A NEW RACE OF GOLDEN-CROWNED KINGLET FROM ARIZONA

WITH TWO ILLUSTRATIONS

By RANDOLPH JENKS

The Golden-crowned Kinglet has been known as a breeding bird in Arizona since July, 1933 (Jenks, Condor, vol. 36, 1934, p. 175). While that record was made under the name of *Regulus satrapa olivaceus,* it now appears that the Arizona birds are not true *olivaceus.*

I have collected Golden-crowned Kinglets in Apache County, central-eastern Arizona, within the past two years, as part of a faunal survey in this territory. I am indebted to Messrs. Edouard C. Jacot, James O. Stevenson, Hustace H. Poor, and Frank G. Watson for assisting in this work and for collecting some of the kinglets. These specimens are in the Randolph Jenks Collections at the Museum of Vertebrate Zoology, the Arizona State Museum, and the Museum of Northern Arizona. Through the advice and personal assistance of Dr. Joseph Grinnell I have been able to compare these Arizona kinglets with series from other parts of North America. Through the cooperation of Mr. E. R. Blake of the Field Museum and Messrs. E. T. Gilliard and J. T. Zimmer of the American Museum of Natural History, I have been able to compare the Arizona birds with series from Guatemala and Mexico. I am also indebted to Dr. A. H. Miller, Dr. J. M. Linsdale and Mr. W. H. Behle of the Museum of Vertebrate Zoology, and Mr. A. R. Phillips of the Museum of Northern Arizona for various suggestions.

The type of *olivaceus* came from Simiahmoo, Washington (Baird, Review Amer. Birds, 1864, pp. 65-66). The principal characters setting it apart from the eastern form, *satrapa,* are its brighter, more olivaceus, coloration above, shorter wing and tail, and more slender bill. Besides these differences, its underparts are tinged with brownish buff, and the yellow and especially the orange of the head are more intense.

Arizona birds and *olivaceus* differ just as strikingly from one another as the latter does from *satrapa.* Also, the Arizona birds are not intermediate between *satrapa* and *olivaceus,* but show characters different from each. Because these birds are, on the whole, more like *olivaceus,* and because of the geographical proximity, I have made primary comparisons with the latter.

From the series of 19 Golden-crowned Kinglets at hand from the White Mountains of central-eastern Arizona I have selected a summer specimen as the type, despite its being in worn plumage, because I am thereby reasonably certain that it is from the breeding population there, and not a migrant from the northeast or northwest.

Regulus regulus apache, new subspecies. Arizona Golden-crowned Kinglet.

Type.—No. 67962, male adult, Museum of Vertebrate Zoology (Randolph Jenks Collection); collected on McKay Peak, White Mountains, 8 miles southeast of McNary, Apache County, Arizona, at 9100 feet altitude, by Randolph Jenks, August 16, 1935. Prepared by E. C. Jacot. (Named for the Apache Indians, from whose country it comes.)

Subspecific characters: The average adult male, spring and summer plumage.—Similar to *R. r. olivaceus,* but having bill and wing decidedly longer, and tarsus, middle toe, and tail averaging slightly longer; bill averaging more slender and more tapering; single pair of nasal plumes characteristic of *Regulus regulus* averaging smaller and less conspicuous; median area of pileum not cadmium orange as in *olivaceus,* but averaging between orange chrome and flame scarlet (names of colors based on Ridgway, Color Standards and Color Nomenclature, 1912), some specimens exhibiting a rich flame scarlet; black anterior and lateral boundary of pileum not so jet black as in *olivaceus* or *satrapa*; intermediate yellow band wax yellow or lemon chrome. Pig-

mentation averages less deep than in *olivaceus*, the bird being lighter in coloration. Upperparts average distinctly lighter gray and lighter olive, gray of nape and hind neck approaching light olive gray and extending posteriorly as far as interscapulum (which in some specimens it overlaps), then blending from grayish olive on back to greenish olive on lower back, rump, and upper tail coverts, of lighter tone than in *olivaceus*. In series, these birds give appearance of having wide dorsal olive gray to light olive gray nuchal band covering nape and hindneck, noticeably more exaggerated and more distinct than in *olivaceus*. Ocular and malar areas similar to hindneck, gray averaging lighter than in *olivaceus*. Partly concealed pale yellow band crossing secondaries near bases and exposed dusky band succeeding it, not so distinct as in *satrapa*. Underparts smoke gray to pale smoke gray on abdomen and under tail coverts, and not tinged with as much or as dark brownish buff as in *olivaceus*, but approaching in this respect condition found in *satrapa*.

Average measurements of adult male.—Exposed culmen 8.9; bill from nostril 6.6; length of gonys 5.6; wing 57.4; tail 44.6; tarsus 16.3; middle toe 8.3. (Measurements in millimeters of 8 adult males.)

Measurements of type specimen (with deviations from average, + above, − below, average). Exposed culmen 9.2+.3; bill from nostril 7.0+.4; length of gonys 6.0+.4; wing 57.8+.4; tail 44.0−.6; tarsus 15.0−1.3; middle toe 8.4+.1; nasal plumes 2.2×.8 (average).

Adult male, autumn and winter plumage.—Similar to male of spring and summer plumage, but a little more brightly colored; upperparts from interscapulum to rump more olivaceus but not so dark on average as *olivaceus*, comparing favorably in this respect with *satrapa*. Gray of nape and hind neck similar to spring and summer plumage, still showing wide dorsal nuchal band. Underparts slightly more suffused with pale buffy olive as in *satrapa*, but not tinged with brownish buff as in *olivaceus*.

Adult female.—Similar to male in subspecific characters of color. Center of pileum entirely yellow (wax yellow to lemon chrome); whether there be racial variation in color tone of pileum is not shown in the limited material at hand.

Average measurements of adult female.—Exposed culmen 9.0; bill from nostril 6.3; length of gonys 5.0; wing 55.2; tail 44.1; tarsus 16.1; middle toe 8.6. (Measurements in millimeters of 5 adult females.)

TABLE I

Measurements of adult male *Regulus regulus* in millimeters

Region	No.	Bill	Wing	Tail	Tarsus
White Mts., Arizona	8	6.6 (5.8-7.1)	57.4 (56.5-59.1)	44.6 (43.5-46.1)	16.3 (14.9-17.5)
San Francisco Mtn., Arizona	1	6.2	57.5	44.3	16.4
Utah, Idaho, Nevada	7	5.8 (5.3-6.1)	55.4 (54.5-56.7)	43.5 (42.2-46.0)	15.5 (14.2-16.0)
Coastal belt, California	20	5.5 (5.0-6.5)	54.2 (52.3-55.8)	42.3 (41.0-43.5)	14.9 (14.0-17.2)
Coastal belt, Alaska	18	5.9 (5.4-6.3)	54.3 (52.4-55-9)	42.8 (40.0-44.1)	15.0 (14.1-16.6)
Guatemala	6	5.8 (5.3-6.0)	55.3 (54.4-56.5)	40.5 (40.0-42.0)	15.7 (15.0-16.0)
Central Mexico (Mexico City and Hidalgo)	2	6.0 (6.0-6.0)	54.5 (54.0-55.0)	41.3 (41.0-41.5)	15.4 (15.0-15.8)
Western Mexico (Jalisco)	4	5.7 (5.3-6.0)	55.4 (54.5-56.2)	41.6 (40.5-43.0)	15.6 (15.0-16.0)
Eastern U. S. (Mich., Wash., D. C., Maine)	6	5.0 (4.9-5.2)	56.9 (56.1-57.8)	44.9 (44.2-45.7)	15.0 (14.4-15.6)

Numbers outside of parentheses indicate averages; those within, extremes. Bill measurements were taken from anterior margin of nostril to tip; wing measurements were taken without straightening the primaries artificially; both wings of each individual were measured and averaged.

Other measurable characters.—The exposed culmen and length of gonys were also measured and found to be closely correlated with length of bill from nostril, but the individual variation was found to be greater for these measurements. The middle toe showed extreme individual variation and was difficult to measure.

Comparisons.—The following table summarizes at a glance the comparison between the four races of New World Golden-crowned Kinglets.

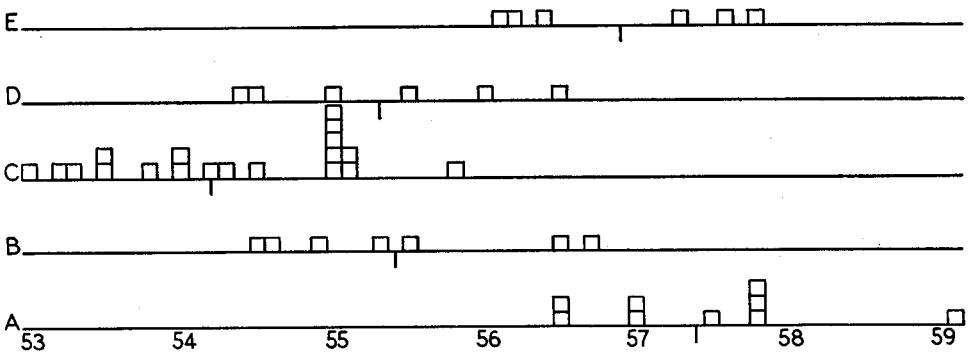

Fig. 48. Wing lengths (in millimeters) of adult male Golden-crowned Kinglets. Each square represents a single bird; averages are indicated by short perpendicular lines. Localities represented are as follows: A, Arizona; B, Nevada, Utah, and Idaho; C, California; D, Guatemala; E, eastern states (Michigan, Washington, D. C., and Maine).

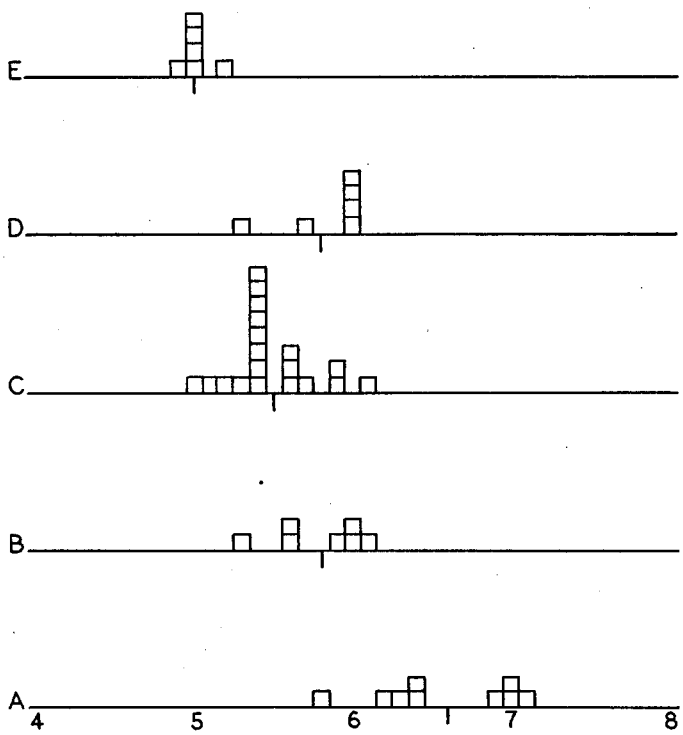

Fig. 49. Length of bill from nostril of adult male Golden-crowned Kinglets. See figure 48 for localities represented.

TABLE 2

R. r. satrapa	*R. r. apache*	*R. r. olivaceus*	*R. r. clarus*
grayer coloration above than *olivaceus*	grayer coloration above than *olivaceus;* olive gray dorsal nuchal band	more olivaceus coloration above, olive of upperparts brighter and more greenish than *satrapa*	olive green of upper parts distinctly brighter green than *olivaceus;* anteriorly olive green extends over shoulders, reducing gray nuchal band
underparts lighter and less tinged with brownish buff than *olivaceus*	underparts lighter and less tinged with brownish buff than *olivaceus*	underparts slightly darker and tinged with more brownish buff than *satrapa* or *apache*	underparts similar to *olivaceus,* but with slightly less brownish buff tinge
wing and tail decidedly longer than *olivaceus*	wing and tail decidedly longer than *olivaceus,* slightly longer than *satrapa*	wing and tail decidedly shorter than *satrapa* or *apache*	wing as long as or slightly longer than *olivaceus;* tail slightly shorter than *olivaceus*
bill stouter than *olivaceus;* stouter and shorter than *apache*	bill more slender and longer than *olivaceus* or *satrapa*	bill more slender than *satrapa,* but shorter, less slender, and less tapering than *apache*	bill similar to *olivaceus*
crown less rich orange than *olivaceus*	crown richer (orange chrome to flame scarlet) than *olivaceus*	crown richer (cadmium orange) than *satrapa* but not so rich as *apache*	crown similar to *apache*
side of head lighter than *olivaceus*	side of head lighter than *olivaceus*	side of head darker than *olivaceus* or *apache*	side of head darker than *olivaceus*

Interpretations.—As may be seen by table 1, the single specimen from San Francisco Mountain (M. V. Z. no. 43593) compares favorably with the White Mountains birds. Specimens from Utah, Idaho and Nevada are on the average intermediate between the White Mountains and the California coast-belt birds, being nearer the California and Alaska ones. In other characters they also appear to be intermediate, but approach more closely the California and Alaska series. The gray dorsal nuchal band is not so evident in these Great Basin birds as it is in *apache,* and the central pileum is never a cadmium orange as in the Pacific Coast birds.

The four September specimens from the mountains of Jalisco in central-western Mexico compare favorably in measurements and other subspecific characters with the Pacific Coast birds of California and Washington. I have seen only two other adult male specimens from Mexico, one from Mexico City (Amer. Mus. Nat. Hist. no. 39341, type of *aztecus,* originally described by Lawrence), and one from Hidalgo not far northeast of Mexico City (Field Mus. no. 9488). From the limited material at hand, I cannot make definite statements concerning these two specimens from central-eastern Mexico, but they are not typical of the race *clarus,* and they appear to be closer to the race *olivaceus.* In comparing these two birds with *clarus,* the nearest geographical race, I find that the underparts are tinged with slightly more brownish buff, the central pileum is not so intense, and the olive green of the upperparts is not so green. In all these respects they are closer to *olivaceus.*

Geographical distribution.—The White Mountains of central-eastern Arizona from which the proposed race comes, consist of extensive mountainous country culminating in Baldy and Ord peaks which rise to approximately 11410 and 11350 feet altitude, respectively. They are separated from the Rocky Mountains of northern and eastern New Mexico by desert. On the north and east slopes of these peaks, the rise in altitude is comparatively gradual until an elevation of about 10000 feet is reached. This factor permits an extensive area of luxuriant boreal flora and fauna in the White Mountains and adjoining elevated tracts of land, and it accounts for the presence of such summer resident birds as Rocky Mountain Jays, not found elsewhere in Arizona.

The Blue Mountains, as well as Escudilla Mountain, should properly be considered faunally as part of the White Mountains, for they are both connected with the White Mountains by continuous Transition Zone forests of western yellow pine and its associated flora. The Blue Mountains are only a short distance southeast of the White Mountains and nearer New Mexico; in fact, they really comprise a spur of the White Mountain mass, arising to an elevation of about 9300 feet and separated from the latter by the Black River. Escudilla Mountain lies directly east of the White Mountains and rises more abruptly from the surrounding country to an altitude of about 10950 feet. Both of these ranges, the Blue and Escudilla mountains, also harbor breeding Golden-crowned Kinglets in their boreal zones.

The Mogollon and adjacent mountains of central-western New Mexico are either continuous, or practically continuous, with the White, Blue, and Escudilla mountains by way of Transition Zone forest. It would be expected that if the Golden-crowned Kinglet were to be found in the boreal zones of those mountains it would probably have the same characters as the form here described. Similarly, certain mountains of the Mogollon Plateau of Arizona, including San Francisco Mountain at its extreme northwestern limit in north-central Arizona, are continuous with the White Mountains by way of Transition Zone forest. Golden-crowned Kinglets are known from San Francisco Mountain, and a speciman (adult male, M. V. Z. no. 43593, October 24, 1922) is like the White Mountains form. Its underparts are, however, decidedly more brownish buff, which brings it in this respect closer to *olivaceus*.

There are certain ranges of southeastern and southern Arizona (Chiricahua, Graham, Santa Catalina, Santa Rita, and Huachuca) which harbor limited areas of boreal zone in which Golden-crowned Kinglets might find a favorable habitat. Indeed, these birds have been found during the summer of 1934 by Phillips (Condor, vol. 37, 1935, pp. 88-89), and in July, 1891, by Rhoads (Proc. Acad. Nat. Sci. Phila., 1892, p. 125), on the Santa Catalina Mountains, the southernmost record for the Golden-crowned Kinglet in the United States. These mountains are isolated ranges, separated from the mountains of central and eastern Arizona and from central-western New Mexico by the intervening Sonoran Desert of Lower Sonoran Zone. The environmental conditions in these mountains are similar to those in the White Mountains, and there is assumedly little or no intercommunication among the resident Golden-crowned Kinglet populations. It will be interesting in the future, when more specimens are collected, to compare series from these mountains with the series of kinglets from the White Mountains and to find whether similar environmental effects produce similar results within these isolated populations.

The specimens examined from Utah, Idaho, and Nevada are not typical of *olivaceus*, of the Pacific Coast. They show certain resemblances to the White Mountains specimens, but the similarities are not close enough to group them with *apache*. After more specimens are collected from the intervening Rocky Mountain and Great Basin districts, enough similarities may be found to extend the range of the proposed race to include these regions. Without further information on this subject all I can do is to designate the range of the proposed race as the mountains of central-eastern Arizona, including the White, Blue, and Escudilla mountains.

Remarks.—Having examined carefully series of Ruby-crowned and Golden-crowned kinglets, comparing the two species, character for character, I agree with Hellmayr (Catalogue of Birds of the Americas, 1934, pp. 510-514) that *"Corthylio"* is not enough different in characters which might be termed generic to be called a separate genus, that the genus *Regulus* should therefore include *"Corthylio"*. I have also examined Golden-crowned Kinglets from the Old World (Germany, France, China, Japan) and

compared them character for character with one another and with the New World Golden-crowned Kinglets. I have found that *Regulus regulus* and *Regulus "satrapa"* do not differ enough in characters which might be termed specific to be called separate species. The differences are in degree and are so slight that they are purely racial. *Regulus "satrapa"* of the New World should therefore be changed to *Regulus regulus*. In this I also agree with Hellmayr, having first come to both conclusions of my own accord, after which I discovered that Hellmayr had previously reached the same conclusions.

KEY TO THE NEW WORLD GOLDEN-CROWNED KINGLETS:

*a*1. General coloration of upperparts olive gray to grayish olive; underparts tinged only slightly with buff; wings and tail decidedly longer; sides of head lighter; a grayer bird.

*b*1. Olive gray of nape blends gradually into olive of back; bill decidedly shorter and stouter; central pileum decidedly lighter in coloration (cadmium orange) ..... *R. r. satrapa*

*b*2. Olive gray dorsal nuchal band extending back to interscapulum and not blending with olive of back; bill much longer and more slender; central pileum much richer (orange chrome to flame scarlet)..... *R. r. apache*

*a*2. General coloration of upperparts richer—olive to olive green; underparts darker, tinged with brownish buff or dusky; wings and tail decidedly shorter; sides of head darker; a greener, more richly-colored bird.

*b*1. Olivaceus coloration of upperparts lighter, gray of nape unrestricted; tail slightly longer; side of head lighter; central pileum lighter.... *R. r. olivaceus*

*b*2. Olive green coloration of upperparts brighter and extending anteriorly over shoulders, restricting gray of nape; tail slightly shorter; side of head darker; central pileum richer..... *R. r. clarus*

Summary.—*Regulus regulus apache* is a new race of Golden-crowned Kinglet occupying as far as is known the mountains of central-eastern Arizona. It differs from *R. r. olivaceus*, its closest geographical counterpart, by being a grayer bird, having a noticeable, wide, gray, dorsal nuchal band, having decidedly longer wings, tail, and bill, and having a deeper and more richly colored central pileum. It differs from *R. r. satrapa* by having a wide gray dorsal nuchal band, a much longer, more slender bill, and a much more deeply colored central pileum. Finally, it differs from *R. r. clarus* by being a considerably grayer bird, having a wide gray dorsal nuchal band, and having longer wings, tail, and bill.

Arizona State Museum, Tucson, Arizona, August 10, 1936.

FROM FIELD AND STUDY

Bird Notes from the Hualpai Mountains, Arizona.—The Hualpai Mountains of central-western Arizona constitute an isolated range surrounded by desert. The highest peaks, at the north end of the range, reach an elevation of 8200 feet and are timbered with a limited growth of yellow pine, Douglas fir, aspen and an occasional white fir. This "island" of the Transition Zone has a small population of birds characteristic of this zone.

Between May 24 and 30, 1935, Mr. Paul Russell and I took notes on the birds of these mountains, mainly at the Hualpai Mountains County Park lying near the north end of the range. At this season, thirty-eight species of birds were recorded. The region was revisited in October, 1935, by Russell who made additional observations on birds.

Apparently the only published notes on the avifauna of the Hualpai region were recorded by Frank Stephens in the Condor (vol. 5, 1903, pp. 75-78, 100-105). Stephens' observations were made during a "fortnight" spent in these mountains in 1902, apparently the first two weeks in July. Reference to the above publication and to Swarth's Distributional List of the Birds of