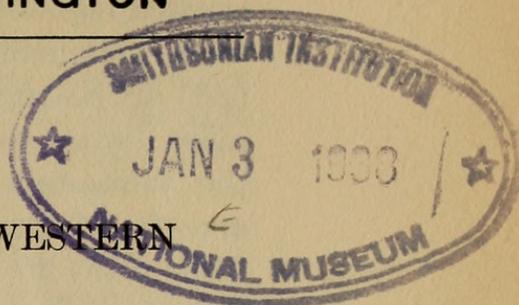


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTONFOUR NEW BIRDS FROM NORTHWESTERN
MEXICO.BY ROBERT T. MOORE,
California Institute of Technology.

A recent airplane trip, taken on May 9, 1937, by the author and Dr. Francis H. Tomlin from Mazatlan to Parral for nearly three hundred miles obliquely across the entire range of the Sierra Madre of Mexico in a northerly direction, has provided another direct visual survey of the results of the climatic differences of the east and west slopes of this great range. Revealed by the experiences of Chester C. Lamb and the author during four years of collecting along the western front of the Mexican plateau and several penetrations deep into the range (see Proc. Bio. Soc. of Wash., Vol. 48, pp. 111-112), it has become clear that the dissected western slopes of the Mexican plateau are subjected to much heavier rain-fall than the eastern slopes. Records from scattered meteorological stations on the two sides of the Sierra Madre prove that precipitation is at least twice as heavy, while the experiences of our collectors and the author, as well as the statements of natives, indicate that it is probably much greater. Indeed, in some of the canyons of northeastern Sinaloa and southeastern Sonora, travel is decidedly perilous during the rainy season, due to the tremendous floods to which they are subjected, whereas in the barrancas of the eastern slope it is but little impeded.

Due to lack of knowledge of these contrasting meteorological conditions, our ornithologists and geographers have been led into erroneous statements concerning the identity of races on these two slopes. Not only do many species break up into well-marked races, characterizing the contrasting slopes, but in addition we now know a definite "break" occurs between two differentiation areas along some line dividing the highest

mountains of northeastern Sinaloa and the mountains of southwestern Chihuahua. Disregarding the differences due to the isolated high Temperate Zone on the top of Mt. Mohinora, the trees, mammals and birds of similar altitudes (6,000 to 9,000 feet) are sharply contrasted with those at San Feliz not twenty miles distant to the southwest. The Black-tailed deer replaces the White-tailed, the Thick-billed Parrot supplants Finsch's and the Macaw, the Hemlock and Poplar become prominent, while plant life is conspicuously different. It is these contrasting conditions which have developed several of the races described below.

My acknowledgments and thanks are given with a sense of deep indebtedness to Dr. Herbert Friedmann and the Smithsonian Institution of Washington for the loan of Types and numerous specimens, to Dr. Harry C. Oberholser and the Biological Survey of Washington for similar courtesies, to Mr. John T. Zimmer and the American Museum of Natural History of New York, Mr. James L. Peters and the Museum of Comparative Zoology of Cambridge, and to Mr. S. C. Simms and the Field Museum of Chicago, for the loan of other comparative material. I am also deeply indebted to Mr. W. S. Harrison and Mr. E. S. Plumb, the manager and assistant manager respectively of the Cia. Minera Wemeco, S. A. at Guadalupe y Calvo, whose unusual courtesy in arranging for mules and burros to take our equipment to our high altitude camp at 10,000 feet on Mt. Mohinora, made possible a successful reconnaissance.

***Catharus aurantirostris aenopennis*, subsp. nov.**

OLIVE-WINGED NIGHTINGALE THRUSH

Type.—Male adult in breeding plumage; number 9226, collection of Robert T. Moore; floor of Arroyo Hondo, about twenty miles north of junction of Rios Chinipas and Fuerte, southwestern Chihuahua, Mexico; May 29, 1934; altitude 4900 feet; collected by Robert T. Moore.

Subspecific characters.—Nearest to *Catharus aurantirostris clarus* Jouy, but much grayer and more olive on pileum, back and rectrices; less cinnamon on rump and upper tail coverts; exposed portions of primaries, secondaries and coverts less Ochraceous-Tawny¹, nearer Dresden Brown; anterior portion of inner web of primaries and secondaries less buffy; breast darker gray and abdomen whiter, creating more contrast; wing and tail smaller.

¹Names of colors in this paper, when capitalized, are taken from Ridgway's "Color Standards and Color Nomenclature," 1912.

Range.—Barrancas and canyons of the western slope of the main Sierra Madre, probably breeding from 4500 to 7000 feet, from southwestern Chihuahua to east central Sinaloa, extending, in an intergrading form, to southeastern Sinaloa, at least to Rancho Batel near Santa Lucia.

The birds of the same western slope of the mountains of southeastern Sinaloa are darker olive above and darker gray below, but of the same small size. These may have to be separated, but for the present until a larger series of breeding and winter specimens are secured, it would be well to retain them under the same name. In the winter many individuals of the new race drift down to lower levels, at least to 1500 feet; one bird was taken at 55 feet elevation at Rosario on Dec. 27th. The single April female from Tepic, Tepic, resembles very closely the darker form from the mountains of southeastern Sinaloa and is more olive above than the birds of Jalisco or Guerrero.

AVERAGE MEASUREMENTS OF *Catharus aurantiirostris aenopennis* AND
Catharus aurantiirostris clarus.

MALES.	WING.	TAIL.	EXPOSED CULMEN.
5 adults <i>aenopennis</i> from Chihuahua and N. E. Sinaloa.....	78.5	64.1	13.4
5 Topotypes <i>clarus</i> from Barranca, Ibarra, Jalisco.....	84.7	67.5	13.4

Specimens examined.—*Aenopennis* S. W. Chihuahua, 1 ♂ (Type) Arroyo Hondo, 1 (?) Barranca del Cobre, 1 ♂ San Jose; N. E. Sinaloa, 1 ♂, 1 ♀ Huassa, 1 ♂ San Lorenzo; S. Sinaloa, 1 ♂, 2 ♀ Rancho Batel, 1 ♂, 3 ♀ Palos Verde Mine, 1 ♀ Rosario; Tepic, 1 ♀ Tepic. *Clarus*, Jalisco, 5 ♂, 2 ♀ (including Type) Barranca Ibarra, 1 ♂ San Sebastian; Michoacan, 1 ♂, 1 ♀ Los Reyes, 2 ♂ Patzquaro; W. Chihuahua, 1 ♂ Bravo, 1 ♂ Jesus Maria; Guerrero, 2 ♂ Omilteme, 4 ♂, 1 ♀ Chilpancingo; Mexico, 4 ♂, 1 ♀ Temascaltepec; Morelos, 1 ♂, 1 ♀ Cuernavaca, 1 ♂ Jutepec, 1 ♀ Santa Maria, 1 ♂ Huitzilac; Puebla, 1 ♂ Atlixco; San Luis Potosi, 1 ♂ Alvarez. *Melpomene*, Vera Cruz, 2 ♂ Jalapa, 1 ♂ Teocelo, 1 ♀ Orizaba, 3 (?) Orizaba, 1 (?) Cordova, 1 ♀ Texolo, 1 ♀ Jaico; Oaxaca, 1 ♂ near Totontepec; Chiapas 2 ♂ Comitán.

Remarks.—Griscom expresses the opinion (Ornithology of Guerrero, p. 397) that, although the birds of Chihuahua represent a paler extreme than typical *clarus* he does not believe that the "formal separation of Chihuahua specimens of *Catharus melpomene* is necessary or advisable." With this I am in thorough accord, for Griscom was referring to birds of the eastern slope of the Sierra Madres, and not to birds of the western slope, which at that time were apparently unknown to him. Since then our series has been collected by Chester C. Lamb and the author, constituting not only the first record of the species for Sinaloa, but more important, the first record for the more humid western slope of the northern Sierra Madre. These birds do not represent a "pale extreme," but a more olive race, distinctly darker below than *clarus*. This contrast is probably due to climatic differences of the two slopes, described above. The remarkable contrast between the luxuriant rain condition of the Arroyo

Hondo on the western slope and the burned, arid condition of the Barranca del Cobre, about twenty-five miles distant to the east on the eastern slope of the Sierra Madre, has already been described by the author (Proc. Bio. Soc. Wash., Vol. 48, pp. 112-113). A specimen from this barranca is intermediate between the new race and the pallid form of the east slope in Chihuahua.

One of the distinguishing characters in this group of thrushes has not been sufficiently emphasized, namely, the external, exposed coloration of the wings, particularly the wing coverts and edges of the primaries. In *melpomene* they are Ochraceous-Tawny, in *clarus* Clay color and in *aenopennis* they range from Saccardo's Umber to Tawny-Olive. In this character Guerrero birds are closer to true *melpomene*, but have the larger size of *clarus*. The specimen from Tepic reveals some tendency toward the Guerrero birds. Characters of five fresh specimens from Temascaltepec and three from Morelos in the Moore Collection place these birds with true *clarus*. Failure to use fresh specimens of the same sex and season will result in unreliable comparisons.

The only other race with which *aenopennis* can be confused, is with *aurantiitirostris aurantiitirostris* of Venezuela and eastern Colombia. This bird resembles the new race in the olive coloration of the wings and upper parts but differs decidedly in smaller size, particularly the tail.

The Type specimen from the Arroyo Hondo was close to breeding, having the testes considerably enlarged on May 29th.

***Atthis heloisa margarethae*,² subsp. nov.**

MARGARET HUMMINGBIRD.

Type.—Male adult in unworn fall plumage; number 12432, collection of Robert T. Moore; Rancho Batel, five miles north of Santa Lucia, southeastern Sinaloa, Mexico; November 14, 1934; collected by Chester C. Lamb.

Subspecific characters.—Male—nearest to *Atthis heloisa heloisa* (Lesson and Delattre) of Vera Cruz, Mexico, but lower throat and abdomen pure white instead of ranging from grayish white to Drab-Gray; buff of sides and flanks much more restricted and lighter color; metallic throat patch darker, Amethyst Violet instead of Pansy Violet, with feathers not so elongated laterally; size slightly smaller.

Female—Differs from the toptotypical females of *heloisa heloisa* in having the spots on throat very much smaller; the sides, flanks, abdomen and under tail coverts light buff instead of cinnamon; the tips of outer rectrices pure white, instead of cinnamon or buff; size smaller. It differs from the female Type of *Atthis morcomi* Ridgway in having the spots on throat finer (mere points) and fewer in number; the buff on sides, flanks and abdomen much less restricted; tips to sub-median rectrices pure white instead of buff; upper parts strongly brassy instead of green; pileum overlaid with iridescent bronze instead of dull brown.

²Named for the author's wife, who was the first to observe the female of this new race at Rancho Batel April 15, 1936, feeding on a large flowering shrub in company with White-eared, Broad-tailed and Calliope Hummingbirds. This dedication commemorates a treasured association with her on expeditions in the Andes of South America and the Sierras of Mexico, where she cheerfully endured real hardships to give encouragement to the author in his ornithological studies.

Range.—Transition Zone of the mountains of Sinaloa, on the eastern slope of the main Sierra Madre from 5500 to 7500 feet in altitude.

The author has not seen the specimens reported by Salvin as taken in Jalisco and Guerrero and does not know which form they represent. It seems likely that the individual reported from "Tepic" by Salvin in the *Biologia Centrali-Americana*, Vol. II, p. 60, really came from Jalisco, as the note refers to a specimen, mentioned in the Catalogue of the British Museum as coming from "Tepic, Jalisco," and not from Tepic, Nayarit.

AVERAGE MEASUREMENTS OF *Atthis heloisa margarethae* AND *Atthis heloisa heloisa*.

	WING	TAIL.	EXPOSED CULMEN.
MALES.			
9 adults (including Type) <i>margarethae</i>	32.7	19.4	11.8
6 adults (including topotypes) <i>heloisa</i>	34.7	20.3	12.0
FEMALES.			
1 adult <i>margarethae</i>	34.9	18.6	
2 adults <i>heloisa</i> from Valley of Mexico.....	36.4	21.4	

Specimens examined.—*Margarethae*, S. E. Sinaloa, 5 ♂ (including Type) Rancho Batel; S. W. Chihuahua, 4 ♂, 1 ♀ S. San Feliz. *Heloisa*, Vera Cruz, 2 ♂, 3 ♀ Jalapa, 2 ♂, 2 ♀ Córdoba; "Oaxaca" 1 juv. ♂; Mexico, 2 ♂ Valle de Mejico, 3 ♂ "Mexico"; Arizona, 1 ♀ Huachuca Mountains (Type, *Atthis morcomi*). *Ellioti*, Guatemala, 1 ♂ Volcon de Fuego (Type *Atthis ellioti* Ridgway), 1 ♂ Guatemala City, 2 ♂ Vera Paz, 2 ♂ "Guatemala." *Selasphoroides*, Honduras, 6 ad. ♂, 2 im. ♂, 8 ♀ Cantoral, 1 ad. ♂ Montaña Vasquez, 1 ad. ♂ Monte Verde, 1 ad. ♀ "Honduras."

Remarks.—The topotypical material from the type locality of *heloisa heloisa*, six specimens from Jalapa, all show the wide area of cinnamon on sides and the Drab-Gray on breast and abdomen, distinctive characters separating them from *margarethae*. The upper parts of the latter average considerably greener above, as compared with the copper or golden bronze of *heloisa*. The immature male from Oaxaca has the uncontracted outermost primary of *ellioti* of Guatemala but is placed here provisionally, as no adult males from Oaxaca have been seen. A male and two females in my collection from the Valle de Mexico have somewhat whiter underparts, but are much closer to true *heloisa* of Jalapa, the male having the typical Pansy Violet throat and all three extensive cinnamon sides and flanks. One of the above-mentioned females is almost identical with the Type of *morcomi*.

This new material from the Valle de Mexico convinces me that the action of the A. O. U. Committee in relegating *Atthis morcomi* to the synonymy of *Atthis heloisa heloisa* is a logical one. Under this conception *heloisa heloisa* ranges from Vera Cruz through the states of central Mexico. It can be regarded only as a vagrant in Arizona, since, except for this record, it has never been found north of San Luis Potosi and Aguas Calientes.

Apparently a large gap exists between the range of *heloisa* and that of the new form, which seems to be restricted to the western slopes of the Sierra Madre. For example, *margarethae* was not found by the author on Mt. Mohinora, Chihuahua, less than twenty miles east of San Feliz, and the highest peak of the main range, yet two of its associates at Rancho Batel, the White-eared and Broad-tailed Hummingbirds, were common.

We would expect some difference in the coloration of specimens from the Valle de Mexico and those from Jalapa, since Mexico City has a precipitation of only twenty inches a year, whereas Jalapa records sixty and Córdoba almost eighty inches. True *heloisa* from the eastern slope of Mt. Orizaba is a Humid Temperate Zone bird, whereas *margarethae* is a Transition Zone form of an ordinarily dry area, where rain seldom falls during eight months of the year. The total for the four wet months (July to September at Panuco) is about twenty-four inches.

A female (Moore Coll. No. 15227), secured by the author at Rancho Batel on April 15, 1936, seems to be a hybrid between *Atthis heloisa margarethae* and *Stellula calliope*. It has the cinnamon basis to all the retrices (including the middle pair) like *margarethae*, but the large size and green pileum of *calliope*. As normal specimens of *Stellula calliope*, were present at Rancho Batel and two collected were immature, it is possible both species breed there.

***Ergaticus ruber melanauris*, subsp. nov.**

GRAY-EARED ERGATICUS.

Type.—Male adult in full breeding condition, nesting; number 18,437, collection of Robert T. Moore; Trogon Valley, eastern slope of Mt. Mohinora, southwest Chihuahua, Mexico; May 12, 1937; altitude 10,000 feet; collected by Robert T. Moore.

Subspecific characters.—Nearest to *Ergaticus ruber ruber* (Swainson), but the whole auricular region grayish black, instead of silvery white; eye-ring generally black instead of gray; upper parts much brighter red, the back Nopal Red instead of Garnet Brown, the forehead much brighter Scarlet-Red, contrasting with back instead of uniform.

Range.—Breeds in the Temperate Zone between 9,000 and 10,000 feet on Mt. Mohinora, the highest mountain of northern Mexico, in extreme southwestern Chihuahua. Migrates in winter to the tops of the lower ranges in southeastern Sinaloa (at least as low as 6,000 feet) and probably to the mountains of southern Durango.

Specimens examined.—*Melanauris*, S. W. Chihuahua, 3 ♂ (including Type), 1 ♀ Mt. Mohinora; S. E. Sinaloa, 2 ♂ (November) Rancho Batel near Santa Lucia. *Ruber*, Mexico, 1 ♂ Temascaltepec, 9 ♂, 5 ♀ Desierto de Los Leones, 2 ♂, 2 ♀ Contreras, 2 ♂, 2 ♀ San Bartolo, 3 ♀ La Venta; several specimens without data Valley of Mexico and Orizaba, Vera Cruz; Guerrero, 1 ♂ Chilpancingo.

Remarks.—Making an airplane landing on a natural meadow at 8,500 feet on the eastern slope, we found the top of Mt. Mohinora bulking high above all the other peaks of southwestern Mexico. The upper shoulders from 9,000 to 11,215 feet are in the Temperate Zone, consisting of an original conifer forest of large pines, firs and hemlocks with scattered stands of poplar. Due to its altitude, the upper areas have a heavy annual rainfall, partly caused by local thunder storms, sufficient to keep its verdure green and its many streams and torrents full of water, throughout the dry season of its lower levels. The Gray-eared *Ergaticus* was a fairly common breeder near the humid, heavily-timbered heads of the canyons, which sculpture the eastern slope of the mountain, just where the oaks peter out and conifers become dominant. Dr. Francis H. Tomlin and the author observed a

number of these sprightly red warblers and the three males and one female, collected, were all nesting birds. That it has not been found in other parts of Chihuahua, Sonora nor northeastern Sinaloa, is probably due to the lack of mountains over 10,000 feet in elevation. In spite of a considerable combing of these high altitudes by Chester C. Lamb during the past four years and by the author in annual visits, only two other specimens have been secured, both migrating birds taken in November at 6,000 feet in the mountains of southeastern Sinaloa. The only other specimens of the species, reported from northwestern Mexico, were secured by Forrer near Durango City, 200 miles southeast of Mt. Mohinora. Not having seen them, the author can not determine their status, but presumes they are intergrades between *ruber ruber* of southern Mexico and *melanauris*.

The comparative material from the State of Mexico consist of fresh specimens in the author's collection, secured by W. W. Brown and Pablo Roveglia, with exception of the few specimens without data. The individual, taken by Mr. Brown at Temascaltepec, comes from an area probably not far from the type locality. Ridgway may have been right in his suggestion that Swainson's Type probably hailed from the "Province of Morelia, state of Michoacan." Nevertheless, the authors of the *Biologia Centrali-Americana* (Vol. 1, p. 164) state that "this species was first described by Swainson in 1827, from a specimen sent from Mexico by Bullock." If it was secured at Temascaltepec, a not impossible assumption, then the Brown-collected specimen is a topotype. It is typical *ruber ruber*.

***Aratinga canicularis clarae*,³ subsp. nov.**

SINALOA PAROQUET.

Type.—Female adult in fresh fall plumage; number 4343, collection of Robert T. Moore; El Molino, northeastern Sinaloa, Mexico; November 3, 1933; near sea level; collected by Chester C. Lamb.

Subspecific characters.—Nearest to *Aratinga canicularis eburnirostrum* (Lesson) from Acapulco, Guerrero, but Apricot Orange of forehead greatly restricted, so that the greenish blue of the crown continues anteriorly around the bare space in front of the eye and joins the blackish area between the base of the maxilla and the bare lores; crown patch of Light Terre Verte, much more extensive both posteriorly and anteriorly, extending in the former direction beyond the posterior margin of eye; lower throat and breast greener, less yellowish olive; dark spots on side of mandible blacker, less brownish; wing and tail larger.

Range.—Arid Lower Tropical Zone from Reforma on the coast of northeastern Sinaloa, fifty miles northwest of Culiacan, south along the coast at least to Mazatlan and the boundary of Tepic; west to Chacala in northwestern Durango ascending the lower mountains of Sinaloa to an altitude of 3500 feet, at least in the Sierra Palos Dulces.

The birds from San Blas, Nayarit, south to Manzanillo, Colima, have the restricted forehead patch of the new race, but the more yellowish olive lower throat and breast of *eburnirostrum*.

³Named in honor of Mrs. Chester C. Lamb, whose association with Mr. Lamb during his four years of collecting in Sinaloa have been a great support and encouragement to his zoölogical work.

AVERAGE MEASUREMENTS OF *Aratinga canicularis clarae* AND *Aratinga canicularis eburnirostrum*.

	MALES.	WING.	TAIL.
9 adults <i>clarae</i>	136.2	110.0
5 adults <i>eburnirostrum</i>	131.6	101.4
	FEMALES.		
5 adults <i>clarae</i>	135.8	113.6
6 adults <i>eburnirostrum</i>	127.6	108.1

Specimens examined.—*Clarae*, Sinaloa, 1 ♂, 2 ♀ Reforma, 1 ♂, 5 ♀ (including Type) El Molino, 1 ♂ Arroyo Guayabito, 1 ♂, 1 ♀ Sierra Palos Dulces, 1 ♂ Vado Hondo, 1 ♂, 1 ♀ San Ignacio, 1 ♀ Quelite, 2 ♂, 3 ♀ Mazatlan, 3 ♂, 2 ♀ Rosario, 1 ♂, 1 ♀ Rancho Santa Barbara, 2 ♂ near Esquinapa; Durango, 2 ♂ Chacala; Nayarit, 3 ♂, 1 ♀ Rio Las Canas. Intergrades from Nayarit, 2 ♂, 1 ♀ San Blas; Colima, 3 ♂ 2 ♀ Manzanillo. *Eburnirostrum*, Guerrero, 4 ♂, 6 ♀ Acapulco, 1 ♂ Coyuca. *Canicularis* Oaxaca, 3 ♂, 2 ♀ Chivela, 1 ♀ Tapanatepec, 1 ♀ Huilotepec, 2 (?) Tehuantepec; Guatemala, 2 ♂ Ocos; Salvador, 1 (?) La Union, 1 (?) Chocoyo, 1 (?) Querultepe; Honduras, 7 ♂, 2 ♀ San Lorenzo, 1 ♀ Monte El Conejo; Nicaragua, 1 (?) Chinandega, 1 (?) Boundary line; Costa Rica, 1 ♀ Alajuela, 2 ♂, 2 ♀ Bolson, 1 ♂ Escazu, 2 ♂, 1 ♀ Ballena, 3 ♂, 6 ♀ Pto. Humo.

Remarks.—Bangs and Peters recognized two races of *canicularis*, designating the type locality of true *canicularis* as northwestern Costa Rica and grouping all of the birds from Guerrero to Sinaloa under *eburnirostrum*. At that time, as our large series from northeastern Sinaloa had not been collected, only a few very old specimens, marked as from the general locality of "Mazatlan" were in existence and only a handful of specimens from Nayarit and Colima. Our series of twenty-eight specimens has thrown an entirely new light on the picture. Sixteen come from central and northern Sinaloa, whence recorded specimens were unknown previously and it is this area that represents the chief habitat of the new race. At a point somewhat south of Mazatlan, the lower throat and chest begins to change to a more yellowish olive, but the restricted forehead patch is maintained to Manzanillo in Colima. A large series of topotypes from Acapulco adequately represent the Type of *eburnirostrum*.

An interesting character of possibly minor importance differentiates true *canicularis* of Costa Rica from most of the forms to the north. Of the twenty individuals from Costa Rica (including thirteen fresh specimens in the Moore collection) not one has the brownish mark on the sides of the mandible, the entire mandible being ivory whitish like the maxilla. Of the fifty-seven specimens, ranging from Guerrero north to Sinaloa, every one has the sides dark in coloration, brownish in the case of *eburnirostrum* and bluish black in *clarae*. It is puzzling that all nine specimens from Oaxaca and two from Guatemala have ivory whitish mandibles like the Costa Rica birds, whereas all ten specimens from Honduras and all three from Salvador have at least some trace of a brown mark on the sides of the mandible. Two specimens from Nicaragua have practically none.

This race seems to breed in March as the oviduct in the female from San Ignacio on March 14th contained a full-sized, hard egg.



Moore, R T. 1937. "Four new birds from northwestern Mexico." *Proceedings of the Biological Society of Washington* 50, 95–102.

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