

LIFE HISTORY OF THE WHITE-BREASTED BLUE MOCKINGBIRD

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The White-breasted Blue Mockingbird (*Melanotis hypoleucus*) is a distinct, strikingly colored species known only from the highlands of Chiapas, Guatemala, Honduras, and El Salvador in northern Central America. It is a slender bird, nearly eleven inches long, with slate-blue upper parts, a black mask covering the face and ear-coverts, and snowy white under parts dulling to grayish-blue on the sides, flanks and under tail-coverts. Its slender bill is black, its eyes dark, and its legs and feet blackish. Male and female are alike in appearance. This mockingbird dwells in dense thickets and open woods with abundant undergrowth, from about 3000 to 9000 feet above sea-level. It lurks well concealed amidst the low bushes and is nearly always difficult to see.

FOOD

The Blue Mockingbird forages chiefly on the ground, where it tosses the fallen leaves and litter with vigorous sideways sweeps of its bill. Only rarely does it use a foot to scratch. Where it has been at work one finds little spots of bare ground amid the leaf mold. The small invertebrates of many kinds which hide in the ground litter apparently form the principal food of the mockingbird, and it also eats small fruits. I have watched it devour the green berries of viburnum, distressingly astringent to the human mouth.

VOICE

As I walked along a steep, bushy slope on the Sierra de Tecpán in western Guatemala in the late dusk of a November evening, I was arrested by an amazing medley of bird notes which issued from amid the foliage of one of the low, scrubby, second-growth oaks that were scattered over the slope. From among the dark leaves came a rapid series of monosyllables, now a shrill squeak, now a whistle, now a guttural croak, all intermixed in the most surprising fashion. I maneuvered around, attempting to catch sight of the author of these startling utterances; but the light was already too dim to distinguish anything in the dense foliage.

But the following morning, amid some undergrowth, I heard a repetition of the performance that had so amazed me on the preceding evening. The abrupt alternation of high and low monosyllables was the most surprising feature of the vocal hodgepodge which now claimed my attention. There was a little peep, a short clear whistle, a churring note as of a woodpecker, a guttural chucking noise, a brief screech, attempts at warbles and trills. The singer seemed to be trying to imitate notes heard from other birds; but I had not yet been in the Guatemalan highlands long enough to recognize the species he was attempting to mimic. The effect was amusing, fantastic, pleasant in its way, certainly not musical or harmonious. Following the sound, I finally caught a glimpse of a big blue and white bird; but he disappeared in an instant and began hunting among the dead leaves that littered the ground. Not long after, he moved to a low perch in a bush and chattered there for a while, giving me an excellent view of himself. From the description I then wrote in my notebook, I later identified this beautiful bird as the White-breasted Blue Mockingbird.

In February of the third year following my first meeting with the Blue Mockingbird, I found that these birds had already paired. Except when he sang, I could not distinguish the male from his mate. One pair used to roost in a dense tangle of bushes and blackberry canes beneath some tall alder trees.

By the end of March, the song became louder. The male repeated over and over a ringing, liquid trill. A neighboring individual delivered a series of low, soft whistles

which were so strongly ventriloquial that it took me long to locate the bird among the low bushes. Both of these performances lacked the borrowed phrases so frequent in the songs heard earlier.

A male observed two months later, toward the end of May, was an able songster and could produce with equal ease notes ranging from a deep mellow whistle to a light, airy trill. He had, like the Yellow-tailed Oriole, a great variety of short musical phrases, each of which he repeated several times before taking up another. When at his best he was not really a mockingbird—that rôle among the birds of the Sierra was ably filled by the Guatemalan Black Ouzel (*Turdus infuscatus*)—and he rarely imitated other birds. During the entire day I heard him use only one borrowed verse, that of the Whip-poorwill. Sometimes he sang from the concealment of the impenetrable thicket, sometimes he mounted to the topmost twig of a tall pine tree to perform.

The only notes I heard from a Blue Mockingbird definitely known to be a female were low and squeaky, or else an oft-repeated guttural *chuck*.

THE NEST

On the Sierra de Tecpán, between 8000 and 9000 feet above sea-level, the White-breasted Blue Mockingbirds must have begun to build their earliest nests in the latter part of April, for two full-grown young birds, which I saw following their parents in early June, could not have been hatched from eggs laid later than the first of May. But I did not actually find nests until after the rains began in the middle of May, when the owners of these nests were just beginning to incubate. Between mid-May and early July, I saw five nests. The mockingbirds, like the Russet-capped Nightingale-Thrush (*Catharus occidentalis*) and the Chestnut-capped Atlapetes (*Atlapetes brunnei-nucha*), which also found their food on the ground, bred chiefly during the first two months of the rainy season. Salvin and Godman (*Biologia Centrali-Americana*, 1, 1879:29-30), who studied the habits of this mockingbird many years earlier, found that it nested from late May until September; but their observations were made in a region several thousand feet lower than the Sierra de Tecpán, and at lower altitudes in Guatemala many birds breed farther into the wet season than on these cool heights. The last nest found on the Sierra was deserted toward the middle of July while it still held two eggs.

The shallow open nests were placed in dense thickets, or more rarely in a sapling in the tangled undergrowth of open woods, at heights varying from 4 to 15 feet above the ground (fig. 34). I was not successful in studying the early stages of construction, but at the end of June I watched a female place the lining. This bird had lost a well-feathered nestling on June 22. On June 28 I found her replacement nest, in the same thicket as the first and 25 feet away. The old nest had been torn apart and its sticks incorporated into the new, the framework of which had been completed before I discovered it. The bird had already made a start in adding the lining of fibrous roots; and the following morning, from a blind, I watched her at work. Between 6:30 and 10:00 the female mockingbird made only five visits to the nest. She worked alone; but her mate accompanied her as she flew back and forth, and while she fashioned the nest, he sang close by from a low perch in the thicket. On each visit she brought a long root doubled up in her bill, dropped it into the nest as soon as she arrived there, pushed it down with her bill while standing on the side, then sat in the concavity and worked principally with her feet, turning to face in various directions, and sinking low in the nest as she smoothed out the materials beneath her. It was evidently an arduous task to pull up and break off the long roots, which she did out of my sight; and probably for this reason she brought so few of them to the nest during the course of a morning.

The completed nest of the White-breasted Blue Mockingbird is a very shallow cup carefully fashioned of fibrous roots closely matted together and supported in a loose, untidy framework of long, coarse sticks. The fabric of some nests is so thin that the



Fig. 34. Nest and eggs of the White-breasted Blue Mockingbird, Sierra de Tecpan, Guatemala.

eggs show through the bottom. The cavity of one nest measured $3\frac{3}{4}$ inches in diameter by $1\frac{3}{8}$ inches in depth.

EGGS

The earliest set of eggs that I actually saw was found on May 19, 1933, when they had already been incubated for several days; but from evidence presented above, egg-laying on the Sierra de Tecpán must have begun no later than the first of May. Each of the five nests found by me contained two eggs or nestlings. Dickey and van Rossem (*Birds of El Salvador*, 1938:438) likewise record a set of two eggs from El Salvador; but Salvin (*loc. cit.*), who studied the species at lower altitudes, states that the usual complement of eggs is three. The glossy eggs are a beautiful, immaculate light blue. The measurements of eight eggs from the Sierra de Tecpán average 31.6 by 21.5 millimeters. Those showing the four extremes measured 34.1 by 21.0, 31.8 by 23.8 and 29.4 by 20.6 millimeters.

INCUBATION

The female alone attends to the incubation of the eggs. The nest to which I devoted most attention was the one earliest found. It was situated four feet above the ground in a dense tangle of bushes and blackberry canes, close beside a rivulet which flowed with a loud babbling through a deep and narrow valley, between steep slopes covered with bushy growth and scattered trees. I decided to put a paint mark on the female, so that I could distinguish her with certainty from her mate. Accordingly, I stuck a little paintbrush into the rootlets and sticks of the nest, with its end, which had been

dipped in vermilion enamel, projecting over the eggs. Then I returned to my blind, already set up near the nest, to watch what the birds would do. One of the mockingbirds, after hesitating much and uttering many throaty *chucks*, finally returned to the eggs. Upon finding the strange object in its way, it immediately took the end of the improvised paintbrush in its bill, pulled the handle from between the rootlets of the lining, and flew out of sight. After this the bird would not return to the nest, although I waited inside the tent for well over an hour. At the end of this period I deemed it prudent to remove all my equipment. The next day, finding that the eggs had not been abandoned, I made a second attempt to mark the bird, but without success. Flycatchers, ovenbirds, cuckoos, and non-passerine birds in general readily rub against a paintbrush, or a wad of cotton soaked in paint, which is placed above or in the entrance to their nests; and this method of marking them is of the greatest value in studying the division of labor at the nest of species in which the sexes are alike in plumage; but with song-birds of most kinds this practice is so seldom successful that I rarely attempt to employ it.

But as it happened, it mattered little that I could not distinguish the female by her plumage; for I could always recognize the male by his voice. At 2:05 p.m., on the day of my second failure to mark a bird at the nest, I began to watch from the blind and continued until nightfall; I returned before dawn the following morning, and watched until the hour at which I had begun on the previous day. It was then late May. The rain fell continuously, sometimes in a hard downpour, sometimes in a light shower, through all of the afternoon on which I watched, and during my morning vigil there were frequent light showers and very little sunshine. Yet the male mockingbird sang during every one of his mate's sessions on the nest. Since she was restless, this means that throughout the day there was not a single half-hour period during which he did not sing. Although he passed much of the day within hearing of the nest, sometimes he went off on long excursions by himself until his voice died away in the distance. The female would usually remain on her eggs until he returned and his voice sounded close by, then leave her nest to join him, and the two would fly away together to forage out of sight. The male almost always accompanied his mate as she returned to her nest, but never was seen to approach nearer than six feet from it.

But the mockingbird which covered the eggs never demonstrated any ability to sing, not even so much as the female Catbird (*Dumetella carolinensis*). While sitting on the nest she did not once sing softly in response to her mate, as do the female Yellow-tailed Oriole (*Icterus mesomelas*) and the female Melodious Blackbird (*Dives dives*); nor did I hear her join the male in song when she went off to forage in his company. While incubating she was silent; and I heard her voice only once, when she answered her mate's song with a few low, squeaky notes.

For a large bird, the Blue Mockingbird's periods on the nest were very short. During the 14 hours of my vigil she took 28 sessions on the eggs ranging from 8 to 42 minutes, with an average of 20.8. An equal number of recesses ranged from 1 to 23 minutes and averaged 7.1 minutes. She devoted 74.6 per cent of the day to incubation. It is of interest to compare her behavior during the cloudy, chilly morning, when only brief light showers fell, with that during the afternoon, when rain fell strongly and steadily. The rain did not cause the bird to lengthen her periods on the nest, for the average length of her afternoon sessions was less than a minute longer than the average length of her morning sessions. On the other hand, when it rained she was eager to return to her eggs and made her recesses very short, staying away at most seven minutes and sometimes only one, with the result that the average duration of her recesses during the afternoon was little

over a third as long as that for the morning. This was quite different from the behavior of a Slate-throated Redstart (*Myioborus miniatus*) which I had watched on a quite similar afternoon only a week earlier; for the redstart lengthened her absences from the eggs to a marked degree while it rained. The difference between the behavior of these two birds in the same kind of weather seems easy to account for: The redstart catches much of its food on wing, and the rain made search for food more difficult; but the mockingbird subsists chiefly on small invertebrates which it picks from the ground and on berries from bushes. Since many small invertebrates crawl out from their concealment beneath the fallen leaves or underground in wet weather, it is probably actually easier for the mockingbird to satisfy its appetite in the rain. Apparently this is why the Blue Mockingbird nests principally during the wet season, while the redstarts and other birds of similar habits bring no new nests after the commencement of the rains.

When I ended my long watch early in the afternoon of May 26, one egg had already been pipped, while by placing the other at my ear I heard the occupant tapping at the shell. By the following day both eggs had hatched.

NESTLINGS

The two blind, dusky-skinned nestlings, newly hatched, bore a sparse covering of long, soft, blackish down. Their mouths when opened revealed a bright orange-yellow lining. I resumed my watch of this nest early on the morning of May 29, when the nestlings were two days old. Three minutes after I entered the blind the female returned to resume brooding. After another three minutes the male came with a billful of food. The female opened her bill widely and he put it well down into her throat. There were at least two pieces, and she dropped one. The male recovered it and did not return it to her at once, although she opened her mouth. He looked around for the mouth of a nestling to which he might deliver the food directly, but the mother had them well covered and he finally relinquished the piece to her. Then she stepped backward to the nest's rim, fed both nestlings, and resumed brooding. Soon she went off for a brief recess, and on returning brought food, gave it to the nestlings, and brooded again. As she was leaving once more her mate, coming with food, met her among the bushes about three yards from the nest and passed to her what he held in his bill. Again the female dropped a piece, and following it to the ground, devoted two minutes to searching for it. After she retrieved the fallen morsel she returned to the nest, fed the nestlings and brooded.

During $2\frac{1}{4}$ hours each parent brought food four times. The female brooded for 6 periods ranging from 11 to 21 minutes, taking recesses of from 2 to 18 minutes in length. During the first days after the nestlings hatched, the male would never feed them in the absence of the female, but if he came with food while she was away, he hopped among the bushes a few yards from the nest until she returned and took the food from him. But later he fed the nestlings while his mate was away and also removed droppings. Sometimes he sang in an undertone as he flitted toward the nest with his bill full of food. In this period of the nesting cycle, full song was heard only occasionally.

After watching the parent mockingbirds attend to their nestlings in the normal fashion, I thought that it would be interesting to give them a few problems to solve, such as I had not long before given to the Russet-capped Nightingale-Thrushes. In the absence of the parents, I completely covered the nest with the large, downy leaf of a *Senecio*. The female soon returned with food in her bill and hopped all around the nest, trying to look under the leaf, and constantly repeated a low, throaty note. After three minutes of this inspection, she cleared her bill for action by swallowing what it contained, picked up the leaf and easily carried it from the nest, then returned at once to

brood her children. While she sat there her mate brought food and gave it to her for delivery to the nestlings, as before. When she went off again, I emerged from the tent and covered the nest completely with a white handkerchief. This time the parents returned together, both with full bills. The female, who was slightly in advance of her mate, at once swallowed what she carried and gave a few tugs to the handkerchief; but it caught on the sticks of the nest, was difficult to remove, and seemed to frighten her. So she retreated a little distance, and the male came forward, swallowed the food in his mouth, and pulled at the handkerchief until it was clear of the nest, then succeeded in dragging it about a foot away. Here he hopped all around it, at times spreading his wings, jerking it and attempting to remove it farther from the nest; but it had caught on the thorns of the blackberry bush and he eventually abandoned his efforts to release it.

After the female had warmed the nestlings again, I removed them from their proper nursery and placed them in my cap, which I had made into a sort of nest among the bushes near the real nest. Soon the mother returned, approaching from the side of the nest opposite the cap, this time without food for the nestlings. She looked into the empty nest and poked at the bottom with her bill. Although clearly perplexed, she sat in the nest as though to brood. Here she evidently did not feel right, and constantly shifted about and rose up to look beneath herself. A loose stick annoyed her and she tried to make it stay down in the rim of the nest where it belonged, but she could not arrange it to her satisfaction, and after sitting less than two minutes she left the nest to carry it away. During her absence the male several times approached the nest, singing, with food in his bill; but because at this period he would not go quite to the nest unless his mate were there, he did not discover that the youngsters were missing. Half an hour passed and the female did not return. The nestlings were returned to the nest and the female came back later to brood them.

A week later I repeated my last experiment, this time placing the cap which contained the young mockingbirds a yard from the nest, on the side opposite that on which the parents invariably approached and departed. The female was the first to return with food, and on finding the nest empty flitted around in the bushes close by, uttering her usual throaty *chucks*, and going back thrice to look into the deserted cup. On leaving the nest after the fourth inspection, she found the nestlings, only one minute after her re-appearance; but instead of feeding them she went again to the nest, then came back to the cap, then once more to the nest and back again to the cap. After four minutes she swallowed the food in her bill; but she continued to circle around in the bushes a few minutes more, repeating her throaty note every few seconds, before she finally settled down to brood the empty nest. Here she sat for six minutes, then hopped out and began vigorously to preen her feathers in the bushes close by.

While she was engaged in this occupation, the male approached, singing and carrying food for the nestlings in his bill. He passed his mate on the way to the nest. On finding it empty, he bent down his head low above it in a most comical fashion, as a near-sighted person might do under similar circumstances. Convinced that the nestlings were no longer there, he went flitting around through the bushes, and within two minutes of his return discovered them in the cap. Several times he advanced toward the strange object and retreated from it, but in very short order he overcame his reaction and fed one of the nestlings, then went away singing. When he came back with food once more, he went first to the empty nest, but then immediately to the cap. The female soon followed the lead of her mate; and so long as I left the nestlings in the cap, both parents went directly to feed them there. But the female would not brood them there, although several times she seemed to be on the point of doing so. The young mockingbirds were

now nine days old and had acquired an amazing capacity for producing heat. Although considerable areas of their skin were still not covered by their sprouting plumage, and the afternoon was so cool that my nose, ears and fingers soon came to feel as cold as the steel blade of my machete, they remained perfectly warm during their two hours' exposure. They now uttered a soft, rapid peeping when they heard their parents approaching, and this no doubt helped to guide the latter to their new position.

The parent Blue Mockingbirds were excessively shy and retiring. The female, if she happened to be brooding them when I approached, always stole away before I could come near enough to see her on the nest; and while I remained at the nest both parents lurked some distance away in the thicket, where they flitted about in silence or uttered occasional throaty notes, but never emitted any cries of distress nor attempted either to attack me or to lure me away. Another female Blue Mockingbird would stay in her higher nest, sitting quietly while I passed beneath her. She even remained when I set up a ladder and climbed to the second step. But when I climbed higher she darted away and maintained a distance while I examined the ten-day old nestling which she had been brooding. The aloofness of the Blue Mockingbirds contrasted strongly with the behavior of Brown Thrashers whose nests are disturbed by humans and with that of a pair of North American Catbirds which I once watched (Skutch, *Fauna*, 8, 1946:87-89). Unlike the Blue Mockingbirds, the latter did not remove a handkerchief or a leaf which covered their nest; yet when I touched the nestlings of the Catbird, the female alighted on the back of my hand to peck it, while the male buffeted my head from behind, and both uttered low mews.

The female brooded by night, and while rain fell, so long as the young birds remained in the nest. The two to which I devoted most attention left the nest when 14 and 15 days old, respectively; but they had been removed from the nest for examination, and otherwise would perhaps have lingered a few days more.

When they left the nest, the young mockingbirds were everywhere, except on the abdomen, so dark a gray as to be nearly black. But the gray feathers of throat and breast were sprinkled with white, signs of the approaching whiteness of these regions. The feathers of the abdomen were white with gray tips. The bill was light gray with white edges, the interior of the mouth orange-yellow, the eyes dark brown. This juvenal attire was worn for only a short period. A young mockingbird which I discovered in early August—my attention was drawn to it by the characteristic throaty *chuck*—had the chin, throat and breast already largely white, but with a few conspicuous traces of gray. All of the mockingbirds that I saw after the end of August were apparently in full adult plumage. The families dispersed after the young birds could take care of themselves; and during the last months of the year I saw lone individuals so frequently that I doubt whether it is the habit of this species to remain mated. When the nesting season had passed the males ceased to sing their true songs, but continued to voice the bizarre medleys which first drew my attention to their kind.

Dickey and van Rossem (*op. cit.*: 439), writing of the "Blue and White Mockingbird" in El Salvador, state that "it is obvious on the most casual examination that the adult plumage is not attained the first year. On Los Esesmiles in February and March three males, all immature, were taken from small flocks numbering up to six birds. These young birds have a pronounced creamy tinge on the underparts; the blue of the upperparts is duller than in adults; the remiges and rectrices are decidedly shorter and narrower." Apparently these differences between yearlings and older birds, evident upon a comparison of specimens in the hand, are not sufficiently pronounced to be readily noticed on birds in the field. Dickey and van Rossem further state that one-year old

birds sometimes breed. Although in El Salvador they met the mockingbirds in small flocks containing at times six individuals, in the neighboring republic of Guatemala I saw no evidence of flocking, except the family groups of four.

SUMMARY

The White-breasted Blue Mockingbird is confined to the highlands of northern Central America, where it ranges vertically from about 3000 to 9000 feet above sea-level. It dwells in dense thickets or in the abundant undergrowth of open woods, especially those of mixed pine and oak.

It forages on the ground, tossing the litter aside with vigorous sideward sweeps of its bill, rarely scratching with a foot. In addition to the small invertebrates picked up from the ground, it eats small fruits.

The full song consists of a variety of short musical phrases, each repeated a number of times. This song is delivered from a low or a high perch and rarely contains imitations of the notes of other birds or harsh interjections. At other times the song is a medley of *churr's*, *cluck's*, screeches and other harsh notes mingled with clearer whistles and trills. This "nonsense singing" is heard at seasons when the bird does not breed nor deliver the true song, but the mockingbird also indulges in it during the nesting season. Apparently song is given only by the male.

On the Sierra de Tecpán in west-central Guatemala, between 8000 and 9000 feet above sea-level, nest-building apparently began in late April but did not become general until after the rainy season started in mid-May.

Five nests found between the middle of May and early July were shallow cups of closely matted fibrous roots supported in a framework of coarse sticks and were placed in dense thickets, or rarely in a sapling in the woods, at heights ranging from 4 to 15 feet above the ground. Only the female was seen to build. Each of the five nests contained two immaculate light blue eggs, or two nestlings. At lower altitudes, sets of three have been reported.

The female alone incubated. During 14 hours of watching at one nest the female's 28 sessions ranged from 8 to 42 minutes and averaged 20.8 minutes. Her 28 recesses varied from 1 to 23 minutes in length and averaged 7.1 minutes. She devoted 74.6 per cent of the day to incubation. Despite cold, wet weather, her mate sang during each of her turns on the nest. During an afternoon of steady cold rain, the female reduced her recesses to a little over a third of their length during the forenoon, while her sessions were of substantially the same length as in the morning.

The nestlings were fed by both parents but brooded only by the female. Early in the nestling period, the male would not approach the nest with food in the absence of his mate. At one nest the young, which earlier had been lifted out for examination, left when 14 and 15 days old, respectively.

When the nestlings were covered with a green leaf or a white handkerchief, the parents promptly pulled the covering from the nest, the male proving himself the more responsive in this emergency. But when nestlings were placed in a substitute nest a few feet from their own, the parents failed to adjust their behavior to the new situation.

The juvenal plumage was worn for only a short period. By early August one young mockingbird was far along in the postjuvenal molt. By September the young wore a plumage which, in the field, could scarcely be distinguished from that of adults.

After the young became self-supporting, the families dispersed. During the last months of the year lone individuals were seen so frequently that it seems doubtful that the adults remain constantly mated.

Finca "Los Cusingos," San Isidro del General, Costa Rica, March 8, 1949.