west of the Cascade and Sierra Nevada ranges, and northwestern Baja California. Winters from Baja California to Nicaragua.

Specimens examined.—Washington (4); Oregon (10); California (34).

Remarks.—The subspecies *brewsteri* was recognized for many years while the name *morcomi* remained a synonym of *aestiva*. About the time *morcomi* became recognized as a subspecies distinct from *aestiva*, the name *brewsteri* became a synonym of *morcomi*. Because *brewsteri* is recognizable, and because the history of the names *brewsteri* and *morcomi* are closely related, a review of the usage of the two names follows.

When Grinnell (1903) described *brewsteri*, he also synonymized *morcomi* with *aestiva*, stating that the holotype of *morcomi* was an extreme example of *aestiva*. He characterized *brewsteri* as smaller in size, less brightly yellow, and with narrower chestnut streaks than in *aestiva*, and gave the breeding range of *brewsteri* as west of the Cascade and Sierra Nevada mountains from Oregon to southern California. Grinnell's comparative material of "*aestiva*" consisted of specimens from the Rocky Mountains and birds from the northeastern United States. The A.O.U. (1910, 1931) recognized *brewsteri* and included the populations from the Rocky Mountains (= *morcomi*) in the range of *aestiva*. Van Rossem (1931) and Dickey & van Rossem (1938) recognized both *brewsteri* and *morcomi*, characterized *brewsteri* of the Pacific coast as larger (contra Grinnell 1903) and having narrower breast streaks than *morcomi*, and gave the range of *morcomi* as from the eastern slopes of the Cascade and Sierra mountains to the Rocky Mountains. Gabrielson & Jewett (1940), without providing details, synonymized both *brewsteri* and *morcomi* with *aestiva*. Twomey (1942) reported that wing chord of *brewsteri* is not a useful sub-

specific character, but, on the basis of color, recognized *brewsteri* as the subspecies breeding in the Uinta Basin, Utah. Grinnell & Miller (1944) reported that specimens from east of the Sierra Nevada north of Mono Lake are intermediate between *brewsteri* and *morcomi*. The A.O.U. (1944) recognized *morcomi*, following Dickey & van Rossem (1938). However, Behle (1948: 77–78) reported that specimens from California and Utah are similar in size, dorsal color, and widths of chestnut streaks. He concluded that the topotypes of *brewsteri* and *morcomi* "are similar in their characters" and that "*brewsteri* appears to be [emphasis mine] a synonym of *morcomi*." Aldrich (in Jewett et al. 1953) and the A.O.U. (1954), both of whom cited Behle (1948), synonymized *brewsteri* with *morcomi*.

The synonymy of *brewsteri* was thus based on comparisons of *brewsteri* with more yellowish specimens of *morcomi* typical of Utah and southwestern Wyoming. The taxonomic conclusion by A.O.U. (1954) did not account for geographic variation in *morcomi*, and the fact that the breeding range of *brewsteri* is isolated from the more yellowish examples of *morcomi* by darker and less yellowish populations of *morcomi* from the eastern slopes of the Cascade and Sierra Nevada mountains.

Grinnell & Miller (1944) included northeastern California as part of the breeding range of *brewsteri*. I did not examine specimens from that region, but specimens from adjacent Oregon belong to *morcomi*.

Dendroica petechia sonorana Brewster

Dendroica aestiva sonorana Brewster, 1888: 137 (Opusura [= Moctezuma], Sonora, Mexico). MCZ

Dendroica petechia hypochlora Oberholser, 1974:737 (3 mi north of Fort Whipple, near Prescott, Arizona). (USNM)

Subspecific characters.—Compared with other subspecies in the *aestiva* group, both

sexes paler yellow above and below; males with dorsal chestnut streaks usually prominent; males with ventral chestnut streaks narrow, paler, and less prominent. Compared with *dugesi*, males with ventral chestnut streaks averaging more prominent; shorter wings (61.0–65.7, mean 63.1 ($n = 14$) in *sonorana* and 64.5–73.1, mean 68.6 ($n = 10$) in *dugesi*. Fall plumage greenish above but more yellowish above and more pure yellow below than *morcomi*.

Distribution.—Breeds from southeastern California, extreme southern Nevada, central Arizona, southern New Mexico, and western Texas south to northeastern Baja California, interior Nayarit, and Zacatecas. Intergrades with *morcomi* in northern and northeastern Arizona, Utah, New Mexico, and western Colorado; intergrades with *morcomi* and *aestiva* in southwestern Oklahoma.

Specimens examined.—California (6); Arizona (132); New Mexico (58); Colorado (7); Texas (24).

Remarks.—Oberholser (1974) named the populations from the area of intergradation with *morcomi* (above) *hypochlora*. The holotype of *hypochlora* most resembles specimens of *sonorana* (Browning 1978, 1990a).

Dendroica petechia dugesi Coale

Dendroica dugesi Coale, 1887:83 (Moro Leon [= Moroleón], Guanajuato, Mexico). (USNM)

Subspecific characters.—Males nearest *sonorana* but more greenish above; wings longer (see under *sonorana*). Females paler and grayer above than *sonorana*.

Distribution.—Breeds in Central Plateau of Mexico from southern San Luis Potosí to Hidalgo, Guanajuato, Michoacán, Guerrero, Morelos, and Puebla. Winters from Morelos to Puebla and Tlaxcala; reported in southern Veracruz (Ramos & Warner 1980).

Specimens examined.—Michoacán (6);

Puebla (5); Durango (1); Guanajuato (1); Tlaxcala (1); Morelos (3); México (3).

Remarks.—The southern breeding range of *sonorana* and northern breeding range of *dugesi* are poorly known. Present information suggests the two ranges are disjunct, but *sonorana* and *dugesi* may come in contact somewhere in Zacatecas or San Luis Potosí.

Summary of *D. p. aestiva* group

Generally, males in the *aestiva* group from coastal Alaska and northern interior populations are greener (less yellow) above than birds from elsewhere. Males from the southwestern range of the *aestiva* group are paler yellow and much less green above than other populations. Ventral color is generally brighter and more purely yellow in southeastern populations, paler in southwestern birds, and slightly tinged with green in northern populations.

More specifically, the northern populations east of the Rocky Mountains from Canada (*parkesi* and *amnicola*) are darker and greener (less yellow) above than adjacent populations; *parkesi* is greener above than *amnicola*. Variation in dorsal color of birds from the eastern United States (*aestiva*) is clinal, with darker birds from the northeast and brighter and more yellowish birds from the southeast and prairie region. Except for the dark populations of coastal Alaska and British Columbia (*rubiginosa*), birds from west of the Rocky Mountains are generally darker and greener above in northern populations and paler and more yellow in southern populations. Birds from interior Alaska and Yukon Territory (*banksi*) are more yellow above than other northern populations and are darker and more greenish than birds of the northern intermountain United States and interior British Columbia (*morcomi*). Populations of western Washington to California (*brewsteri*) are more yellow above than *morcomi*. Southwestern populations (*sonorana*) are paler and more pure yellow (less greenish) above than

the northern populations, and are smaller and slightly less greenish above than interior Mexican populations (*dugesii*).

Dendroica p. petechia group

Populations of the *petechia* group differ from birds of the *aestiva* group in having a generally well-defined chestnut crown and rounder wings. Birds of the *petechia* group differ from those of the *erithachorides* group in having the chestnut restricted to the crown, with the exception of the chestnut hooded birds from Martinique. Birds from Martinique are more similar in size to birds of the *petechia* group than to the *erithachorides* group. Birds of *petechia* group are usually found in mangroves.

Dendroica petechia rufivertex Ridgway

Dendroica petechia rufivertex Ridgway, 1885:21 (Cozumel Island, Yucatán [= Quintana Roo]). (USNM)

Subspecific characters.—Males near *gundlachi* above but chestnut streaks more extensive and darker. Females less heavily streaked below than *gundlachi*.

Distribution.—Resident on Cozumel Island, Quintana Roo, Mexico.

Specimens examined.—Cozumel Island (18).

Remarks.—The whitish plumages typical of most of the northern subspecies of the *petechia* group are apparently absent in this subspecies.

Dendroica petechia armouri Greenway

Dendroica petechia armouri Greenway, 1933:63 [= 68] (Old Providence Island). MCZ

Subspecific characters.—Males nearest *flavida* but forehead and throat yellow (not chestnut); ventral chestnut streaks more extensive. Compared with *rufivertex*, both sexes darker and less yellow above.

Distribution.—Isla Providencia, western Caribbean.

Specimens examined.—Isla Providencia (5).

Remarks.—The only female of *armouri* compared is similar to females of *rufivertex* and *flavida*. Bond (1950) reported *armouri* as the rarest resident on the island. Birds were not found there by Russell et al. (1979) and Tye & Tye (1991).

Dendroica petechia flavida Cory

Dendroica flavida Cory, 1887:179 (St. Andrew Island, Caribbean). FM

Subspecific characters.—Males nearest *rufivertex* but chestnut on crown reduced and ventral streaks wider. Compared to *armouri*, forehead and throat chestnut (not yellow) and rump greener. Females darker green than males of *flavida*, and some heavily marked with ventral chestnut streaks.

Distribution.—Isla Andrés, western Caribbean.

Specimens examined.—Isla Andrés (17).

Dendroica petechia eoa Gosse

Sylvicola eoa Gosse, 1847:158 (Crab Pond, Jamaica). BM

Dendroica petechia e. jamaicensis Sundevall, 1870:608 (near Spanishtown, Jamaica). (USNM)

Dendroica auricapilla Ridgway, 1888:572 (Grand Cayman). (USNM)

Subspecific characters.—Males near *gundlachi* but slightly brighter (more yellow), especially above in fall plumage, with chestnut crown patch more extensive. Compared with *albicollis*, males slightly greener and darker above. Females greener above than *flaviceps*. Females in fall plumage duller above and below than *gundlachi*.

Distribution.—Jamaica and Cayman Islands.

Specimens examined.—Jamaica (31), Little Cayman (3), Grand Cayman Island (37).

Remarks.—Until Peters' (1927) study, birds from Jamaica were considered to represent nominate *petechia*. I follow Hellmayr (1935) and others in synonymizing *auricapilla* with *ea*. I disagree with Buden (1979) who synonymized *ea* with *albicollis*.

Dendroica petechia gundlachi Baird

Dendroica gundlachi Baird, 1865:197 (Cuba). (USNM)

Subspecific characters.—Both sexes near *flaviceps* but duller and greener above; rump greenish (not yellowish); less brilliant yellow (more greenish) below; chestnut crown usually more extensive. Compared with *ea*, both sexes duller and greener above; duller yellow below; males with chestnut crown usually less extensive. Compared with *solaris* and *albicollis*, males greener above.

Distribution.—Cuba, Isle of Pines, and mangroves of southern Florida from Florida Bay Island, Virginia Key near Miami, and Florida Keys (Stevenson & Anderson 1993).

Specimens examined.—Cuba (99); Isle of Pines (21); Florida (2).

Remarks.—This subspecies was first reported as breeding in southern Florida by Greene (1942) who collected two specimens (USNM) near Key West in mid-July. The two specimens have tarsi of 20.3 and 21.8 mm, and are more similar to *gundlachi* than to *flaviceps* in dorsal color.

Dendroica petechia flaviceps Chapman

Dendroica petechia flaviceps Chapman, 1892: 310 (Rum Cay, Bahamas). (AMNH)

Subspecific characters.—Both sexes near *gundlachi* but more yellow above; rump yellowish; more yellowish (less greenish) below. Topotypical *flaviceps* are brighter (lacking a greenish cast) below than *gundlachi*; specimens from elsewhere in the Bahamas are more similar to *gundlachi*. Compared with *solaris* and *albicollis*, males duller yellow below. Fall and spring plumages def-

initely more yellowish (less greenish) above than *gundlachi*; most yellowish females from Cuba are still greener above than *flaviceps*.

Distribution.—Bahama Islands.

Specimens examined.—Various Bahama Islands (103).

Remarks.—Peters (1927) characterized *flaviceps* as similar to *gundlachi*, but with the chestnut of the crown less extensive and the tarsi longer. Hellmayr (1935) commented that specimens of *flaviceps* are generally brighter in color and the wings are more rounded than in *gundlachi*. Bond (1942) synonymized *flaviceps* with *gundlachi* stating that the characters "such as more rounded wing, longer tarsus and brighter coloration did not hold." Others (e.g., Lowery & Monroe 1968, Buden 1979) followed Bond (1942).

Wiedenfeld (1991) stated that birds with the longest tarsi are from the northern Bahamas. Measurements of tarsi of *flaviceps* ($n = 17$) in this study range from 20.2 to 23.6, with a mean of 21.6, and of *gundlachi* from Cuba ($n = 14$) range from 19.5 to 21.1, with a mean of 20.3. Individual measurements of *flaviceps* overlap 30% of those of *gundlachi*; individuals of *gundlachi* overlap 50% of those of *flaviceps*.

Dendroica petechia albicollis (Gmelin)

Motacilla albicollis Gmelin, 1789:983 (in insula S. Dominici [= Santo Domingo]).

Subspecific characters.—Both sexes with more yellowish (less dull and greenish) backs and more yellow crowns than *ea* and duller and more greenish (less yellowish) above than *solaris*. Males brighter yellow below than *flaviceps* and more yellowish above than *gundlachi*. Females with some pale chestnut on foreheads and grayer above than *ea* and *solaris*.

Distribution.—Hispaniola, Vache, and Tortue islands.

Specimens.—Hispaniola (27).

Remarks.—Buden (1979) synonymized *ea* with *albicollis*.

Dendroica petechia chlora,
new subspecies

Holotype.—USNM 280265, adult male, Tororu Island, Siete Hermanos islands, Dominican Republic, collected 31 January 1929 by A. J. Poole and W. M. Perrygo (original no. 165).

Subspecific characters.—Males nearest *albicollis* but back and crown distinctly darker green; edges of secondaries and primaries greener (less yellow); chestnut on crown darker. Compared with *solaris*, males much darker above and less yellow below than *solaris*. Compared with *gundlachi*, males slightly greener above and usually paler yellow below. One of two females darker and less grayish above than *albicollis* (the other specimen cannot be distinguished from *albicollis*).

Distribution.—Siete Hermanos islands, off Hispaniola.

Specimens examined.—Siete Hermanos islands (8).

Etymology.—Greek, *chloros*, for the greener color of the plumage.

Remarks.—A male from Fort Liberty, mainland Haiti, a locality about 10 miles SSW of the type locality of *chlora*, resembles *albicollis* in color.

Dendroica petechia solaris Wetmore

Dendroica petechia solaris Wetmore, 1929:1 (Z'Etroiotes, Île de la Gonave [in Gulf of Gonaïves], Republic of Haiti, Hispaniola). (USNM)

Subspecific characters.—Males nearest *albicollis* but brighter and more yellowish above, and on edges of primaries and secondaries. Compared with *chlora*, males paler (less dark green) than those of *chlora*. Females average paler and more yellowish above than *albicollis*.

Distribution.—Resident on Gonave and Petite Gonave islands off Haiti.

Specimens examined.—Gonave (27); Petite Gonave (4).

Remarks.—Although *solaris* was listed as a distinct subspecies by Bond (1930) and by Hellmayr (1935), Lowery & Monroe (1968) synonymized the name with *albicollis*.

Dendroica petechia bartholemica
Sundevall

Dendroica petechia bartholemica Sundevall, 1870:607 (St. Bartholemew). Royal Natural History Museum, Stockholm (fide Gyldenstolpe 1926)

Dendroica petechia cruciana Sundevall, 1870:608 (St. Croix). Cambridge Univ. (fide Hellmayr 1935)

Subspecific characters.—Near *albicollis*, but both sexes average brighter yellow below; males with chestnut on the head and breast more extensive. Compared with *melanoptera*, males with crown less distinctly capped with chestnut.

Distribution.—Puerto Rico, islands east of Puerto Rico, Virgin Islands, northern Lesser Antilles from Anguilla to St. Martin, St. Bartholomew, Barbuda, St. Eustatius, Nevis, St. Kitts, Antigua, and Montserrat.

Specimens examined.—Puerto Rico (97); Virgin Islands (17); St. Martin (2); Barbuda (4); St. Kitts and Nevis (8); Antigua (17); Montserrat (2).

Remarks.—According to Peters (1927), specimens that he identified as *cruciana* from St. Croix were “quite distinctive” from those he identified as *bartholemica* from St. Thomas. However, Wetmore (1927:105) concluded that the range of *cruciana* extends east to Antigua, and that *cruciana* and *bartholemica* “are closely similar” in color. I found that overlap in color between populations is extensive, with some specimens from the northern Lesser Antilles (“*bartholemica*”) being brighter below and having more chestnut on the crown than specimens from Puerto Rico (“*cruciana*”). The only female from Montserrat examined has a yellowish rump. Use of the name *bartholemica* for this subspecies follows Ridgway (1903) who acted as the first revisor.

Dendroica petechia melanopectera Lawrence

Dendroica petechia melanopectera Lawrence, 1879:453 (Guadeloupe). (USNM)

Subspecific characters.—Males nearest *bartholemica* but with chestnut crown more distinct. Females average slightly more yellowish on rump than *bartholemica*.

Distribution.—Central Lesser Antilles: Guadeloupe, Désirade, Marie Galante, Îles des Saintes, and Dominica.

Specimens examined.—Guadeloupe (9); Dominica (7); Marie Galante (2).

Dendroica petechia ruficapilla (Gmelin)

Motacilla ruficapilla Gmelin, 1789:490 (in Martinica = Martinique).

Dendroica rufigula Baird, 1865:204. (Martinique). ANSP

Dendroica granadensis Sharpe, 1885:284 (Colombia = Martinique). (BM)

Subspecific characters.—Differs from Antillean subspecies by having a chestnut hood, thus resembling subspecies in the *erithachorides* group. Birds from Martinique are similar in size to subspecies in the *petechia* group (Wiedenfeld 1991).

Distribution.—Martinique, Lesser Antilles.

Specimens examined.—Martinique (10).

Remarks.—According to Peters (1927), the name *ruficapilla* was based on females from Guadeloupe that were originally characterized as having a yellow throat, whereas birds from Martinique (= "*rufigula*" in Peters, footnote) have throats that are "generally clouded with rufous." Hellmayr (1935) concluded that there are no valid grounds for Peters' treatment and most subsequent authors have followed Hellmayr.

Sharpe (1885) referred to three specimens listed by Sclater (1862:32) in his indeterminate description of *granadensis*. Hellmayr (1935), who examined one of the specimens, believed that the name *granadensis* was probably a synonym of *ruficapilla*. Apparently on the recommendation of A. Wet-

more (notes on file, USNM), Warren & Harrison (1971) listed one of the three specimens as a syntype of *granadensis*. Based on measurements and description of plumage (P. R. Colston, in litt.), the specimen listed by Warren & Harrison (1971) is identifiable as *ruficapilla*. The characters of a second specimen (BM), examined by Browning and S. L. Olson, agree with Colston's characterizations of the specimen listed by Warren & Harrison (1971). A third specimen (BM) is similar in size and color to *erithachorides*. Because the three syntypes of *granadensis* represent more than one subspecies, I designate BM 1884.5.5.15.356, the same specimen listed by Warren & Harrison (1971), as the lectotype of *Dendroica granadensis* Sharpe.

Dendroica petechia babad Bond

Dendroica petechia babad Bond, 1927:571 (St. Lucia, British West Indies). (ANSP)

Subspecific characters.—Males nearest *melanopectera* but slightly more yellowish (less greenish) below; slightly darker chestnut cap. Chestnut areas more extensive than *alsiosa* and much paler than nominate *petechia*.

Distribution.—St. Lucia, Lesser Antilles.

Specimens examined.—St. Lucia (4).

Remarks.—I agree with Bond (1936) who stated that *babad* is "barely distinguishable" from birds from Dominica (*melanopectera*). The purported differences in crown color (Bond 1927; Hellmayr 1935) between the adjacent subspecies *alsiosa* and *melanopectera* are exaggerated.

Dendroica petechia petechia (Linnaeus)

Motacilla petechia Linnaeus, 1766:234 (in America septentrionali = Barbados, Lesser Antilles).

Dendroica capitalis Lawrence, 1868:359 (Barbados, Lesser Antilles). (AMNH)

Dendroica petechia c. barbadensis Sundevall:608 (Barbados). (USNM)

Subspecific characters.—Males nearest *rufopileata* but greener (less yellowish) below; chestnut cap slightly darker; darker above than either *rufopileata* or *obscura*. Chestnut areas much darker than *alsiosa*. Females paler (less blackish) below than *rufopileata*; more yellowish (less greenish) above than *babad*, and greener above than *alsiosa*.

Distribution.—Barbados, Lesser Antilles.

Specimens examined.—Barbados (12).

Remarks.—The name *petechia* was used for the Jamaican populations until Peters (1927) determined that Edwards' plate is of a bird from the Barbados population.

Dendroica petechia alsiosa Peters

Dendroica petechia alsiosa Peters, 1926:41 (Prune Island, east of Union Island, Grenadines). (MCZ)

Subspecific characters.—Males near *melanoptera*, but more yellow (less greenish) above; yellow (not greenish) immediately above the bill and cheeks. Compared with *babad* and nominate *petechia*, males with slightly paler ventral chestnut streaks. Crown color paler than in nominate *petechia*. Females more yellowish (less greenish) above than *babad*.

Distribution.—Grenadine islands, Lesser Antilles.

Specimens examined.—Prune Island (5); Union and Mayero islands (2).

Remarks.—Males from Prune Island have slightly darker crowns than the two males from Union and Mayero islands.

Dendroica petechia rufopileata Ridgway

Dendroica rufopileata Ridgway, 1884:173 (Curaçao). (USNM)

Subspecific characters.—Males near *obscura* but yellowish-green (not dark green) above; chestnut areas paler, especially ventral streaks. Chestnut crown darker than all previously listed subspecies of *petechia* group, except nominate *petechia*. Com-

pared with *aurifrons*, males darker above; chestnut streaks slightly darker and wider.

Distribution.—Aruba, Curaçao, and Bonaire; Blanquilla, Margarita, and Islas Los Testigos, off northern Venezuela.

Specimens examined.—Aruba (13); Curaçao (31); Bonaire (13); Blanquilla (16); Islas Los Testigos (11).

Remarks.—Birds in the eastern and western parts of the range of *rufopileata* are separated by a darker subspecies, *obscura* (see below), and the taxonomy of the complex has varied historically. When Ridgway (1884) named *rufopileata*, birds from the islands off Venezuela were known only from Curaçao. Hartert (1893) discovered similar birds on Aruba and Bonaire, and Lowe (1907) extended the range of *rufopileata* to include Isla Blanquilla. Cory (1909) named *obscura* from Isla Los Roques and, although he noted differences between the now disjunct eastern and western parts of the range of *rufopileata*, he considered these too minor for recognition of a third subspecies. Peters (1927) essentially followed Cory (1909) and included specimens from Isla Las Aves in *obscura*. Although Hellmayr (1935) synonymized *obscura* with *rufopileata*, he characterized birds from the range of *obscura* as dark, and birds from Blanquilla, Testigos, and Tortuga as brighter yellow above, with wider yellow margins on the wings, than in birds from western islands. Phelps & Phelps (1950) followed Hellmayr (1935), but they (Phelps & Phelps 1951) later recognized *obscura*, adding that specimens from Tortuga are intermediate between *rufopileata* and *aurifrons* from islands to the south (see below) but closer to the latter. Voous (1957), who recognized both *rufopileata* and *obscura*, reported that 2 of 8 specimens from Aruba have faint streaks on the throat as in *cienagae* (see below). Voous (1957) also, followed by Phelps & Phelps (1959) and Lowery & Monroe (1968), included specimens from Isla La Orchila (formerly in *rufopileata*) in *obscura*.

The two populations of *rufopileata* are

generally similar, but males from the western islands of Isla Blanquilla and Isla Los Testigos have slightly darker ventral chestnut streaks than 66% of the specimens from Bonaire, Curaçao, and Aruba. The chestnut on the crown of the western population is darker than about 50% of the eastern birds, and about 25% of the eastern birds are more yellow on the rump than in western birds. I do not view these differences as sufficient for taxonomic recognition.

Dendroica petechia obscura Cory

Dendroica ruficapilla obscura Cory, 1909: 217 (Isla Los Roques, Leeward Islands). (FM)

Subspecific characters.—Near *rufopileata* but dark greenish (less yellowish) above, with chestnut area darker, especially ventral streaks.

Distribution.—Islas Los Roques, Islas Las Aves, and Isla La Orchila, off northern Venezuela.

Specimens examined.—Isla Las Aves (7); Islas Los Roques (19); Isla La Orchila (1).

Remarks.—See under *rufopileata*.

Dendroica petechia aurifrons
Phelps & Phelps, Jr.

Dendroica petechia aurifrons Phelps & Phelps, Jr., 1950:21 (Puerto de La Cruz, Anzoátegui, Venezuela). AMNH

Subspecific characters.—Males more yellowish (less greenish) above and more yellow (not chestnut) on the crown than *ciénaga* and *paraguanae*; slightly paler below than *ciénaga*. Compared with *rufopileata*, males slightly paler above; chestnut streaks narrower.

Distribution.—Coast of Anzoátegui and extreme western Sucre (at Cumaná), north-central Venezuela, and islands immediately offshore, including Isla La Tortuga, Islas Las Tortuguillas, and Isla de Pirítu.

Specimens examined.—Isla La Tortuga (3); Venezuela mainland (2).

Summary of *D. p. petechia* group

Generally, the ventral chestnut streaks are more prominent in males from the western Caribbean islands than those from other populations. The chestnut cap ranges from pale in males from the Greater Antilles to dark in birds from the southern Lesser Antilles and parts of islands off Venezuela.

More specifically, the ventral chestnut streaks of birds from Isla Providencia (*armouri*) are darker than those from Cozumel (*rufivertex*), and are more extensive than birds from Isla Andrés (*flavida*). Populations from the northeastern Caribbean islands are generally greener above, with less extensive chestnut caps than birds from the southern islands. Birds from Cuba and southern Florida (*gundlachi*) are duller and greener above than those from the Bahama Islands (*flaviceps*) and are still greener above than birds from the main island of Hispaniola (*albicollis*). Populations of the islands off Hispaniola from Gonave and Petite Gonave islands (*solaris*) are more yellow above than *albicollis* and birds from the Siete Hermanos islands (*chlora*) are darker above than *albicollis* and *gundlachi*. Birds from Puerto Rico and the northern Lesser Antilles (*bartholemica*) are brighter yellow above and below, with more prominent chestnut caps, than *albicollis*. The chestnut cap is still more prominent in males from the central Lesser Antilles (*melanoptera*). The populations of Martinique (*ruficapilla*) have a chestnut hood similar to that of the *erithachorides* group. Birds from St. Lucia (*babad*) are more yellow above, with darker chestnut caps, than *melanoptera*. Males from Barbados (*petechia*) are still more yellow above, with still darker caps. The chestnut streaks and caps of birds from the Grenadine islands (*alsiosa*) are paler than *petechia*. The caps of birds from the islands off northern Venezuela (*rufopileata* and *obscura*) are darker than *petechia*. Back color of *rufopileata* is paler than *obscura*. Males of the populations from western coastal Venezuela and adjacent islands (*aurifrons*)

are paler above, with narrower chestnut streaks than *rufopileata*.

Dendroica p. erithachorides group

Subspecies in the *erithachorides* group differ from those in the *aestiva* and *petechia* groups by having chestnut heads. Birds also differ from the *aestiva* group by having rounded wings. Members of the *erithachorides* group are usually found in mangroves.

Dendroica petechia oraria
Parkes & Dickerman

Dendroica petechia oraria Parkes & Dickerman, 1967:87 (two miles south of Buena Vista (= about nine miles north of Tlaxotalpán), Veracruz, Mexico). (CM)

Subspecific characters.—Males nearest *bryanti* but more greenish (less yellowish) above; averaging paler yellow below; averaging less heavily streaked with chestnut below, especially flanks. The only female examined, from Veracruz, is paler and more yellow above and below than females of *bryanti*.

Distribution.—Coastal southern Tamaulipas to Tabasco, Mexico. Intergrades with *bryanti* in eastern Tabasco and western Campeche.

Specimens examined.—Tamaulipas (5); Veracruz (19); Tabasco (4); Campeche (4).

Dendroica petechia bryanti Ridgway

Dendroica vieillotii var. *Bryanti* Ridgway, 1873:605 (Belize, British Honduras = Belize, Belize) fide Parkes & Dickerman (1967). (USNM)

Subspecific characters.—Males near *oraria* but more yellowish (less greenish) above; brighter yellow below; chestnut streaks averaging narrower. Compared with *erithachorides*, both sexes greener above; males with narrower less prominent chestnut streaks below.

Distribution.—Caribbean coast from Yucatan Peninsula, Mexico to Campeche and

Nicaragua. Possibly breeds on Isla Mujeres, Quintana Roo (Parkes & Dickerman 1967). Intergrades with *oraria* in eastern Tabasco and western Campeche.

Specimens examined.—Quintana Roo (8); Yucatan (19); Belize (7); Honduras (3); Nicaragua (9).

Dendroica petechia erithachorides Baird

Dendroica erithachorides [sic] Baird, in Baird, Cassin, & Lawrence, 1858:283 (South America = Cartagena, Colombia, fide Hellmayr [1935]). (USNM)

Dendroica Vieilloti Cassin, 1860:192 (Cartagena, Colombia). (USNM)

[*Dendroica petechia*] *i*) *panamensis* ? Sundevall, 1870:609 (Cartagena, Department of Bolívar, Colombia). (USNM)

Subspecific characters.—Males near *bryanti* but darker above; darker chestnut head; more conspicuous chestnut streaks. Compared with *chrysendeta*, males less yellowish below; chestnut bib more defined; less heavily streaked below. Females greener on back and rump (less yellow) than *bryanti* and *chrysendeta*.

Distribution.—Caribbean coast from Costa Rica, locally, to Panama (Bocas del Toro and islands), and Caribbean coast of Colombia.

Specimens examined.—Costa Rica (5); Panama (29); Colombia (7).

Remarks.—Cherrie (1891:524) remarked that specimens from Limón, Costa Rica, have broader chestnut streaks than do northern examples of *bryanti*, and that the throat of the Limón birds is closer to that in specimens from Panama. I found that males from elsewhere along the coast of Costa Rica also have broader chestnut streaks and are slightly darker above than northern examples of *bryanti*. I agree with Stiles & Skutch (1989) in extending the northern range of *erithachorides* to Costa Rica. The populations from Limón, Costa Rica, and Bocas del Toro, Panama, are ap-

parently disjunct; there are no mangroves between the two localities. Specimens of both sexes from Escudo de Varaguas, Bocas del Toro, Panama, are duller above than specimens of *erithachorides* from the mainland and islands off Almirante, Panama, but I provisionally assign them to this subspecies.

Dendroica petechia chrysendeta Wetmore

Dendroica petechia chrysendeta Wetmore, 1946:52 (Laguna de Tucacas, Puerto López, Guajira, Colombia). (USNM)

Subspecific characters.—Males near *erithachorides* but yellow areas brighter; chestnut of head and upper breast darker, more extensive on the head. Compared with *paraguanae*, back more yellowish (less green); chestnut less extensive on the breast.

Distribution.—Coastal Guajira Peninsula, northeastern Colombia and Bahía Portete, Puerto López, Castilletes, and Paraguipe in western Venezuela.

Specimens examined.—Guajira Peninsula (6).

Remarks.—Specimens from Bahía Portete are intermediate in color between *erithachorides* and *chrysendeta* (Wetmore 1946b). Variation in the dorsal yellow of *chrysendeta* and some populations of *paraguanae* are similar (N. K. Klein, pers. comm.).

Dendroica petechia paraguanae
Phelps & Gilliard

Dendroica petechia paraguanae Phelps & Gilliard, 1941:10 (La Boca, Adícora, Paraguaná Peninsula, Falcón, Venezuela).

Subspecific characters.—Both sexes darker and greener above than *chrysendeta*.

Distribution.—Paraguaná Peninsula, Falcón, northwestern Venezuela.

Specimens examined.—Paraguaná Peninsula (8).

Dendroica petechia cienagae
Zimmer & Phelps

Dendroica petechia cienagae Zimmer & Phelps, 1944:14 (La Ciénaga, sea level, between Ocumare de la Costa and Turiamo, Aragua, Venezuela). (AMNH)

Subspecific characters.—Compared with *aurifrons*, males brighter yellow below; throat and forehead more chestnut; chestnut streaks wider. Compared with *chrysendeta*, males darker and greener above; chestnut regions paler.

Distribution.—Coast of Carabobo and Aragua, north-central Venezuela, and small islands off Falcón.

Specimens examined.—Aragua (2).

Dendroica petechia castaneiceps Ridgway

Dendroica bryanti castaneiceps Ridgway, 1885:350 (La Paz, Lower California). (USNM)

Dendroica erithachorides hueyi van Rossem, 1947:50 (San Ignacio Lagoon, Pacific coast of Baja California). SDMNH

Subspecific characters.—Both sexes nearest *rhizophorae* but average slightly greener above; males with chestnut streaks less dense and narrower. Males with slightly longer tails (51.9–58.1, mean 55.9, $n = 13$) than *rhizophorae* (48.7–54.3, mean 51.0, $n = 9$).

Distribution.—Both coasts of Baja California from San Ignacio and Pond lagoons (Pacific coast) south to lat. 27°N.

Specimens examined.—Baja California (63).

Remarks.—Specimens from San Ignacio Lagoon (“*hueyi*”) are fairly consistently dull and green above and pale below, but are within the range of variation of *castaneiceps* from elsewhere.

Dendroica petechia rhizophorae
van Rossem

Dendroica erithachorides rhizophorae van

Rossem, 1935:67 (Tobari Bay, Sonora, Mexico). (SDNHM)

Subspecific characters.—Both sexes nearest *castaneiceps* but average slightly more yellow below (less greenish); males with chestnut streaks usually wider; males with slightly shorter tails (see above) than *castaneiceps*. Both sexes more yellow on the back and rump than the subspecies from Sinaloa to Honduras (below). Compared with *xanthotera*, males with slightly narrower chestnut streaks below; chestnut bib more sharply defined.

Distribution.—Coastal Sonora from Tepopa Bay to Mazatlán, Sinaloa, Mexico. Intergrades with the next subspecies apparently at Mazatlán, Sinaloa.

Specimens examined.—Sonora (8).

Remarks.—Van Rossem (1935) stated that the “tail has more yellow than in *xanthotera*; more than in *castaneiceps*.” I found that the amount of yellow on the tail is too variable individually for identifying *castaneiceps* from *rhizophorae*. There is nearly complete overlap in measurements of exposed culmen of *rhizophorae* and *castaneiceps* (contra van Rossem 1935).

Dendroica petechia phillipsi,
new subspecies

Holotype.—DMNH 36348, adult male, La Piñita de Jaltemba, El Islote, southwestern Nayarit, Mexico, 16 April 1955, collected by A. R. Phillips (original number 3903).

Subspecific characters.—Compared with *rhizophorae* and *xanthotera*, both sexes with greener back and rump; yellow below with slight greenish cast; edges of tertials, wing coverts, and outer edges of rectrices greener. Chestnut streaks resemble *rhizophorae*.

Distribution.—Pacific coast from Sinaloa to Honduras. Intergrades with *rhizophorae* apparently at Mazatlán, Sinaloa; intergrades with *xanthotera* at San Lorenzo, Honduras.

Specimens examined.—Mexico: Sinaloa (7); Nayarit (16); Oaxaca (1); Chiapas (2); Honduras (4).

Etymology.—For Allan R. Phillips in recognition of his contributions to the taxonomy of birds.

Remarks.—Lowery & Monroe (1968) did not list breeding localities of *D. petechia* from the Pacific Coast of Mexico south of Nayarit. The species probably breeds along the shore of Colima (Schaldach 1963), is possibly a permanent resident of coastal Oaxaca (Binford 1989), and is a resident of coastal Chiapas (Alvarez 1964). The breeding status of the two males from Chiapas is unknown. One of seven old specimens from Mazatlán has a yellowish rump similar to *rhizophorae*. A male from San Lorenzo, Honduras, is green above but otherwise it is similar to specimens of *xanthotera*.

Dendroica petechia xanthotera Todd

Dendroica bryanti xanthotera Todd, 1924: 123 (Puntarenas, Costa Rica). (CM)

Subspecific characters.—Compared with *phillipsi*, both sexes more yellow on the back and rump; males with chestnut more extensive on head; ventral chestnut streaks wider; chestnut bib not sharply defined. Compared with *aithocorys*, males with chestnut hood restricted and darker; ventral chestnut streaks narrower. Females with less chestnut below than *aithocorys*.

Distribution.—Pacific coast of Nicaragua and Costa Rica. Intergrades with *phillipsi* at San Lorenzo, Honduras.

Specimens examined.—Costa Rica (25).

Dendroica petechia aithocorys Olson

Dendroica petechia aithocorys Olson, 1980: 474 (5 miles east of La Honda, near Los Santos, Los Santos Providence, Panama). (USNM)

Subspecific characters.—Males nearest *xanthotera* but slightly more yellow above;

chestnut hood paler and extends into upper breast; chestnut streaks wider and less sparse. Compared with *iguanae*, males greener above; chestnut hood paler. Compared with *aequatorialis*, males with darker chestnut hood; upper breast not streaked with yellow. Females more yellow (less greenish) below and more heavily streaked with chestnut than *aequatorialis* and *xanthotera*.

Distribution.—Pacific coast of Panama from Chiriquí to Coclé including Isla Coiba and Azuero Peninsula. Intergrades with *aequatorialis* at Puerto Aguadulce.

Specimens examined.—(77); same specimens compared by Olson (1980).

Remarks.—Wetmore (1957) regarded birds from the above range as “intermediates between *aequatorialis* and *xanthotera*,” and he and Lowery & Monroe (1968) referred them to the former name. Specimens from Isla Coiba are slightly less streaked below than other specimens of *aithocorys*. More specimens from Isla Coiba have dorsal chestnut streaks than do other specimens of *aithocorys* but these differences are minor and inconsistent. Three adult males, three adult females, and one subadult male (all USNM) from Isla Brincanco are slightly duller green above and paler yellow below, and the females are slightly less marked with chestnut than other specimens of *aithocorys* from elsewhere.

Dendroica petechia iguanae Olson

Dendroica petechia iguanae Olson, 1980:475 (Isla Iguana, Los Santos Province, Panama). (USNM)

Subspecific characters.—Males nearest *aithocorys* but darker, greener (less yellow) above and below; darker chestnut hood; chestnut streaks more dense. Chestnut hood darker than *aequatorialis*. Females near *aithocorys* but more greenish (less yellow) below; average more heavily streaked below.

Distribution.—Isla Iguana, Los Santos Province, Panama.

Specimens examined.—(13); same specimens compared by Olson (1980).

Dendroica petechia aequatorialis
Sundevall

Dendroica petechia aequatorialis Sundevall, 1870:609 (Guayaquil, Ecuador [= Panama City, Panama]). Royal Natural History Museum, Stockholm (fide Gyldestolpe 1926)

Subspecific characters.—Males nearest *aithocorys* but chestnut of the head region paler; upper breast streaked with yellow. Compared with *jubaris*, males duller yellow below; chestnut region of head forms a definite but suffused hood vs. a cap. Females nearest *jubaris* but less yellow below; more heavily streaked with chestnut below than *aithocorys*.

Distribution.—Pacific coast of the Province of Panamá and the Pearl Islands. Intergrades with *jubaris* at Río Majé.

Specimens examined.—(95); same specimens compared by Olson (1980); 20 others from Pearl Islands.

Remarks.—Thayer & Bangs (1905) and Wetmore (1946a) reported that many of the specimens from Isla San Jose, Pearl Islands, were golden-orange where the yellow plumage normally occurs. I found individual specimens of other subspecies, including examples in the *aestiva* group, with traces of orange feathers. The large number of entirely golden-orange birds from Isla San Jose cannot be explained.

Olson (1980) reported that males collected at the mouth of Río Majé show traces of yellow in the cheeks and that this may indicate intergradation between *aequatorialis* and *jubaris*. More noticeable in the Río Majé males is that the crown and cheeks are intermediate between these two subspecies in the hue of chestnut. Ventrally, the Majé specimens are more similar to *jubaris* than to *aequatorialis* in the hue and amount of chestnut streaks. The amount of yellow in the throats of the Majé series is also similar

to that of *jubaris* but the yellow of the lower ventral regions is duller and thus similar to that of *aequatorialis*.

Dendroica petechia jubaris Olson

Dendroica petechia jubaris Olson, 1980:478 (Nuquí, [lat.] 5°40'N, Dept. Chocó, Colombia). (USNM)

Subspecific characters.—Compared to *aequatorialis*, males with dark chestnut crowns with remaining chestnut areas paler (tawny) and more suffused with yellow; chestnut hood absent; chestnut streaks wide and suffused on bright yellow ventral surface; distinct chestnut cap; throat yellowish. Females nearest *aequatorialis* but more heavily streaked with chestnut below; chestnut on head paler than other Pacific coast subspecies from Panama; more heavily streaked with chestnut below than *peruviana*.

Distribution.—Darién, Panama, south along the Pacific coast of Chocó, at least to Buenaventura, Valle del Cauca, Colombia.

Specimens examined.—(26); same specimens compared by Olson (1980).

Dendroica petechia peruviana Sundevall

Dendroica petechia peruviana Sundevall, 1870:609 (Callao, Peru, and Guayaquil, Ecuador; type from Callao [?], fide Gyldenstolpe [1926]). RNHM (fide Gyldenstolpe 1926).

Subspecific characters.—Males nearest *jubaris* but crown less suffused with pale chestnut; cheeks, lores, and chin more yellow. Females with little to no ventral chestnut streaking.

Distribution.—Nariño, extreme southwestern coastal Colombia to northern coastal Peru, and possibly as far south as Lima.

Specimens examined.—Colombia: Nariño (4); Esmeraldas (2); El Oro (8); Ecuador (6).

Remarks.—The cheeks of a specimen from Nariño have some pale chestnut feath-

ers; chestnut on the checks of two specimens from Esmeraldas is even paler.

Dendroica petechia aureola (Gould)

Sylvicola aureola Gould, in Darwin, 1839: 86 (Galápagos Islands)

Subspecific characters.—Nearest *peruviana* but males less heavily streaked and both sexes usually less bright yellow below.

Distribution.—Cocos Island and Galápagos Archipelago.

Specimens examined.—Cocos Islands (27); Galápagos Islands (90).

Remarks.—Plumage patterns in *aureola* resemble subspecies in the *petechia* group. However, specimens of *aureola* are more similar in size to birds of the *erithachorides* group (Wiedenfeld 1991).

Summary of *D. p. erithachorides* group

Generally, the chestnut streaks are narrower in northern males from the Pacific and Caribbean populations and are wider in most other populations. The chestnut on the hood and neck of males ranges from dark and forming (more or less) a hood in northern birds to paler and no distinct hood in southern populations from the Pacific coast and islands off western South America.

More specifically, northern populations of the Caribbean coast from Tamaulipas and Tabasco, Mexico (*oraria*), Yucatan to Nicaragua (*bryanti*), and from the Pacific coast from Baja California (*castaneiceps*), Sonora (*rhizophorae*), Sinaloa to Honduras (*phillipsi*), and Nicaragua to Costa Rica (*xanthotera*) have relatively narrower ventral chestnut streaks than other populations of the *erithachorides* group. Back color of the northernmost populations of Pacific coast (*castaneiceps*) is greener than *rhizophorae*, but it is more yellow than in *phillipsi*, the next subspecies to the south. Males from along the Pacific coast of western Panama (*aithocorys*) have more extensive chestnut

hoods than *xanthotera*, the chestnut is darker in birds from Isla Iguana (*iguanae*), the chestnut is paler, with the upper breast being more yellow, in birds from the Province of Panama (*aequatorialis*), and the chestnut is even paler, with more yellow in the upper breast, in birds from eastern Panama to Buenaventura, Colombia (*jubaris*). Males from coastal southwestern Colombia to northern Peru (*peruviana*) have less chestnut and more yellow on the head than the other mainland populations of the Pacific coast. The populations of the Cocos and Galápagos islands (*aureola*) have still less chestnut on the head and neck, thus *aureola* is superficially similar to subspecies in the *petechia* group. Males from the Caribbean coasts of Costa Rica, Panama, and western Colombia (*erithachorides*) have darker chestnut heads than *bryanti*, but they are paler than birds from the Guajira Peninsula, Colombia (*chrysendeta*). Males from the Parajuaná Peninsula, Venezuela (*paraguanae*), are darker and greener above than *chrysendeta*.

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Literature Cited

- Aldrich, J. W. 1942. Specific relationships of the Golden and Yellow Warblers.—*Auk* 59:447-449.
- Alvarez del Toro, M. 1964. Lista de las aves de Chiapas. Instituto de Ciencias y Artes de Chiapas, Tuxtla Gutierrez, Chiapas, 82 pp.
- American Ornithologists' Union. 1910. Check-list of North American birds. Third edition. American Ornithologists' Union, Lancaster, Pennsylvania, 526 pp.
- . 1931. Check-list of North American birds. Fourth edition. American Ornithologists' Union, Lancaster, Pennsylvania, 372 pp.
- . 1944. Nineteenth supplement to the American Ornithologists' Union Check-list of North American birds.—*Auk* 61:441-464.
- . 1945. Twentieth supplement to the American Ornithologists' Union Check-list of North American birds.—*Auk* 62:436-449.
- . 1954. Twenty-ninth supplement to the American Ornithologists' Union Check-list of North American birds.—*Auk* 71:310-312.
- . 1957. Check-list of North American birds. Fifth edition. American Ornithologists' Union, Baltimore, Maryland, 691 pp.
- . 1983. Check-list of North American birds. Sixth edition. American Ornithologists' Union, Washington, D.C., 877 pp.
- Audubon, J. J. 1831. Ornithological biography. Vol. 1. Adam Black, Edinburgh, 512 pp.
- Baird, S. F. 1865. Review of American birds in the museum of Smithsonian Institution.—*Smithsonian Institution Collections* 181, 478 pp.
- , J. Cassin, & G. N. Lawrence. 1858. Birds. Vol. 9, Reports of explorations and surveys . . . for a railroad from the Mississippi River to the Pacific Ocean. Washington, D.C., 1005 pp.
- Batchelder, C. F. 1918. Two undescribed Newfoundland birds.—*Proceedings of the New England Zoölogical Club* 6:81-82.
- Behle, W. H. 1948. Systematic comments on some geographically variable birds occurring in Utah. *Condor*.—50:71-80.
- . 1985. Utah birds: geographic distribution and systematics. Utah Museum of Natural History, University of Utah, Occasional Publication No. 5, 147 pp.
- Binford, L. C. 1989. A distributional survey of the

- birds of the Mexican state of Oaxaca.—Ornithological Monographs No. 43, American Ornithologists' Union, Washington, D.C., 418 pp.
- Bond, J. 1927. A new golden warbler from the island of St. Lucia, B. W. I. *Auk* 44:571–572.
- . 1930. The resident West Indian warblers of the genus *Dendroica*.—Proceedings of the Academy of Natural Sciences of Philadelphia 82:329–337.
- . 1936. Resident birds of the Bay Islands of Spanish Honduras.—Proceedings of the Academy of Natural Sciences of Philadelphia 88:353–364.
- . 1942. Additional notes on West Indian birds.—Proceedings of the Academy of Natural Sciences of Philadelphia 94:89–106.
- . 1950. Results of the Catherwood-Chaplin West Indies Expedition, 1948. Part 2. Birds of Cayo Largo (Cuba), and San Andrés and Providencia.—Proceedings of the National Academy of Sciences of Philadelphia 102:43–68.
- Brewster, W. 1888. On three apparently new subspecies of Mexican birds.—*Auk* 5:136–139.
- Browning, M. R. 1978. An evaluation of the new species and subspecies proposed in Oberholser's *Bird Life of Texas*.—Proceedings of the Biological Society of Washington 91:85–122.
- . 1990a. Taxa of North American birds described from 1957 to 1987.—Proceedings of the Biological Society of Washington 103:432–451.
- . 1990b. The nomenclatural status and type locality of the Yellow Warbler subspecies *Dendroica petechia aestiva* (Gmelin) (Aves: Parulidae).—Canadian Field-Naturalist 103:597–599.
- Buden, D. W. 1979. Ornithogeography of the southern Bahamas. Unpublished Ph.D. Dissertation, University Microfilms International, London, 277 pp.
- Cassin, J. 1860. Catalogue of birds collected during a survey for a ship canal across, [sic] the Isthmus of Darien, by order of the government of the United States, made by Lieut. N. Michler, of the U.S. Topographical Engineers, with notes and descriptions of species.—Proceedings of the National Academy of Natural Sciences of Philadelphia. Pp. 132–144; 188–197.
- Chapman, F. M. 1892. Notes on birds and mammals observed near Trinidad, Cuba, with remarks on the origin of West-Indian bird-life.—American Museum of Natural History Bulletin 4:279–330.
- Cherrie, G. K. 1891. Notes on Costa Rican birds.—Proceedings of the United States National Museum 14:517–537.
- Coale, H. K. 1887. Description of a new species and sub-species of the genus *Dendroica*.—Ridgway Ornithological Club Bulletin 2:82–83.
- Cory, C. B. 1887. Descriptions of six supposed new species of birds from the islands of Old Providence and St. Andrews, Caribbean Sea.—*Auk* 4:177–180.
- . 1909. The birds of the Leeward Islands, Caribbean Sea.—Field Museum of Natural History, Publication Number 137, Ornithological Series 1(5):193–255.
- Deignan, H. G. 1961. Type specimens of birds in the United States National Museum.—United States National Museum Bulletin 221, 718 pp.
- Dickey, D. R., & A. J. van Rossem. 1938. The birds of El Salvador.—Field Museum of Natural History, Zoological Series 23, 609 pp.
- Gabrielson, I. N., & S. G. Jewett. 1940. Birds of Oregon.—Oregon State Monographs, Studies in Zoology No. 2, 650 pp.
- Gmelin, J. F. 1789. Caroli Linné. *Systema naturae*. Vol. 1 (part 1). Lugduni, 1032 pp.
- Godfrey, W. E. 1986. The birds of Canada. Revised edition. National Museum of Natural Science (Canada), Ottawa, Ontario, 595 pp.
- Gosse, P. H. 1847. The birds of Jamaica. John Van Voorst, London, 447 pp.
- Gould, J. 1839. Birds. In C. R. Darwin, Narrative of the surveying voyages of H.M.S. Beagle. Part 3. Smith, Elder & Company, Cornhill, 156 pp.
- Greene, E. R. 1942. Golden Warbler nesting in Lower Florida Keys.—*Auk* 59:114.
- Greenway, J., Jr. 1933. A name for the Golden Warbler of Old Providence Island.—Proceedings of the New England Zoölogical Club 13:63–64.
- Grinnell, J. 1903. The California Yellow Warbler.—*Condor* 5:71–73.
- , & A. H. Miller. 1944. The distribution of the birds of California.—Pacific Coast Avifauna No. 27, 608 pp.
- Griscom, L., & M. S. Crosby. 1926. Birds of the Brownsville region, southern Texas.—*Auk* 43:18–36.
- Gyldenstolpe, N. 1926. Types of birds in the Royal Natural History Museum in Stockholm.—*Arkiv för Zoologi* 19:1–116.
- Hartert, E. 1893. On the birds of Aruba, Curaçao, and Bonaire.—*Ibis* 5:299–338.
- Hellmayr, C. E. 1935. Catalogue of birds of the Americas.—Field Museum of Natural History, Zoological Series 13, part 8:1–541.
- Irving, L. 1960. Birds of Anaktuvuk Pass, Kobuk, and Old Crow.—United States National Museum Bulletin 217, 409 pp.
- Jewett, S. G., W. P. Taylor, W. T. Shaw, & J. W. Aldrich. 1953. Birds of Washington state. University of Washington Press, Seattle, Washington, 767 pp.
- Johnston, R. F. 1964. The breeding birds of Kansas.—University of Kansas Publications, Museum of Natural History 12:575–655.
- Kessel, B., & D. D. Gibson. 1978. Status and distri-

- bution of Alaska birds.—Studies in Avian Biology No. 1, 100 pp.
- , & G. B. Schaller. 1960. Birds of the Upper Sheenjek Valley, northeastern Alaska.—Biological Papers of the University of Alaska No. 4, 59 pp.
- Lawrence, G. N. 1879. Catalogue of a collection of birds obtained in Guadeloupe for the Smithsonian Institution, by Mr. Fred A. Ober.—Proceedings of the U.S. National Museum No. 57: 449–462.
- Linnaeus, C. 1766. Systema Naturae. Edition 12. Holmiae, 532 pp.
- Lowe, P. R. 1907. On the birds of Blanquilla Island, Venezuela.—Ibis series 9, 1:111–122.
- Lowery, G. H., & B. L. Monroe, Jr. 1968. Family Parulidae. Pp. 3–93 in R. A. Paynter, ed. Checklist of birds of the world. Vol. 14. Museum of Comparative Zoology, Cambridge, Massachusetts.
- Miller, A. H., H. Friedmann, L. Griscom, & R. T. Moore. 1957. Distributional check-list of the birds of Mexico. Part 2.—Pacific Coast Avifauna No. 33, 436 pp.
- Oberholser, H. C. 1897. Description of a new subspecies of *Dendroica*. Auk 14:76–79.
- . 1938. The bird life of Louisiana. Department of Conservation, State of Louisiana, Bulletin 28, 834 pp.
- . 1974. The bird life of Texas. Volume 2. University of Texas Press, Austin, pp. 531–1069.
- Olson, S. L. 1980. Geographic variation in the Yellow Warbler (*Dendroica petechia*: Parulidae) of the Pacific coast of Middle and South America.—Proceedings of the Biological Society of Washington 93:473–480.
- Pallas, P. S. 1811. Zoographia Rosso-Asiatica. Vol. 1. Imperii Rossici, Petropoli. Pp. 297–568.
- Parkes, K. C. 1968. Some bird records from western Pennsylvania.—Wilson Bulletin 80:100–102.
- , & R. W. Dickerman. 1967. A new subspecies of Mangrove Warbler (*Dendroica petechia*) from Mexico.—Annals of the Carnegie Museum 39: 85–89.
- Peters, J. L. 1926. A new race of the Golden Warbler from the West Indies.—New England Zoölogical Club 9:41.
- . 1927. A revision of the Golden Warblers, *Dendroica petechia* (Linné).—Proceedings of the Biological Society of Washington 40:31–42.
- Phelps, W. H., & W. H. Phelps, Jr. 1950. Lista de las aves de Venezuela con su distribución. Part 2, Passeriformes.—Boletín de la Sociedad Venezolana de Ciencias Naturales 12:1–427.
- , & ———. 1951. Las aves de las Islas Los Roques y Las Aves y descripción de un nuevo canario de mangle.—Boletín de la Sociedad Venezolana de Ciencias Naturales 13:7–30.
- , & ———. 1959. Las aves de las Isla La Orchila.—Boletín de la Sociedad Venezolana de Ciencias Naturales No. 93:252–266.
- , & E. T. Gilliard. 1941. Seventeen new birds from Venezuela.—American Museum of Natural History Novitates 1153, 17 pp.
- Phillips, A., J. T. Marshall, & G. Monson. 1964. The birds of Arizona. University of Arizona Press, Tucson, Arizona, 220 pp.
- Phillips, J. C. 1911. A years' collecting in the state of Tamaulipas, Mexico.—Auk 28:67–89.
- Ramos, M. A., & D. W. Warner. 1980. Analysis of North American subspecies of migrant birds wintering in Los Tuxtlas, southern Veracruz, Mexico. Pp. 173–180 in A. Keast & E. S. Morton, eds. Migrant birds in the Neotropics: ecology, behavior, distribution, and conservation. Smithsonian Institution Press, Washington, D.C.
- Raveling, D. G., & D. W. Warner. 1978. Geographic variation of Yellow Warblers killed at a TV tower.—Auk 95:73–79.
- Ridgway, R. 1873. On some new forms of American birds.—American Naturalist 7:602–619.
- . 1884. On a collection of birds made by Messrs. J. E. Benedict and W. Nye, of the United States Fish Commission steamer "Albatross."—Proceedings of the United States National Museum 7:172–210.
- . 1885. Some emended names of North American birds.—Proceedings of the U.S. National Museum 8:354–356.
- . 1887. Catalogue of a collection of birds made by Mr. Chas. H. Townsend, on islands in the Caribbean Sea and in Honduras.—Proceedings of the U.S. National Museum 10:572–597.
- . 1902. The birds of North and Middle America.—United States National Museum Bulletin 50, part 2, 834 pp.
- Russell, S. M., J. C. Barlow, & D. W. Lamm. 1979. Status of some birds on Isla San Andres and Isla Providencia, Colombia.—Condor 81:98–100.
- Schaldach, W. J., Jr. 1963. The avifauna of Colima and adjacent Jalisco, Mexico.—Proceedings of the Western Foundation of Vertebrate Zoology 1: 100 pp.
- Slater, P. L. 1862. Catalogue of a collection of American birds. N. Trubner and Company, London, 368 pp.
- Sharpe, R. B. 1885. Catalogue of the birds in the British Museum. Volume 10. British Museum (Natural History), London, 682 pp.
- Slud, P. 1964. The birds of Costa Rica.—Bulletin of the American Museum of Natural History 128, 430 pp.

- Smithe, F. B. 1975. Naturalist's color guide. American Museum of Natural History, New York.
- Stevenson, H. M., & B. H. Anderson. 1993. The birdlife of Florida. University of Florida Presses, Gainesville (in press).
- Stiles, G., & A. F. Skutch. 1989. A guide to the birds of Costa Rica. Comstock Publishing Associates, Cornell University Press, Ithaca, New York, 511 pp.
- Sundevall, C. F. 1870. Öfversigt af fogelslägtet *Dendroica*. Öfversigt af Kongl. Vetenskaps-Akademiens Föreläsningar, 1869, no. 26:605–618.
- Sutton, G. M. 1967. Oklahoma birds. University of Oklahoma Press, Norman, 674 pp.
- Thayer J. E., & O. Bangs. 1905. The mammals and birds of the Pearl Islands, Bay of Panama.—Bulletin of the Museum of Comparative Zoology 46:137–160.
- Todd, W. E. C. 1924. Descriptions of eight new neotropical birds.—Proceedings of the Biological Society of Washington 37:121–124.
- Twomey, A. C. 1942. The birds of the Uinta Basin, Utah.—Annals of the Carnegie Museum 28:341–490.
- Tye, A., & H. Tye. 1991. Bird species on St. Andrew and Old Providence islands, west Caribbean.—Wilson Bulletin 103:493–497.
- van Rossem, A. J. 1931. Report of a collection of land birds from Sonora, Mexico.—Transactions of the San Diego Society of Natural History 6:237–304.
- . 1935. The Mangrove Warbler of northwestern Mexico.—Transactions of the San Diego Society of Natural History 8:67–68.
- . 1947. An undescribed race of the Mangrove Warbler from Baja, California, Mexico.—Transactions of the San Diego Society of Natural History 11:49–52.
- Vicillot, J. P. 1808–1809. Historie naturelle des oiseaux de l'Amerique septentrionale. Vol 2. Chez Desfray, Libraire, De l'imprimerie, Paris, 74 pp., pl. 57bis + 124.
- Voous, K. H. 1957. The birds of Aruba, Curaçao, and Bonaire. Pp. 1–260 in P. W. Hummelinck, ed. Studies on the fauna of Curaçao and other Caribbean islands. Vol. 7. Martinus Nijhoff, The Hague.
- Warren, R. L. M., & C. J. O. Harrison. 1971. Type-specimens of birds in the British Museum (Natural History). Volume 2. Passerines. British Museum (Natural History), London, 628 pp.
- West, G. C., & C. M. White. 1966. Range extensions and additional notes on the birds of Alaska's Arctic Slope.—Condor 68:302–304.
- Wetmore, A. 1927. The birds of Porto Rico and the Virgin Islands—Psittaciformes to Passeriformes.—New York Academy of Sciences 9:409–598.
- . 1929. Descriptions of four new forms of birds from Hispaniola.—Smithsonian Miscellaneous Collections 81, 4 pp.
- . 1946a. The birds of San José and Pedro González islands, Republic of Panamá.—Smithsonian Miscellaneous Collections 106, 105 pp.
- . 1946b. New forms of birds from Panama and Colombia.—Proceedings of the Biological Society of Washington 59:49–54.
- . 1957. The birds of Isla Coiba, Panamá.—Smithsonian Miscellaneous Collections 134, 105 pp.
- , R. Pasquier, & S. L. Olson. 1984. The birds of the Republic of Panamá.—Smithsonian Miscellaneous Collections 150, part 4, 670 pp.
- Wiedenfeld, D. A. 1991. Geographical morphology of male Yellow Warblers.—Condor 93:712–723.
- Williamson, F. S. L., & L. J. Peyton. 1962. Faunal relationships of birds in the Iliamna Lake area, Alaska.—Biological Papers of the University of Alaska No. 5, 73 pp.
- Winker, K., B. A. Fall, J. T. Klicka, D. F. Parmelee, & H. B. Tordoff. 1991. The importance of avian collecting and the need for continued collecting.—Loon 63:238–246.
- Zimmer, T. T., & W. H. Phelps. 1944. New species and subspecies of birds from Venezuela. 1.—American Museum of Natural History Novitates 1270, 16 pp.

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