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A REVISION OF THE NORTH AMERICAN MAINLAND
SPECIES OF MYIARCHUS.

BY E. W. NELSON.

The present paper covers all of the species and subspecies of *Myiarchus* known to occur on the mainland of North America north of the Isthmus of Panama. In addition I have included the birds of Cozumel Island near the coast of Yucatan, and the Tres Marias Islands off the coast of Tepic, western Mexico.

The recently accumulated material in this group, especially the Mexican series in the Biological Survey collection, serves to throw much light upon the characters, relationships and distribution of several obscurely known species. In addition to the large series of specimens available in the Biological Survey and National Museum collections, Mr. William Brewster and Mr. Outram Bangs have kindly sent me material from their collections that has been of great value in filling gaps and enabling me to reach definite conclusions in some otherwise obscure questions.

The genus *Myiarchus* appears to reach its greatest development in the American tropics, including the West Indies, with a limited number of forms ranging well up into temperate North America. These most northerly representatives of the genus are *cinerascens* which reaches the northern border of the Upper Sonoran zone on the west coast in Oregon, and *crinitus*

which crosses the Transition zone of eastern America to southern Canada and New Brunswick. *M. laurencei* and its subspecies is the most widely distributed of the North American species, with a breeding range extending from the Isthmus of Panama to southern Arizona and the Tres Marias Islands. The species of most limited distribution is probably *M. yucatanensis*, found only on the peninsula of Yucatan and on Cozumel Island.

The North American species of *Myiarchus* appear to have but one moult a year and this occurs immediately following the breeding season, from August to September or perhaps October. The birds are much darker or more richly colored for a short period following the assumption of the new plumage than at any other period. This extreme intensity of coloration quickly passes into a duller condition which continues with but little change through the winter months. In spring the colors gradually fade or become bleached by the sun until in the breeding season the original shades of greenish, olive and gray of the back and the yellow of the under parts are almost lost in the dingy browns and yellows of the frayed plumage. The upper parts especially bleach to a dingy grayish brown so nearly alike in several species that there is but little color difference between summer specimens, and identification of birds in this condition depends largely on size and tail pattern. This condition becomes most marked in species living under the brilliant sun of the Lower Sonoran and Arid Tropical regions and is much less noticeable in species like *crinitus* which live in regions of greater humidity and cloudiness.

The general resemblance in color between many of the subspecies and even between some of the species would render a description of faded spring or summer birds misleading in the apparent uniformity of coloration, while the most richly colored condition that is found immediately after the moult in late summer or fall is so evanescent that it can scarcely stand to represent the average characters. For this reason in the following descriptions I have taken, when available, the unworn winter birds which represent the typical colors of the various species from soon after the fall moult until the wear and fading of the spring and summer begin to destroy the distinctive shades of color. I have designated this as the 'fresh' plumage. In

some specimens the winter condition of the colors remains until late in spring or early summer, but ordinarily they are much faded at this season. The sexes are alike in color, but the females are usually smaller than the males, as shown by the measurements.

In most of the published descriptions of the rufous-tailed species described in the present paper, little or no range of variation in distribution of the dusky pattern on the tail feathers has been mentioned. This has given the erroneous impression that these markings are rather constant and has led to the identification of female individuals of *cinerascens* from Arizona as *nuttingi*. By the examination of several hundred specimens of the various species it has been demonstrated that the dusky pattern on the inner webs of the outer tail feathers (and to a similar degree on the inner tail feathers) of *cinerascens*, *mexicanus*, *crinitus*, and *nuttingi* with their subspecies have a wide range of variation in extent, though usually preserving a characteristic outline, although at times this also disappears. Thus we have the dusky area practically gone on the inner web of the outer tail feather of some of the females of *cinerascens*, producing a pattern exactly as in *nuttingi*. One specimen of otherwise typical *cinerascens* from Guanajuato has the dusky line along the shaft as in typical *inquietus*, and a specimen of *nuttingi* from Honduras has the dusky shaft line of *inquietus*. *M. crinitus* may or may not have a dusky shaft line on inner web, while in *mexicanus* this line varies greatly in width. The rufous border to inner webs of tail feathers in *yucatanensis* also varies much in width and may or may not be present on the outer feather. The considerable amount of individual variation thus shown renders it difficult to make a key that is serviceable in identifying more than average specimens of some species.

In the cases of *cinerascens* and *nuttingi* the differences in dimensions are decisive and almost equally diagnostic between these two and *inquietus*.

The first plumage of the young in all of the species is characterized by a much greater amount of rufous on the wings and tail than in the adult. This is especially marked on the tail, in which the characteristic dusky pattern of the adult is not apparent. The extension of the rufous on the tail usually includes

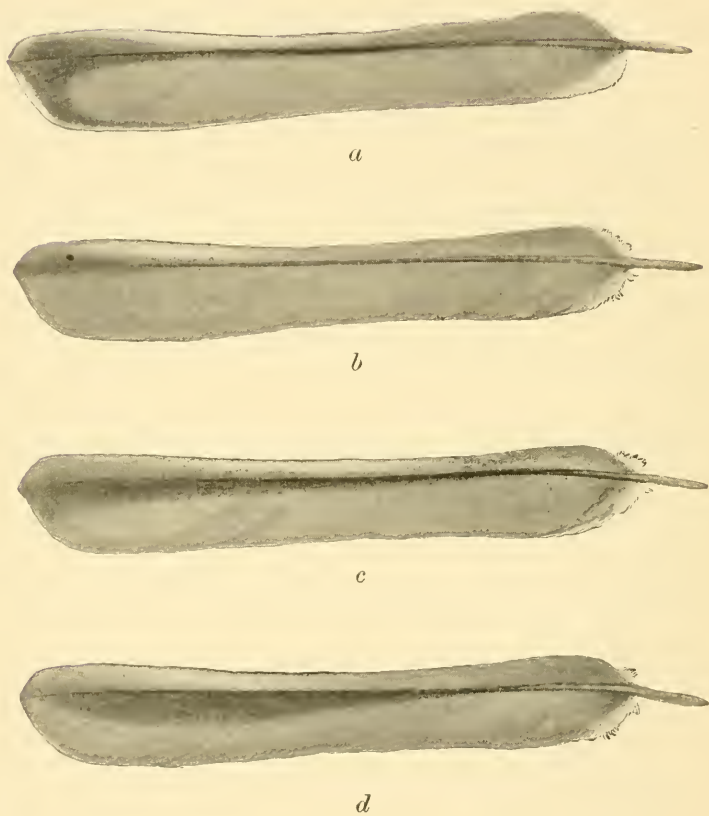


FIG. 1. Outer tail feathers of American Mainland *Myiarchus*.

a. *Myiarchus cinerascens*.

c. *Myiarchus n. inquietus*.

b. *Myiarchus nuttingi*.

d. *Myiarchus mexicanus*.

both middle and outer pair of feathers and effects a generalized pattern.

Even the young of *M. nigriceps* which is without rufous in the adult plumage has it strongly marked on the wings and tail of the young. Among the great number of winter specimens examined I have not found a single individual in this first plumage, so it appears that the young moult this plumage within a short time and assume the dress of the adult.

It is with some hesitation that I add further to the disension concerning the application of Kaup's *Tyrannula mexicana* and *T. cooperi*, a matter which has already been the subject of much difference of opinion; but the case appears to be still unsettled, and my notes may help toward its definite determination.

In the Proceedings of the Zoological Society of London for 1851, p. 51, Kaup described two species of *Myiarchus* in such a brief and unsatisfactory manner that the application of his names has given rise to much controversy. From recent study of the matter it appears to me that Prof. Baird was right in his disposal of the names (*Birds of North America*, 1858, p. 180) and that their present use by American ornithologists is wrong. The matter cannot be absolutely settled until Kaup's types are examined, but the present evidence in support of Prof. Baird's conclusions are of interest. He recognized Kaup's error in applying Nuttall's *Muscicapa cooperi* (= *Tyrannula cooperi* Kaup, a synonym of *Nuttallornis borealis*), to a *Myiarchus*, and then proceeded to make a new use of the name (*loc. cit.*), describing in detail as *Myiarchus cooperi* a specimen from "Mexico" (No. 9100 U. S. National Museum). Baird's type is still in the Museum collection and is the bird from eastern Mexico and the Rio Grande Valley commonly known to ornithologists as *Myiarchus mexicanus mexicanus*. In case, as I believe, the latter name belongs elsewhere, then Baird's name *cooperi* becomes available for this species. Baird identified Kaup's *Tyrannula mexicana* as Lawrence's *Tyrannula cinerascens* (*Ann. Lyc. Nat. Hist. N. Y.*, V., Sept. 1851, p. 121) and gave it priority over the latter name on the strength of the dates on which the two papers were read; Kaup's paper having been read on February 11, 1851 and Lawrence's in September, 1851. According to Selater (*P. Z. S.*, 1893, p. 439) the part of the Proceedings of the Zoological Society containing Kaup's

paper was not actually published until October 28, 1852, while the American Journal of Sciences and Arts, 2d Series, XIII, No. 38, p. 303 for March, 1852, contains a notice of Lawrence's paper, thus giving *cinerascens* at least six months priority. The reasons for believing that Kaup's *mexicana* is the same as *cinerascens* are as follows: Kaup states that the type of *T. mexicana* was sent from Mexico by Mr. Wollweber but mentions no definite locality. Mr. Wollweber sent various birds to the Darmstadt Museum in addition to the type of *mexicana*, among which were the types of *Pitangus derbianus* and *Parus wollweberi* both of which were recorded from Zacatecas. I have seen no other locality mentioned for any of Wollweber's specimens and it is not unreasonable to suppose the type of *mexicana* came from the same district. Zacatecas lies on the west side of the Mexican tableland remote from the range of the so-called *M. mexicanus mexicanus* of eastern Mexico, but within the range of *cinerascens* which is common in parts of this State. Furthermore Kaup, in his description of *T. cooperi*, says, "with shorter wings than *mexicanus* but with longer bill like *crinita*, throat and over breast light gray," and mentions the broad black stripe along inner web of outer tail feathers, all of which applies to the bird we now call *mexicanus*. In the description of *mexicana* he says, "breast light ash-gray; above lighter," which is certainly applicable to *cinerascens*. Measurements of a large series of the bird we now call *mexicanus* and of *cinerascens* show that a considerable percentage of males of *cinerascens* have longer wings than many of the specimens of "*mexicanus*" from eastern Mexico, while the differences between the size of bill and color mentioned by Kaup are exactly applicable to these two birds. It is true that Mr. Sclater compared Kaup's type of *mexicana* with certain specimens in the British Museum and found them to be similar and that they were the same as Baird's *M. cooperi* (fide Ridgway, Proc. Biol. Soc. Wash., II, pp. 90-91); but in the Biologia II, p. 91, Salvin and Godman, apparently with the same specimens before them which Sclater found to be similar to Kaup's type and pronounced to be the same as *M. cooperi* Baird, come to exactly the opposite conclusion and pronounce these specimens to represent *cinerascens*, and state that Baird's conclusions as given above regarding the application of Kaup's names were correct.

The authors of the *Biologia* however, in place of using Baird's name *cooperi* unite the birds of eastern and western Mexico under Ridgway's *magister*, which is a distinct subspecies from *cooperi* and should not be confused with either of Kaup's birds.

The color terms in this paper are based on Mr. Ridgway's 'Nomenclature,' and all measurements are given in millimeters.

I have again to thank Mr. Robert Ridgway and Dr. Chas. W. Richmond, of the National Museum, for their continued courtesies.

KEY TO SPECIES AND SUBSPECIES.

- Bill rounded**, with depth at angle of gonys nearly or quite equal to width at same place (subgenus *Myiarchus*)
- Wing and tail feathers without rufous or cinnamon area on either web; crown olive brown; back greenish olive - *panamensis* p. 29.
- Wing and tail feathers with distinct rufous or cinnamon area on one or both webs
- Inner web of outer tail feather usually entirely rufous (except in some specimens a narrow dusky line along shaft mainly near tip)
- Bill small and proportionately slender (exposed culmen usually less than 19 mm.)
- Size small, wing usually less than 86 mm. - *nuttingi* p. 37.
- Size larger, wing usually more than 93 mm. (♀'s in part) *cinerascens* p. 33.
- Bill stout and proportionally heavy (exposed culmen usually more than 19 mm.)
- Underside of neck and breast pale ashy gray *brachyurus* p. 40.
- Underside of neck and breast dark gray
- Exposed culmen not over 20 mm. - *erinitus* p. 29.
- Exposed culmen over 20 mm. - *residuus* p. 30.
- Inner web of outer tail feather partly or wholly dusky
- Inner web of outer tail feather wholly dusky *yucatanensis* p. 41.
- Inner web of outer tail feather partly dusky
- Inner web of outer tail feather with well defined dusky band along shaft, rufous along inner border to tip
- Bill long and heavy (usually 20 mm. or over); dusky band on inner web of outer tail feather usually broadest in middle.
- Size smaller, wing usually less than 105 mm. *mexicanus* p. 31.
- Size larger, wing usually more than 105 mm. *magister* p. 33.
- Bill small and slender, exposed culmen usually less than 18 mm.; dusky band on inner web of outer tail feather broadening gradually from base, widest at tip

- Inner webs of tail feathers mainly rufous *inquietus* p. 38.
 Inner web of tail feathers mainly dusky *yucatanensis* p. 41.
 Inner web of outer tail feather usually entirely rufous on basal two-thirds, with outer third more or less broadly tipped with dusky
 Bill smaller, slenderer; color darker - *cinerascens* p. 33.
 Bill larger, broader; color paler - *pertinax* p. 36.
Bill flattened with depth at angle of gonys decidedly less than width at same place (subgenus *Onychopterus*)
 Tail feathers usually distinctly edged on one or both webs with rufous or cinnamon
 Tail feathers distinctly edged on both webs with rufous or cinnamon
 Crown conspicuously darker than back (black or blackish)
 Crown sooty black - *nigricapillus* p. 44.
 Crown clove brown - *lawrencei* p. 42.
 Crown appreciably darker than back (usually between olive and sepia brown) - *querulus* p. 47.
 Tail feathers not at all or but slightly edged on inner webs with rufous or cinnamon
 Back greenish or greenish olivaceous
 Back greenish, crown intensely black - *bangsi* p. 45.
 Back greenish olivaceous, crown bistre brown
platyrhynchus p. 45.
 Back grayish olivaceous or hair brown
 Back grayish olivaceous; inner webs of tail feathers usually not edged with rufous - *olivascens* p. 48.
 Back hair brown; inner webs of tail feathers usually slightly edged with rufous - *tresmaria* p. 49.
 Tail feathers not edged on either web with rufous; no rufous edgings on wings; crown dull black - *nigriceps* p. 49.

DESCRIPTIONS OF SPECIES AND SUBSPECIES.

Genus *Myiarchus* Cabanis.

1845. *Myiarchus* Cabanis, in Tschudi, Fauna Peruana, Aves, 1845, p. 152. Type *Muscicapa ferox* Gmelin.

Typical *Myiarchus* is characterized by a rounded and proportionately deep bill; the depth at angle of the gonys nearly or quite equaling its width at the same place. It includes the majority of the species in this paper, viz., *M. ferox panamensis*, *M. crinitus*, *M. c. residuus*, *M. mexicanus*, *M. m. magister*, *M. cinerascens*, *M. c. pertinax*, *M. nuttingi*, *M. n. inquietus*, *M. brachyurus*, and *M. yucatanensis*.

***Myiarchus ferox panamensis* (Lawrence).**

PANAMA FLYCATCHER.

1860. *Myiarchus panamensis* Lawrence, Ann. Lyc. Nat. Hist. N. Y. VII, p. 284. May, 1860.

Type locality.—Lion Hill, Panama. Type in American Museum of Natural History (Lawrence collection).

Breeding range.—From nearly or quite to the southern border of Costa Rica (specimens examined from David, Chiriqui) through Panama (including San Miguel Island) into northern Columbia at least to Santa Marta. Not migratory.

Zonal distribution.—Humid Tropical.

Subspecific characters.—Larger than *ferox*; upper parts paler, more greenish olive.

Description of fresh plumage.—Crown olive, usually a little darker than back but often the same color; back greenish olive; upper tail coverts vary from hair brown to broccoli brown; tail coverts and outer webs of tail feathers edged with drab or isabella color; outer web of outer tail feather hair brown or drab, distinctly paler than inner web; rest of tail feathers plain dusky, slightly paler at tip; wing coverts, edges of secondaries and tertials hair brown (palest on tertials) and commonly tinged with slight shade of greenish; chin, throat and breast, ash gray; abdomen and under tail coverts sulphur yellow.

Measurements.—Averages of seven adult males from Panama and Chiriqui: Wing, 93.1 (87-96); tail, 90.3 (85-93); culmen, 19.1 (18-20); tarsus, 23.4 (22.5-24.5).

Averages of five adult females from Panama and Chiriqui: Wing, 91 (89-93); tail, 89 (87-91); culmen, 19.4 (18-21); tarsus, 23.7 (23-24.5).

General Notes.—*Myiarchus ferox* was described from Cayenne, Guiana, and the few specimens at hand from that and adjacent sections of South America appear to show that it is smaller with a smaller bill than *panamensis*, and the upper parts browner and less greenish. Birds from Chiriqui average a little larger than those from Panama. The series in the Bangs Collection from San Miguel Island, Panama, are not distinguishable from mainland birds in the same condition of plumage. Like *M. nigricaps* the present species is South American and only enters the area included within the limits of this paper at the northern extremity of its range. It has no near relative in North America.

***Myiarchus crinitus* (Linnaeus).**

GREAT CRESTED FLYCATCHER.

1766. *Muscicapa crinita* Linnaeus, Syst. Nat., I, 12th ed., p. 325. Based on the *Muscicapa cristata, ventre luteo* of Catesby, Car. I, p. 52, t. 52.

Type locality.—Catesby says "It breeds in Carolina and Virginia" and

gives no more definite type locality; but as in the case of most of Catesby's species the Carolina birds probably served for his description.

Breeding range.—Throughout eastern North America from New Brunswick and Manitoba south to northern Florida and to Bexar County, Texas.

Migrates through eastern and southern Mexico and Central America to Panama and the Santa Marta Mountains in Colombia.

Zonal distribution.—Upper and lower Austral and Transition (in breeding season).

Specific characters.—Size large; under side of neck and breast rather dark olive-gray; back distinctly *greenish* olive; inner web of outer tail feather mainly or entirely rufous.

Description of fresh plumage.—Top of head olive with a brownish shade; back greenish olive; upper tail coverts hair brown margined with tawny-ochraceous; wing coverts pale grayish drab, sometimes tinged with greenish yellow; tertials edged with dull grayish white, sometimes tinged with greenish yellow; basal part of outer web of all but outer primary edged with deep cinnamon rufous; outer webs of tail feathers thinly margined on basal half with tawny ochraceous; inner webs of tail feathers, except middle pair, mainly or entirely bright cinnamon-rufous (almost orange-rufous) with a more or less distinct but narrow line of dusky along shaft in the majority of specimens; chin, throat and breast olive gray; abdomen and under tail coverts clear bright yellow—between Naples yellow and sulphur yellow of Ridgway.

Description of young in first plumage.—Crown dull olivaceous-sepia brown; back dingy greenish olive; upper tail coverts hair brown broadly bordered and tipped with russet-cinnamon; tail as in adult but with inner webs of middle pair of tail feathers mainly cinnamon-rufous; wing coverts light buffy cinnamon; primaries and secondaries narrowly edged with cinnamon-rufous; tertials bordered with dull yellowish white, slightly tinged with buffy cinnamon; chin, throat and breast French gray; abdomen and under tail coverts primrose yellow.

***Myiarchus crinitus residuus* Howe.**

FLORIDA GREAT CRESTED FLYCATCHER.

1901. *Myiarchus crinitus residuus* Howe, Cont. N. Am. Orn., I, p. 30.
May 21, 1902.

Type locality.—Isstopoga Lake, Florida. Type No. 1233, adult male, Howe-Shattuck Collection.

Breeding range.—Peninsular part of Florida. Probably not migratory.

Zonal distribution.—Lower Austral.

Subspecific characters.—Wing averages a little shorter and bill much larger than in *M. crinitus*.

COMPARATIVE AVERAGE MEASUREMENTS OF MYIARCHUS CRINITUS AND M. CRINITUS RESIDUUS.

Name	Sex	No. of spec.	Wing	Tail	Culmen	Tarsus
<i>M. crinitus</i>	♂	10	106.1 (103-112)	92.7 (89-97)	19.3 (18-20)	21.7 (21-22)
" "	♀	10	98.7 (98-102)	86.9 (83-93)	19.1 (18-20)	21.4 (21-22)
<i>M. c. residuus</i>	♂	5	102.4 (101-105)	91.8 (90-93)	21.3 (20.5-22.5)	21.7 (20-23)

General Notes.—As first pointed out by Mr. Bangs, the Great Crested Flycatchers of southern Florida are readily distinguished from birds occupying other parts of its range by the much greater size of their bills. This character appears so constant and is so marked that it seems to be worthy of recognition by name, although not accompanied by any other equally well marked differences. Unfortunately the birds from the Carolinas are most like those from New England, so that Mr. Bangs in his *Myiarchus crinitus boreus* (Auk, XV, p. 179, April, 1898) renamed the type form. The name afterwards given by Mr. Howe to the bird of southern Florida must therefore be recognized. The amount of variation in color of this species aside from that due to seasonal wear and fading is not great, though occasional specimens have a lighter or more yellowish green shade on the back. The main variation is in the tail markings. Only sixteen out of sixty-six specimens of true *M. crinitus* have the inner web of the outer tail feather entirely rufous. The other fifty specimens have a narrow dusky line along the inner side of the shaft, varying from a thin barely appreciable line to a well marked band covering one-fourth the width of the web. This dusky line on inside of shaft of outer tail feather is present in seven out of eight of the birds from southern Florida. There appears to be no geographic significance in this marking, as it occurs throughout the range of the species and also in both sexes.

Myiarchus mexicanus* (Kaup)

MEXICAN CRESTED FLYCATCHER.

1852. *Tyrannula mexicana* Kaup, Proc. Zool. Soc. London, 1851, p. 51. Published October 28, 1852.

Type locality.—"Mexico." Type sent to the Darmstadt Museum from

*As explained in the notes under *Myiarchus cinerascens* the name *mexicanus* is probably a synonym of *cinerascens* but is used here in conformity with present custom until the type can be examined.

In case *mexicanus* proves to be a synonym of *cinerascens* then *Myiarchus cooperi* Baird, Birds of N. Am., p. 180, 1858 (Type from "Mexico" Verreaux Collection, No. 9100 U. S. National Museum) becomes available for this species.

Mexico by Mr. Wollweber but no definite locality mentioned.

Breeding range.—From the Rio Grande Valley in southern Texas, south along the tropical and subtropical parts of eastern Mexico to Yucatan, Cozumel Island, Belize, northeastern Guatemala, and Honduras (Ceiba). Migratory only in northern part of its range.

Zonal distribution.—Lower Sonoran, Arid and Humid Tropical.

Specific characters.—Crown olive; back brownish olive; wings and tail (on both webs) strongly margined with rufous.

Description of fresh plumage.—Top of head olive with a greenish shade, feathers indistinctly streaked with darker centers; back dull brownish olive, slightly grayer than crown; back of neck slightly grayer than back, forming an indistinct collar; upper tail coverts dingy raw-umber brown, sometimes edged with dull rusty; wing coverts broadly edged with dull brownish white; tertials edged with white, tinged with pale greenish; primaries, except first, edged along middle with dark rufous; chin, throat and breast ashy gray, palest on chin; abdomen and under tail coverts deep primrose yellow sometimes slightly washed with gray (especially in Yucatan and Cozumel specimens); outer web of outer tail feather varying from plain drab to lighter more grayish brown; inner web of outer feather with a band of dusky along shaft from near base to tip, usually a little broader in middle where it occupies from one-fifth to over one-half the width of web; other tail feathers, except middle pair, similar, but dusky band decreasing toward middle of tail.

Measurements.—Averages of seventeen adult males from northeastern Mexico: Wing, 102.4 (98-106); tail, 95.4 (90-98); culmen, 21.3 (20-23); tarsus, 23.5 (22.5-25).

Averages of five adult females from northeastern Mexico: Wing, 95.7 (94-98); tail, 90 (88-91); culmen, 19.9 (19-21.5); tarsus, 22.4 (21-23).

General Notes.—In worn or faded plumage much of the greenish wash on upperparts is lost and the coloration closely resembles that of *magister*. Specimens from the State of Vera Cruz average larger than those from the Rio Grande while those from Yucatan and Cozumel Island are smaller than from any other part of their range. Cozumel birds are also slightly darker than those from elsewhere. This form reaches the borders of the tableland along river valleys but does not inhabit the tableland proper. Its range comes in contact with that of *magister* only through the low gap in the elevated continental area at the Isthmus of Tehuantepec. A large proportion of specimens have the dusky line along shaft on inner web of outer tail feather appreciably broadest in the middle and narrowing toward each end, but in some individuals it is nearly the same width most of its length and in a few cases becomes a little broader near the tip.

A typical specimen in the Bangs Collection taken by Mr. W. W. Brown, January 16, 1902, at Ceiba, Honduras, is the southernmost record of this species with which I am familiar. This was perhaps a winter straggler.

***Myiarchus mexicanus magister* Ridgway.**

ARIZONA CRESTED FLYCATCHER.

1884. *Myiarchus mexicanus magister* Ridgway, Proc. Biol. Soc. Wash., II, p. 90.

Type locality.—Camp Lowell, near Tucson, Arizona. Type No. 86,005, adult male, U. S. National Museum.

Breeding range.—From northwestern Chihuahua and southern Arizona through western Mexico at least to the border of Chiapas. A partial winter migration of northern birds extends as far as Guatemala, but they are resident throughout a large part of their range.

Zonal distribution.—Lower Sonoran and Arid Tropical.

Subspecific characters.—Generally similar to and in some cases difficult to distinguish in coloration from pale or faded specimens of true *mexicanus*, but upper parts averaging grayer and less greenish; throat and breast slightly paler ashy, and abdomen a trifle clearer or brighter yellow; size averages decidedly larger.

Description of first plumage.—Crown light seal brown; back dark hair brown; upper tail coverts, broad border to outer webs and most of the inner webs of tail feathers dull, dark cinnamon rufous; lesser wing coverts tipped and tertials edged with pale vinaceous-buff; greater wing coverts, secondaries and primaries broadly edged with dull rusty rufous, paler than on borders of tail feathers; chin, throat and breast pearl gray becoming darkest on breast; abdomen and under tail coverts pale primrose yellow.

Measurements.—Averages of twenty-three adult males: Wing, 108.9 (103-114); tail, 100.3 (93-106); culmen, 23.2 (22-25); tarsus, 25.4 (24.5-26).

Averages of fifteen adult females: Wing, 106.7 (100-110); tail, 98.1 (94-102); culmen, 23 (22-25); tarsus, 25.1 (24-26).

General Notes.—Size is the only character by which *magister* can be distinguished in a great majority of cases. Specimens from the type region in southern Arizona are considerably larger than those from the more southerly part of their range. Among the series from various sections of the range, the one from the Tres Marias Islands averages the smallest thus paralleling the relatively smaller size of the series of typical *mexicanus* from Cozumel Island, off the coast of Yucatan. The types of both "*cooperi*," and *magister*, are larger than average birds of the forms they represent.

***Myiarchus cinerascens* (Lawrence).**

ASH-THROATED FLYCATCHER.

1851. *Tyrannula cinerascens* Lawrence, Ann. Lyc. Nat. Hist. N. Y., V, p. 121. September, 1851.

Type locality.—Western Texas.

Breeding range.—From the Dalles, Oregon, Cheyenne, Wyoming, and

central southern Texas south to northern Lower California, central Sonora and at least to Zacatecas on the southern part of the Mexican tableland.

Winter range.—Migrates over all of Lower California and the rest of Mexico (except the southeastern tropical parts) at least to Guatemala.

Zonal distribution.—Upper and lower Sonoran.

Specific characters.—Upper parts grayish brown; crown a little darker than back; inner webs of tail feathers mainly rufous but tipped more or less broadly with dusky on outer feather.

Description of fresh plumage.—Top of head grayish bistre brown, usually a little darker than back; back dark hair brown, becoming paler and grayer in worn plumage; back of neck sometimes paler or more ashy than back; upper tail coverts dark hair brown, sometimes edged slightly with raw umber or russet (never in worn specimens); wing coverts and tertials broadly, and secondaries narrowly edged with grayish white; primaries (except first) edged with rufous; primaries, secondaries, tertials and top of tail feathers clove brown, palest on tertials; underparts from chin over breast and wash over fore-part of abdomen pale cinereous gray, becoming whitish in faded plumage; abdomen and under tail coverts primrose yellow (becoming whitish in faded plumage); basal half or three-fourths of outer web of outer tail feather distinctly whitish, latter color replaced on distal end by dusky line bordering shaft and widening toward end of feather in proportion to extent of same color on inner web of feather; inner web of outer feather cinnamon rufous from base to middle of feather, the rufous replaced along shaft at varying distances beyond this to within one-fifth of length from tip by dusky line gradually broadening to include entire tip and sometimes extending back as narrow border some distance along inner side of feather; extent of dusky tip varies from narrow border to half an inch or more; tips of other tail feathers except middle pair with similar pattern but amount of dusky decreasing inward.

Female.—Dusky on inner web of outer tail feather not rarely restricted to narrow wedge shaped line along shaft on terminal part of feather much as in *M. nuttingi*; but such birds are readily distinguishable by their much greater size.

Young in first plumage (Pecos River, northwest of Comstock, Tex., August 1, 1902).—Top of head dull rusty brown; back dull hair brown; upper tail coverts and tail mainly light cinnamon rufous, including middle pair of feathers; outer web of outer feather paler, except tip; narrow dusky shaft lines on distal third of all tail feathers and broad dusky band along basal two-thirds of shaft except on middle pair; underparts pale ashy whitish to breast; abdomen and under tail coverts yellowish white.

Measurements.—Averages of ten adult males from western Texas: Wing, 101.5 (99-103); tail, 95.2 (93-98); culmen, 18.9 (17.5-20); tarsus, 23.7 (23-24).

Averages of ten adult females from western Texas: Wing, 94.7 (91-98); tail, 87.9 (82-93); culmen, 17.9 (16.5-19); tarsus, 22.7 (21-24).

General Notes.—In "The Auk" for October, 1892, p. 394, was recorded the supposed occurrence in Arizona of *Myiarchus nuttingi* based upon three specimens, all females, in the Biological Survey collection—one from Rillito Creek, near Tucson, one from Oracle, and another from Prescott. After a detailed study of the large series of *Myiarchus cinerascens* and its near relatives in the Biological Survey and National Museum collections, it has become evident that all the supposed specimens of *M. nuttingi* from the United States are really females of *cinerascens*. The error in identification arose from the previously unknown fact that a considerable percentage of the females of *cinerascens* have the dusky area restricted at the tips of the inner webs of the outer tail feathers, sometimes being almost entirely absent and thus producing the exact tail pattern of *nuttingi*.

Myiarchus nuttingi is a much smaller species than *cinerascens* and is represented in the National Museum collection by the type only. There are two specimens in the Biological Survey collection, one from Nenton, Guatemala, and one from Ocozucua, Chiapas, the latter probably the most northerly actual record for the species. The broad area lying between the breeding range of *M. cinerascens* and that of *M. nuttingi* is occupied as shown below by *M. nuttingi inquietus* (Salvin and Godman).

I have carefully measured a series of *M. cinerascens* from the type region in western Texas, another from southern Arizona, another from northern California and Oregon, and still another of winter migrants from southern Mexico and northern Guatemala and the averages show close uniformity in size throughout its range. The size, when comparison is made between specimens of the same sex, is so much greater in *cinerascens* that the species may be at once distinguished from *nuttingi* by this character alone.

The identification of specimens of *cinerascens* as *nuttingi* was due to the almost precise similarity of the patterns of color on the outer tail feathers between these specimens and the type of *nuttingi*. On examination of the series of *cinerascens* at hand I find that among 113 males there is not a single specimen that lacks a definite dusky tip to the outer tail feather, although sometimes reduced to a narrow dusky border. On the other hand among 60 specimens of females, 15 of them showed a marked reduction of the dusky at tip of inner web of outer tail feather and a corresponding extension of the rufous. Several of these, in addition to the three specimens cited from Arizona, have the dusky so reduced on this feather that the rufous covers practically all of the inner web to the tip as in *nuttingi*. These were taken on the Santa Cruz River west of the Patagonia Mountains, Arizona, at Owens lake, Inyo County, and Mountain Spring, San Diego County, California, Alpine, mouth of Nueces River and Boquillas, Texas. Others with the dusky much reduced and forming merely a slender wedge-shaped line next the vane on the terminal part of the feather were taken at Baird, California, Santa Cruz River, Arizona, and a winter specimen at Mazatlan, Sinaloa, Mexico. Every gradation is shown in this series between the pattern on the outer tail feather of typical *cinerascens* and

nuttongi but they are all females, typically *cinerascens* in size and general coloration, and occur sporadically practically throughout the range of the species. From the frequency of this variation of the females it appears that there is a tendency toward the extension of the rufous at the expense of the dusky tip of the outer tail feather among them which is not shared equally by the males. While this variation appears to have no geographical significance, yet it evidently, judging from the specimens examined, occurs most frequently in southern Arizona. All of the 105 males examined have the tip of the outer tail feather sufficiently typical to enable one to identify them by this character without trouble, although there is considerable variation in the extent of the dusky on the tip. In some cases the feather is entirely rufous on the inner web to within one-fifth of its length from the tip, where the dusky begins next the vane and broadens rapidly into a narrow band occupying the tip of the feather and sometimes extending down a little along the inner border. In other cases the dusky begins at varying distances along the shaft to within one-third of its length from the base and extends outward in a gradually widening line to occupy the terminal 5 to 15 millimeters of the feather and may or may not extend back along the inner edge of the feather sometimes nearly or quite halfway to the base. When the dusky extends back along the inner edge of the feather the outer end of the rufous on this vane forms a narrowing point on the middle of the web. In other specimens it is cut squarely off by the inward extension of the dusky near the end of the feather. This variation occurs throughout the range of the species.

Myiarchus nuttingi inquietus (Salvin and Godman) replaces *M. cinerascens* to the south in Mexico, and the material at hand appears to show that they are distinct species.

***Myiarchus cinerascens pertinax* (Baird).**

CAPE ST. LUCAS FLYCATCHER.

1859. *Myiarchus pertinax* Baird, Proc. Acad. Nat. Sci. Phila., 1859, p. 303.

Type locality.—Cape St. Lucas, Lower California. Type No. 12,944. U. S. National Museum.

Breeding range.—Cape region of Lower California north at least to Pichilínque Bay. Not migratory.

Zonal distribution.—Arid Tropical and border of Lower Sonoran.

Subspecific characters.—Similar to *cinerascens* but grayer above and more whitish below; size smaller; bill larger.

Description of first plumage.—Crown warm sepia brown; back hair brown; upper tail coverts dull cinnamon rufous; middle pair of tail feathers strongly margined with same; outer webs of rest of tail feathers except outer one similarly margined; outer web of outer feather whitish

on basal half and becoming drab on distal third; inner webs of all but middle pair plain cinnamon rufous except for a slender dusky line along shafts near tips; wing coverts tipped with whitish and narrowly edged with dull cinnamon; tertials edged with whitish; secondaries broadly edged with cinnamon shading into broad edgings of light cinnamon rufous on primaries; chin, throat and breast pale pearl gray; abdomen and under tail coverts white with the faintest tinge of yellowish.

Measurements.—Averages of three adult males; wing, 94.6; tail, 89.3; culmen, 19.6; tarsus, 23.3.

General Notes.—There is some difficulty in distinguishing specimens of *pertinax* from faded ones of *cinerascens*, but the larger bill of *pertinax* and its smaller size are usually sufficiently marked to distinguish them. In fairly fresh plumage *pertinax* is distinctly grayer on the upper parts. The exact limits between the ranges of the two forms is still undetermined.

***Myiarchus nuttingi* Ridgway.**

NUTTING'S FLYCATCHER.

1882. *Myiarchus nuttingi* Ridgway, Proc. U. S. National Museum, V, p. 394.

Type locality.—La Palma, Costa Rica. Type No. 87,391, U. S. National Museum.

Breeding range.—Costa Rica (La Palma); Honduras (on Nicaraguan boundary 180 miles from Pacific Coast); Guatemala (Nenton); Mexico (Ocozucua, Chiapas). Not migratory.

Zonal distribution.—Arid and Semi-Arid Tropical.

Specific characters.—Size small, wing not over 88 mm.; back rather light olivaceous brown; inner web of outer tail feather usually almost wholly rufous.

Description of fresh plumage.—Crown olive brown with slightly darker shaft lines, and borders of feathers with a shade of bistre brown; back varying from slightly grayish to yellowish olive, usually with less greenish than in *brachyurus*; upper tail coverts dark broccoli brown shaded and slightly edged with dark raw umber; wing coverts and tertials broadly edged with dingy brownish white, palest on tertials; primaries edged with dark rusty; outer web of outer tail feather light drab; inner web usually plain rufous except a fine line of dusky along shaft near tip, but sometimes with dusky line along shaft much as in *iniquetus*; chin, neck and breast dull gray, palest on throat; abdomen and under tail coverts between primrose and sulphur yellow. Upper parts of worn specimens, like the type, are dull grayish, olive brown.

Measurements.—Averages of two adult males: Wing, 86.5 (85-88); tail, 84 (81-87); culmen, 17.2 (17-17.5); tarsus, 22 (21-23).

Adult female (one specimen): Wing, 85; tail, 84; culmen, 17; tarsus, 22.

General notes.—This species has a close general resemblance to

brachyurus and apparently occupies about the same range, for both have been taken along the Pacific coast region from Costa Rica to Chiapas, Mexico. Its smaller size, less greenish upperparts and slightly darker underparts are the main characters. The small bill of *nuttingi* at once distinguishes it among the specimens of *brachyurus* at hand. In the original description of *nuttingi* the specimens cited as belonging to that species, with the exception of the type, all proved to belong to another species which Mr. Ridgway afterwards described as *brachyurus*, thus leaving the type the unique representative of *nuttingi* in the National Museum collection until two others were secured by Mr. Goldman and myself in Chiapas and Guatemala. Through the lack of definite knowledge of just what *nuttingi* represented, quite a number of erroneous citations of this species have been made, and its range unwarrantably extended far beyond its real limits. Attention is called to this in the notes upon *M. cinerascens*.

A specimen in the Bangs collection, taken on the boundary line between Nicaragua and Honduras, 180 miles from the Pacific coast, differs from typical birds in having a well marked dusky line along the shaft on the inner web of outer tail feather, and less conspicuously the same on other tail feathers, as in typical *inquietus*. The size and color, however, show that this is *nuttingi*, and these tail markings merely due to individual variation.

***Myiarchus nuttingi inquietus* (Salvin and Godman).**

GODMAN'S FLYCATCHER.

1889. *Myiarchus inquietus* Salvin and Godman, Biol. Cent.-Am., II, p. 88. March, 1889.

Type locality.—Acahuizotla*, Guerrero, Mexico. Type in British Museum.

Breeding range.—Arid tropical and subtropical parts of southwestern Mexico from central western Chihuahua and southern Sonora to Isthmus of Tehuantepec and inland to southern Puebla. No definite migration, but strays in winter to Guatemala.

Specimens examined from: Sonora (Nacosari, Alamos); Chihuahua (Batopilas, Hacienda San Rafael, El Carmen, Durasno); Sinaloa (Culiacan); Durango, (Chacala); Tepic (Acaponeta); Zacatecas (San Juan Capistrano); Jalisco (La Barca); Michoacan (La Salada, Zamora); Morelos. (Yecapixtla); Puebla (Tehuacan); Guerrero (Acahuizotla, Dos Arroyos, El Rincon, Acapulco, Papayo, El Naranjo, La Lagunilla, Rio Balsas); Oaxaca (Huilopec, Tehuantepec City, Santa Efigenia, Chihuitan); Chiapas (Gineta Mountains); Guatemala (Nenton).

*This is a small plantation on the road between Acapulco and Chilpancingo. The spelling of the name Acaguisotla given in the original description is erroneous for the owners of the place spell it as given above.

Zonal distribution.—Lower Sonoran and Arid Tropical.

Description of fresh plumage.—Crown grayish bistre brown, a little darker than back; back grayish olive brown, becoming much like *cinerascens* in faded plumage; upper tail coverts light sepia brown, strongly edged and often distinctly colored throughout with tawny olive or rusty olive; primaries, secondaries, tertials and top of tail dark hair brown; wing coverts and tertials edged with dull brownish white, bleaching to dull whitish; primaries (except first) narrowly edged along middle with rusty rufous; chin, neck and breast pale cinereous ashy, little if any darker than in winter specimens of *cinerascens*; abdomen and under tail coverts sulphur yellow; outer web of outer tail feather in some specimens uniform pale hair brown and in others edged more or less with whitish; inner web of this feather cinnamon rufous with a line of dark hair brown (varying somewhat in shade) along shaft beginning on basal third of feather and gradually widening to occupy from one-fourth to entire width of inner web at tip; same pattern repeated with decreasing amount of dusky inward on other feathers except middle pair.

Description of first plumage (♀ Rio Balsas, Guerrero, Mexico, June 3, 1903).—Much like same plumage of *M. cinerascens* but darker; top of head sepia brown with a light wash of dull tawny; back dull, dark hair brown; wing coverts and tertials edged with lighter, varying from pinkish buff to ochraceous buff; upper tail coverts dark cinnamon rufous with dusky shaft streaks; tail cinnamon rufous with bases of middle pair of feathers dusky and a narrow shaft line of same extends thence toward end of feathers gradually broadening to occupy most of feather near tip, but completely bordered by rufous; outer web of outer feather dusky, edged broadly along middle two-thirds with pale buffy whitish; outer web of other tail feathers with broad dusky band along shaft and narrower edging of rufous; inner webs of all except middle pair plain rufous. Underparts from chin over breast pale cinereous ashy; abdomen and under tail coverts pale yellowish white.

Measurements.—Average of ten adult males*: Wing, 91.2 (88-93); tail, 88.4 (85-92); culmen, 18 (17.5-21); tarsus, 22.4 (22-23).

Averages of five adult females*: Wing, 86.8 (85-88); tail, 84.8 (81-87); culmen, 17.2 (17-18); tarsus, 21.5 (21-22).

General notes.—Up to the present time, except for the brief notes published with the original description, this bird has remained comparatively unknown. During the spring of 1903, Mr. Goldman and I secured specimens at the type locality and elsewhere throughout this region, which added to specimens already in the Biological Survey and National Museum form an excellent series covering a wide range in western and southern Mexico. Instead of being, as the describers suggested, "a small resident form of the migratory *M. crinitus* of eastern America, which being isolated in the Sierra Madre del Sur, has acquired distinc-

*Specimens from southwestern Mexico, mainly from the region about the type locality.

tive characters," it is a common resident of western Mexico from Batopilas in western Chihuahua to the Isthmus of Tehuantepec. The specimens from the Isthmus and adjacent part of Chiapas are distinctly intergrades showing that *inquietus* is merely a northern subspecies of *Myiarchus nuttingi*, which latter does not appear to range north of Chiapas.

Nine specimens, representing both sexes, from the Pacific Coast of the Isthmus of Tehuantepec and thence to the border of Chiapas, have the brown line along the inside of the shaft of the outer tail feather considerably reduced, often to half or less the amount found in typical birds. They are also rather smaller than typical birds and their color is otherwise like that of *nuttingi*. This combination of exactly intermediate characters in the birds of this section with the occurrence of undoubted *nuttingi* a little farther down in Chiapas and Guatemala appears sufficiently conclusive evidence to warrant placing *inquietus* as a subspecies of *nuttingi*. In general coloration these two forms appear to be practically identical so that they are to be separated only by size and pattern of color on the outer tail feathers.

M. n. inquietus is intermediate in size between *nuttingi* and *cinerascens* and there is a close resemblance in the color of the upper parts of slightly faded specimens of *inquietus* and *cinerascens*. In freshly assumed fall plumage the upper parts of both these species are darker than at any other time. At such times *inquietus* may be distinguished by its darker and browner upper parts and the richer yellow of the abdomen as well as by the tail pattern.

A careful examination of the large series of *inquietus* and *cinerascens* now available has failed to reveal any evidence of intergradation. Birds from the river valleys of western Chihuahua and Sonora differ from *cinerascens* in size and color almost equally with those from Guerrero. The breeding range of *M. inquietus* appears to be complementary to that of *cinerascens*, but during the winter *cinerascens* migrates over the range of *inquietus*.

These two birds have evidently been confused by different authors under the name of *cinerascens* so that without the specimens for verification it will be impossible to satisfactorily place some of the winter citations for western and southern Mexico. Summer records within the demonstrated range of either can be more readily handled.

***Myiarchus brachyurus* Ridgway.**

SHORT-TAILED FLYCATCHER.

1887. *Myiarchus brachyurus* Ridgway, Man. N. Am. Birds, p. 334.

Type locality.—Ometepe, Nicaragua. Type No. 91,057, U. S. National Museum.

Breeding range.—Costa Rica (San Lucas, Bahia de Salinas); Nicara-

gua (Ometepe, San Juan del Sur); Mexico (Tonala, Chiapas). Not migratory.

Zonal distribution.—Arid and Semi-Arid Tropical.

Specific characters.—Generally similar to *M. nuttingi* but larger and heavier with much stouter, heavier bill and proportionately shorter tail.

Description of fresh plumage.—Crown dark olive shaded with greenish and a slight buffy suffusion on borders of feathers in some specimens; back lighter olive with a greenish shade (latter nearly or quite absent in worn plumage); back of neck sometimes a little grayer than back; upper tail coverts dark broccoli brown edged and sometimes suffused throughout with dark rusty rufous; primaries, except first one, edged along middle with dark rufous; wing coverts and tertials edged with dull whitish or brownish white with shade of greenish on coverts in some specimens; outer web of outer tail feather pale drab; inner web uniform rufous, sometimes with a narrow inconspicuous line of dusky along shaft; other tail feathers, except middle pair, similar; chin, neck and breast ashy gray palest on chin; abdomen and under tail coverts deep primrose yellow.

Measurements.—Averages of two adult males: wing, 96 (93-99); tail, 86 (85-87); culmen, 21 (21); tarsus, 23.5 (23-24).

Averages of five adult females: wing, 94.4 (93-96); tail, 85.2 (81-87); culmen, 20.7 (19.5-21); tarsus, 22.6 (22-23).

General notes.—In general coloration this species differs but slightly from *M. nuttingi* but may be easily distinguished by differences in size and proportion, and especially by the much larger bill, and more rusty upper tail coverts. Although resembling *eritatus* somewhat in size and pattern of color on outer tail feathers yet the much paler colors above and below readily distinguish them from that species. Like other members of the genus this species gradually fades in spring until the upper parts lose the greenish cast and become dull olive brown.

***Myiarchus yucatanensis* Lawrence.**

YUCATAN CRESTED FLYCATCHER.

1871. *Myiarchus yucatanensis* Lawrence, Proc. Acad. Nat. Sci. Phila., 1871, p. 235. Based on the *Myiarchus mexicanus* Lawrence (nec Kaup) Ann. Lyc. Nat. Hist. N. Y., IX, p. 202, June, 1869.

Type locality.—Merida, Yucatan. Type in American Museum of Natural History (Lawrence Collection).

Breeding range.—Peninsula of Yucatan and Cozumel Island. Not migratory.

Zonal distribution.—Arid or Semi-Arid Tropical.

Specific characters.—Crown bistre brown; upper tail coverts hair brown, slightly if at all edged with russet; inner webs of all but middle

and often outer pair of tail feathers broadly edged with well defined band of cinnamon buff.

Description of fresh plumage.—Crown bistre brown with or without a slight olivaceous shade; back olive; upper tail coverts hair brown with or without slight edging of russet; tail feathers edged externally on basal half with drab, sometimes thinly bordered with dull rusty; primaries (except outer pair) and part of secondaries distinctly edged with rusty rufous; wing coverts broadly tipped with drab or broccoli brown; tertials broadly edged with grayish white; chin, throat and breast rather dark ash gray; abdomen and under tail coverts straw yellow; outer web of outer tail feather drab, varying in shade but usually much lighter than inner web and sometimes edged with whitish; inner webs of all but outer and middle pair of tail feathers with a well defined border of cinnamon buffy covering from one-third to one-half the web; inner web of outer tail feather sometimes plain dusky but more often slightly and sometimes distinctly bordered with cinnamon buffy.

Measurements.—Averages of four adult males: Wing, 84.7 (83-87); tail, 84 (81-85); culmen, 17.5 (17-18); tarsus, 21.8 (21-22.5).

Averages of two adult females: Wing, 78.5 (78-79); tail, 79 (78-80); culmen, 17; tarsus, 21.7 (21.5-21.7).

General notes.—As already noted by Mr. Sclater (Cat. Bds. Brit. Mus. XIV, p. 260), the present species appears to be most nearly related to the *Myiarchus stolidus* group of the West Indies. On the mainland it has no close relative nearer than northern South America.

The proportions of wing and tail vary considerably, and in the series of seventeen specimens examined (mostly not sexed) nine had the tail equalling or longer than the wing and eight had the tail shorter than the wing.

Subgenus **Onychopterus** Reichenbach.

1850. *Onychopterus* Reichenbach, Av. Syst. Nat., t. lxxv. Type *Tyrannus tuberculifer* D'Orbigny and Lafresnaye.

This group is characterized by a flattened and proportionately broad bill; the depth at the angle of the gonys being decidedly less than its width at same place. The species in the present paper belonging to this subgenus are *M. lawrencei* with its subspecies and *M. nigriceps*.

Myiarchus lawrencei (Giraud).

LAWRENCE'S FLYCATCHER.

1841. *Muscicapa lawrencei* Giraud, Sixteen Birds of Texas, t. 2, f. 1.

Type locality.—"Texas." The type, No. 47,690 U. S. National Museum, agrees in size and other characters with birds of northeastern Mexico, whence it probably came.

Breeding range.—From near Monterey, Nuevo Leon, in northeastern

Mexico, south in foothill country to the state of Vera Cruz and eastern San Luis Potosi, and thence generally distributed in tropical and subtropical parts of eastern Mexico to the Isthmus of Tehuantepec. At the Isthmus they spread across to the Pacific coast and occupy suitable areas on both coasts in southern Oaxaca, Tabasco, Chiapas, and at least part of Guatemala. They do not occur in the coast belt of northern Tabasco and Campeche, nor the Peninsula of Yucatan, where they are replaced by *M. l. platyrhynchus*. Not migratory.

Zonal distribution.—Arid Tropical in northern. Humid Tropical in southern part of range.

Specific characters.—Crown decidedly darker than back—usually clove brown; back brownish olive; tail feathers strongly edged externally with rufous and inner border of inner webs usually distinctly edged with vinaceous-buffy or cinnamon-buffy.

Description of fresh plumage.—Crown clove brown, sometimes more or less washed with olive, but always much darker than back; back olive, always with a brownish shade, but often with a slight greenish tinge; upper tail coverts broccoli brown edged and often suffused with russet or cinnamon-rufous; secondaries and all but first primary and outer borders of tail feathers strongly edged with dark rusty rufous; wing coverts usually with broad edging of cinnamon or russet varying to isabella color; chin, throat and breast ash gray; abdomen and under tail coverts rich sulphur yellow; inner webs of tail feathers usually with a distinct and often broad border of reddish-buffy, broadest on inner rectrices and often present on middle pair; occasionally this buffy border nearly or quite absent, especially in specimens from southern part of range.

Description of young in first plumage.—Crown seal brown; back dark sepia brown; upper tail coverts dark hair brown broadly edged with russet; tail feathers broadly bordered on both sides by light cinnamon-rufous; wing coverts, tertials, primaries and secondaries strongly edged with rusty vinaceous-cinnamon not very different from color on border of tail feathers; chin and throat light gray shading into olive gray on sides of neck and breast; abdomen and under tail coverts primrose yellow, deepest on middle of abdomen.

Measurements of typical specimens from Tamaulipas and Nuevo Leon.—Averages of six adult males: Wing, 87.7 (82-90); tail, 84.7 (77-89); culmen, 17.1 (16.5-18); tarsus, 21 (20-22).

Averages of five adult females: Wing, 83.8 (80-88); tail, 80.2 (76-84); culmen, 16.8 (16-18); tarsus, 20.2 (20-21).

General notes.—Typical *Myiarchus laurencei*, characterized by its large size and the amount of rufous edgings on both webs of tail feathers, is found only in northeastern Mexico from Monterey, Nuevo Leon, to northern Vera Cruz. South of this there is a steady decrease in size to the Isthmus of Tehuantepec. This decrease in size is accompanied by a decrease in the amount of rufous bordering the inner webs of the tail feathers. Birds from south of the Isthmus to Guatemala are decidedly smaller than those from the northern part of the range, and

agree closely in this character with *nigricapillus* from Costa Rica, but the colors of upperparts are most like those of typical *lawrencei*, with which I have placed them. The birds from southern Vera Cruz to Guatemala occupy a belt between the ranges of *querulus* on one hand and *platyrhynchus* on the other, and the occurrence of intergrades with these forms and with *nigricapillus* to the south renders the exact determination of many specimens from this region extremely difficult. In cases of this kind one is forced to name specimens arbitrarily or leave them undetermined. The amount of rufous margination to inner webs of tail feathers sometimes covers half the web in specimens from northeastern Mexico, and in southern Vera Cruz and southward individuals occur in which there is little or no trace of it, though they are not numerous. Some specimens from Jalapa and other localities farther south in Vera Cruz have the buffy border on inner webs of tail feathers much restricted and sometimes indistinct. The backs in winter specimens throughout its range in northeastern Mexico vary from dull olivaceous to olivaceous brown. Resident birds from Santa Efigenia, Oaxaca, and from other points on the Pacific slope south of Tehuantepec in Chiapas are more like typical *lawrencei* in size and color than those from the southern part of its range on the Gulf coast.

***Myiarchus lawrencei nigricapillus* (Cabanis).**

COSTA RICAN FLYCATCHER.

1861. *Myiarchus nigricapillus* Cabanis, Journal für Ornithologie, 1861, p. 250 (in text).

Type locality.—Costa Rica. No type nor specific locality mentioned.

Breeding range.—Central America from southern Guatemala to Costa Rica. Not migratory.

Zonal distribution.—Humid Tropical.

Subspecific characters.—Crown blacker than in true *lawrencei*; back darker olive; size smaller.

Description of fresh plumage.—Crown brownish black, sometimes tinged with olive; back dark olive, slightly less grayish than in true *lawrencei*; upper tail coverts dark broccoli brown edged with dark russet or rusty rufous; wing (except first primaries) and tail feathers edged externally with dark russet or rusty rufous; wing coverts bordered with cinnamon or russet; chin, throat and breast dull ash gray, averaging darker than in *lawrencei*; abdomen and under tail coverts rich sulphur yellow; inner border of tail feathers usually with narrow edging of cinnamon buffy, this border occasionally covering one-fourth of web.

Measurements of specimens from Costa Rica and Nicaragua: Averages of four adult males: Wing, 82 (80-83); tail, 77.2 (75-79); culmen, 16.1 (16-16.5); tarsus, 20.2 (20-20.5).

Averages of four adult females: Wing, 76.5 (75-78); tail, 69.5 (66-72); culmen, 16 (16); tarsus, 19.6 (19-20).

General notes.—Birds from Honduras, Nicaragua and Costa Rica, of which I have examined a considerable number, agree closely in size and color. The Honduras birds, however, average a little smaller than those from Costa Rica. There is the usual variation in amount of rufous edgings to outer borders of wings and tail.

***Myiarchus lawrencei bangsi* subsp. nov.**

BANGS'S FLYCATCHER.

Type.—No. 8758, adult male, Collection of E. A. and O. Bangs. From Boquete, Panama. Collected January 26, 1901, by W. W. Brown, Jr.

Breeding range.—Panama. Not migratory.

Zonal distribution.—Humid Tropical.

Subspecific characters.—Crown intensely black; back greenish; inner webs of tail feathers without buffy borders.

Description of fresh plumage.—Crown intensely black; back dark greenish olive; upper tail coverts dark hair brown slightly edged with dull russet; tail bordered externally with dull russet; inner webs of tail feathers plain dusky; wing coverts bordered with isabella color lightly edged with cinnamon; tertials narrowly edged with grayish white; primaries (except two outer ones) finely edged with russet; secondaries more broadly edged with same; chin, throat and breast dull ashy or olive gray; abdomen and under tail coverts between a rich primrose yellow and sulphur yellow.

Measurements.—Adult male (type): Wing, 84; tail, 81; culmen, 15.5; tarsus, 21.

Adult female (topotype): Wing, 78.5; tail, 73; culmen, 16; tarsus, 20.

General notes.—The intensely black crown and greener back serve to distinguish the present form from any of the other subspecies of *M. lawrencei*. The tail is also blacker and less bordered with rufous than in *nigricapillus*, and the bill appreciably smaller. The two specimens from Boquete are the only ones I have seen of *M. l. bangsi*, but they are so different from the numerous specimens of *nigricapillus* at hand that I have no doubt of their representing another subspecies. Citations of *nigricapillus* from Panama undoubtedly refer to the present bird.

***Myiarchus lawrencei platyrhynchus* (Ridgway).**

COZUMEL FLYCATCHER.

1885. *Myiarchus platyrhynchus* Ridgway, Proc. Biol. Soc. Wash., III, p. 23. February 26, 1885.

Type locality.—Cozumel Island, off coast of Yucatan. Type No. 102,738 U. S. National Museum (skinned from alcohol and much decolorized).

Breeding range.—Cozumel Island, Peninsula of Yucatan, and coast region of Campeche and Tabasco, to the Grijalva River. Not migratory.

Zonal distribution.—Arid and Semi-arid Tropical.

Subspecific characters.—Most like *olivascens*, but upper parts darker; back more greenish, and tail coverts, tail and wings darker and more strongly edged with russet or reddish cinnamon; bill averages broader.

Description of fresh plumage.—Crown dark brownish more or less heavily washed with olive; back slightly greenish olive; upper tail coverts broccoli brown edged and sometimes shaded with russet or reddish cinnamon; tail feathers edged externally like upper coverts; all but two outer primaries narrowly and secondaries more broadly edged externally with russet like tail; wing coverts broadly tipped with dark isabella brown; chin, throat and breast ashy gray; inner webs of tail feathers usually plain dusky, but occasional individuals have narrow buffy edges along inner borders of inner feathers. Worn specimens lose nearly or quite all the greenish shade on back and the rusty edgings to wings and tail.

Measurements of specimens from Cozumel Island.—Averages of five adult males: Wing, 81 (79-83); tail, 77.7 (74-82); culmen, 17 (16.5-17.5); tarsus, 20.2 (20-20.5).

Averages of two adult females: Wing, 75 (75); tail, 69 (69); culmen, 16 (16); tarsus, 18.5 (18-19).

Mainland specimens average about the same.

General notes.—A series of 33 specimens in the Biological Survey and National Museum collections, from various localities covering the range given above, show conclusively that the birds from this region and especially from Yucatan which were formerly referred to *lawrencei* and later to *olivascens* are identical with *platyrhynchus*, described by Mr. Ridgway from Cozumel Island. This form occupies the comparatively arid region of northern Yucatan and the adjacent coastal area to the exclusion of true *lawrencei*, which belongs to the more humid interior bordering the Cordillera.

Among the entire series only a single specimen, and it is from Cozumel Island, has a buffy border to inner webs of inner tail feathers.

In view of their wide separation, necessarily distinct origin and different environment, the close general similarity between *platyrhynchus* and *olivascens* is interesting. It is another of the many cases in which great similarity exists between widely separated forms of a species with one or more decidedly more differentiated forms occupying the intervening area. The greater humidity of the habitat of *platyrhynchus* accounts for the somewhat darker colors of this form in comparison with the paler and grayer colors of *olivascens*.

***Myiarchus lawrencei querulus* subsp. nov.**

QUERULOUS FLYCATCHER.

Type.—No. 185,220, adult male, U. S. National Museum, Biological Survey Collection. From Los Reyes, Michoacan, Mexico. Collected February 17, 1903, by E. W. Nelson and E. A. Goldman.

Breeding range.—Southern end of Mexican tableland from central Jalisco, Michoacan, Hidalgo and state of Mexico south through Colima; Guerrero, part of Puebla and Oaxaca to Isthmus of Tehuantepec, where it passes into true *lawrencei*. Not migratory.

Zonal distribution.—Arid Tropical to Upper Sonoran.

Subspecific characters.—Color most like *platyrhynchus* but size larger (almost equalling *lawrencei* from northeastern Mexico), and inner borders of tail feathers usually more or less edged with buffy.

Description of fresh plumage.—Crown nearly clove brown, with a slight wash of olive, distinctly darker than back; back slightly grayish olive but darker and more greenish than in *olivascens*; upper tail coverts dark hair brown, more or less bordered and shaded with cinnamon; outer edges of tail feathers thinly bordered with russet; wing coverts tipped with isabella color; secondaries and all but outer primaries narrowly edged with russet; chin, throat and breast clear ash gray; abdomen and under tail coverts rich straw yellow; inner webs of inner tail feathers usually narrowly bordered with ochraceous buffy.

Young in first plumage.—The same as in *lawrencei*, but paler, especially on crown and underparts.

Measurements.—Averages of ten adult males: Wing, 86.1 (83-90); tail, 83.3 (80-86); culmen, 17.3 (17-18); tarsus, 19.6 (19-20).

Averages of five adult females: Wing, 81.6 (78-87); tail, 79.2 (76-83); culmen, 17 (16.5-17.5); tarsus, 19.4 (19-20).

General notes.—Specimens of the present form have hitherto been confused with the smaller and paler *olivascens*, but the Biological Survey series from all parts of western and southern Mexico make it plain that there are two recognizable forms on the mainland north of the Isthmus of Tehuantepec. The southern one, *querulus*, occupies an area lying between the more arid home of *olivascens* and the still more humid one of true *lawrencei*. One of the unexpected characters of *querulus* is its large size—almost the same as of *lawrencei* of northeastern Mexico, and considerably exceeding that of *olivascens* or of the representatives of *lawrencei* where their two ranges come in contact. Its large size also separates it at once from *platyrhynchus*. It is paler than *lawrencei* and with less strongly marked rufous borders to wings and tail. Some specimens, especially from Hidalgo and certain other tableland localities, sometimes lack the buffy inner edging to the tail feathers, but their large size and general coloration distinguishes them.

***Myiarchus lawrencei olivascens* Ridgway.**

OLIVACEOUS FLYCATCHER.

1884. *Myiarchus lawrencei olivascens* Ridgway, Proc. Biol. Soc. Wash., II, p. 91.

Type locality.—Santa Efigenia, Oaxaca. Type No. 57,655 U. S. National Museum.

Breeding range.—Southern Arizona and thence south in western Mexico, west of the Sierra Madre to northern Tepic.

Migrates from northern part of its range south throughout southwestern Mexico to Chiapas and inland through Michoacan and Guerrero. Resident in southern part of breeding range.

Zonal distribution.—Lower Sonoran and Arid Tropical.

Subspecific characters.—Decidedly smaller than true *lawrencei*; upper parts grayish and rectrices only slightly if at all edged with pale cinnamon.

Description of fresh plumage.—Crown olive brown, but slightly darker than back; back grayish olive with but slight if any indication of greenish; upper tail coverts hair brown usually but not always edged with pale cinnamon; outer edges of tail feathers, secondaries and all but two outer primaries edged with slightly darker shade of cinnamon; wing coverts vary from drab to isabella color; inner webs of inner tail feathers usually plain dusky but sometimes with a slight buffy edge along inner border; chin, throat and breast ashy gray; abdomen and under tail coverts varying from sulphur yellow to straw yellow.

Measurements of specimens from southern Arizona.—Averages of ten adult males: Wing, 81.5 (76-85); tail, 77.9 (73-81); culmen, 16.6 (16-17); tarsus, 18.9 (18-20).

Averages of ten adult females: Wing, 76.4 (75-78); tail, 72.5 (70-75); culmen, 16.1 (15-17); tarsus, 18.1 (17.5-19).

General notes.—The type of *olivascens* came from Santa Efigenia, Oaxaca, close to the border of Chiapas, where the resident birds are nearly typical *lawrencei* both in size and color. The type of *olivascens* is in winter plumage and agrees in every way with birds from northwestern Mexico and southern Arizona. From this it is practically certain that this individual was a winter visitant from the north. The birds of southern Arizona may be considered typical of the form.

M. olivascens is apparently not numerous in winter south of Guerrero. The Bangs collection contains one specimen taken on April 4, at Patzcuaro, Michoacan, which was probably a migrant. Among a series of over fifty specimens at hand only a few have indications of a buffy border along the inner edge of the tail feathers, and most of these are intergrades from along the southern border of its range where it merges into *querulus*. There is also a gradual increase southward in size.

***Myiarchus lawrencei tresmariae* subsp. nov.**

TRES MARIAS FLYCATCHER.

Type.—No. 156,810, adult male, U. S. National Museum, Biological Survey Collection. From Maria Madre Island, Tepic, Mexico. Collected May 5, 1897, by E. W. Nelson and E. A. Goldman.

Breeding range.—Tres Marias Islands, Tepic Ty., Mexico. Not migratory.

Zonal distribution.—Arid Tropical.

Subspecific characters.—Palest and grayest of the forms of *lawrencei*, with slight buffy borders on inner webs of inner tail feathers; bill proportionately longer and broader than in *olivaceus*.

Description of slightly worn plumage.—Upperparts hair brown, only slightly darker on crown; upper tail coverts drab thinly edged with pale cinnamon; tail feathers thinly edged externally with same; inner primaries and secondaries very finely edged externally with same; wing coverts tipped with drab; chin, throat and breast dingy ash gray, duller than in *olivaceus*; abdomen and under tail coverts straw yellow; inner webs of inner tail feathers usually with narrow border of buffy; bill larger and broader than in *olivaceus*.

Measurements.—Adult male (type); Wing, 79; tail, 75; culmen, 18; width of culmen, 9; tarsus, 21.

Average of seven adult females: Wing, 76.1 (73-80); tail, 74.4 (70-79); culmen, 16.8 (16-18); width of culmen, 9.1 (9-9.5); tarsus, 19.6 (19-20.5);

General notes.—The present form only needs comparison with *olivaceus*, from which it is easily distinguished by the characters mentioned.

***Myiarchus nigriceps* Sclater.**

BLACK CROWNED FLYCATCHER.

1860. *Myiarchus nigriceps* Sclater, Proc. Zool. Soc. London, 1860, p. 68.

Type locality.—Pallatanga, Ecuador. Type in British Museum.

Breeding range.—Over a large part of northern South America from the valley of the Amazon to Panama (including San Miguel Island). Not migratory.

Zonal distribution.—Mainly Humid Tropical but ranging above this to 9500 feet in Peru (Biologia Cent.-Am., II, p. 96).

Specific characters.—Crown slaty black; back olive greenish; wings and tail of adult without rufous edgings.

Description of fresh plumage.—Crown slaty black; back olive greenish; upper tail coverts hair brown slightly edged with tawny olive; tail feathers edged externally with hair brown varying to isabella color; outer web of outer feather drab, paler than inner web; inner webs plain dusky; outer primaries without external edging; inner primaries with

or without a fine grayish edging; secondaries narrowly edged with light drab often tinged with greenish; tertials dingy whitish sometimes inclining to drab; wing coverts drab; inner borders of wing feathers salmon buffy; chin, throat and breast ash gray; abdomen and under tail coverts canary yellow varying to sulphur yellow.

Description of young in first plumage.—Crown dull sooty black; back dingy olive; upper tail coverts sepia brown edged with dark russet; wing coverts, tertials and secondaries rusty cinnamon, palest on tertials; inner primaries thinly edged with russet; inside of wing feathers bordered with salmon buffy; tail feathers narrowly bordered on both webs by cinnamon rufous; chin, throat and breast ashy gray; abdomen and under tail coverts primrose yellow.

Measurements.—Averages of ten adult males from northern Colombia: Wing, 81.7 (80-83); tail, 76.3 (74-78); culmen, 17.1 (17-18); tarsus, 19.6 (18.5-20.5).

Averages of five adult females from northern Colombia: Wing, 77.2 (73-83); tail, 72 (68-76); culmen, 16.6 (16-17); tarsus, 19.4 (18-20.5).

General notes.—The adults of this species in size and general style of coloration resemble *M. nigricapillus* and *M. bangsi*, except that they completely lack the rufous edgings to wings and tail found in those birds. The first plumage of *nigriceps* is much like the young of *lawrencei* but the upper parts are darker and the rufous borders to the tail feathers are decidedly narrower. Whether the ranges of this species and *M. bangsi* overlap or are complementary remains to be determined.

Myiarchus brunneiceps Lawrence, Ann. Lyc. Nat. Hist. N. Y., VII, 327, June, 1861, from Lion Hill, Panama, is a synonym of *M. nigriceps*.

M. nigriceps is a wide ranging South American species with *M. lawrencei* and subspecies as its nearest relatives in North America.