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A LAST REMNANT OF IVORY-BILLED WOODPECKERS IN CUBA

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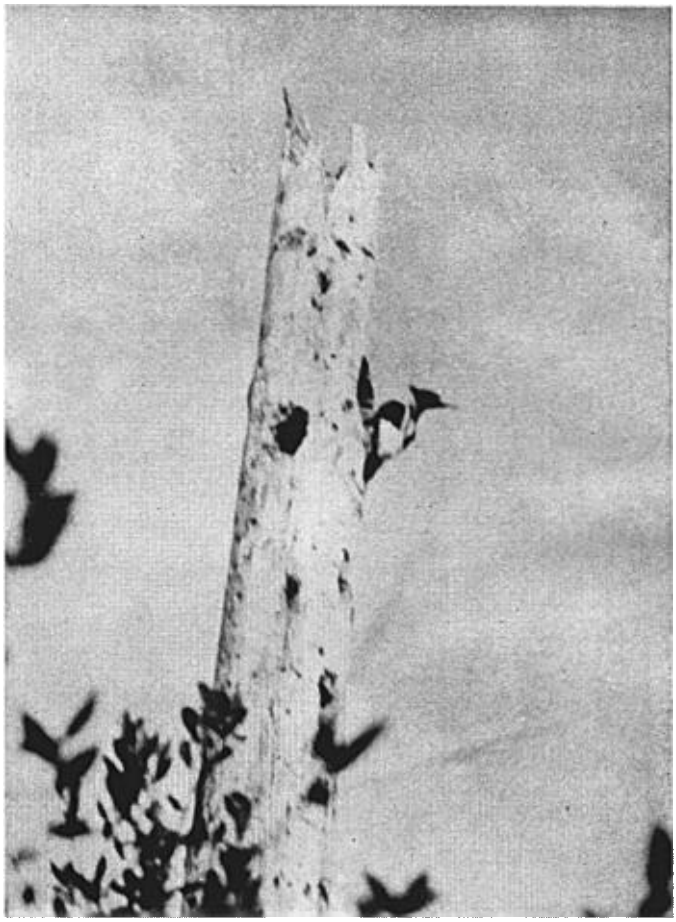
Plate 13

IT IS interesting to observe that Ivory-billed Woodpeckers, *Campephilus principalis* and *bairdii*, at the present time should be in final stages of becoming totally extinct in the two parts of the world where they occur, Cuba and the southern part of the United States. The last known colony of American birds (on the Singer Tract in Louisiana) has apparently disappeared. Barring the unlikely possibility of a new colony being discovered, the American bird is now extinct except for a few stray individuals. The fate of the Cuban bird, until this report, was generally unknown outside of Cuba. A pair had been collected in the Sierra del Cristal of Oriente Province about 1907 by Dr. C. T. Ramsden. He also found a nest. In this same range a Swedish botanist, Eric Ekman, saw a few individuals about 1920. Bond (1947) gives the probable range of the species at the present time as the Sierra del Cristal and the Sierra de Moa in northern Oriente. Barbour (1943) considers the bird virtually extinct and adds that "a few pairs may possibly still be living in the pine-clad highlands of Mayarí . . . " Speaking of the range of the Ivory-bill during Gundlach's time (the last half of the nineteenth century), Barbour states that it was "to be found in the Organ Mountains north of San Diego de los Baños, in the high woods about the Ensenada de Cochinos, where the memory of the 'Carpintero Real' persists, as well as near Guantánamo." He (Gundlach) collected traditions of still earlier occurrence in Banagüises, Calimete and along the Hanábana.

My interest in the fate of the Cuban bird was aroused by Mr. Davis Crompton of Worcester, Massachusetts, who has made several trips



MALE CUBAN IVORY-BILLED WOODPECKER PREPARING TO ENTER NESTING CAVITY. THE LOWER HOLE APPEARED TO CONNECT WITH THE MAIN CAVITY.

to the South in efforts to locate colonies of the American Ivory-bill. Mr. Crompton had made inquiries concerning the Cuban bird, and we were fortunate in receiving letters, giving us detailed information about a colony at an undisclosed site, "somewhere in Cuba." Since we are obligated to keep secret all information that might lead to the discovery of any remaining Ivory-bills, all place names are omitted from this paper as are the names of birds having a restricted range. We are entirely in sympathy with this restriction since what little chance the Cuban birds have depends to a large extent upon their isolation and freedom from molestation by trophy hunters and collectors.

Our information came from a man who had the welfare of the birds at heart and who took steps toward their protection. Unfortunately he is no longer present in the region in which the birds occur. The largest number he saw was a group of six, this in 1941. The group followed him through the woods for some distance, exhibiting great curiosity. In the same year he observed a nesting site in a dead pine. Interestingly enough, a young bird, still unable to fly, was brought to him by some lumbermen. It was fed "white grubs, these being procured by a man who was paid to chop them out of dead pine logs." When the bird was able to fly, it was released. Our informant kept track of several pairs, one of which nested at the same site for two seasons. He did not know the exact status of the birds at the present time, but thought that lumbering activities had probably reduced their numbers or had driven them to more remote districts. Although we had no assurance that we would find any living birds, we thought that there was enough probability to warrant a try. So it was that we left for Cuba in April of 1948 in the hope that we would see and photograph the Cuban Ivory-billed Woodpecker before the species was extinct.

After arriving at our destination, we spent several days exploring the country in all directions from our headquarters. The mountainous terrain here was largely covered by a broad belt of pine. The pine gave way to a splendid deciduous forest which was in the process of being ruined by lumbering activity and fire. The pine forest had already been ruined, only dead and defective trees remaining. Adding to the devastation, were forest fires which burned unchecked. The lumbermen did not bother to put out their cigarettes but tossed them into the dry underbrush. A view of the mountains always revealed columns of smoke rising from a dozen or more points. No attempt, whatsoever, was made to put out any of the fires. The country was almost empty of inhabitants, but here and

there squatters had moved in. Their huts, made of thatched palm fronds, stood in the middle of bleak clearings where every single tree had been felled, with the exception of royal palms, if any existed.

At first we made little mention of the Ivory-bill or 'Carpintero Real.' We did not want to attach too much importance to the bird as this might induce people to kill them in the belief that there was some value in a dead bird. But as our early explorations bore no fruit, we began to make some careful inquiries. We soon learned that almost any woodpecker was called a "carpintero real." Our suspicions then were that very few people working or living in this region knew the Ivory-bill. This assumption proved correct when we later found that of several dozen lumbermen, only two could describe the bird. But after a good deal of inquiry, during which we showed equal interest in Cuban todies, trogons, parrots and the like, we learned of an area where woodpeckers, almost certainly Ivory-bills, occurred. We were told that the birds were seldom seen, being active only during the early morning and toward evening.

The region to which we had been referred was one made up of pine forest with an understory of palms and grasses. There was a sprinkling of deciduous trees, some quite large. Although this region had been heavily logged and burned over as well, growth was quite luxuriant in spots. A watercourse, as well as the generally rugged terrain, had prevented a clean sweep of all the timber. The pine trees, on the whole, were limited to less than five inches in diameter. Numerous dead pines, often ten or more inches in diameter, were still standing.

Almost as soon as we entered this region, we found fresh Ivory-bill diggings in small and defective pine trees. Walking along old lumber trails, we shortly heard calls which sounded like descriptions of the Ivory-bill note. Leaving all our equipment as well as our guides behind, we plunged into thick growth, hoping for a quick termination to our search, now entering its fifth day. Presently all hopeful sounds ceased. We were left without a clue as to what direction to follow. For several hours we penetrated along a ridge, finally coming to a point where we had a good view of the valley below. At this point we separated; I made my way to a vantage point where I could watch for birds in flight and Mr. Crompton remained in the same spot to get some rest or sleep after our fatiguing climb. Within fifteen minutes Mr. Crompton was awakened by the calls of an Ivory-bill in near-by trees while, in the mean time, I spotted a second bird engaged in shredding bark from a small pine. Either both these birds were females, as their black crests suggested, or one of them was a female (this we later established) and the other was an immature male.

They were 'barking' the small pine trees in search of food. While I returned for my camera, Mr. Crompton followed the bird which proved to be a female as she made her way leisurely down the ridge. After several hundred yards, she came to some dead pine stubs and lingered in this vicinity. When I returned, I saw not only this bird, but also a male leaving a cavity in one of the dead pines. It soon became obvious that we had stumbled upon a nesting site.

Our observations at the site lasted from about 1:00 P. M. until 5:00 P. M. We were unable to return again to this spot so that my data are quite fragmentary, to say the least. But in as much as virtually nothing has been written on the habits or nesting of the Cuban Ivory-bill, I offer my notes as a slim beginning. Ironically, these notes may be the last, due to the precarious status of this species.

All persons who gave us assistance and supplied us with information can not be mentioned in this text. One of these persons, a citizen of the Republic of Cuba, gave us invaluable aid as a guide—this without asking for remuneration. I am able to acknowledge publicly the encouragement and assistance given us by Mr. C. Russell Mason, Executive Director of the Massachusetts Audubon Society. I am also indebted to Mr. James L. Peters of the Museum of Comparative Zoölogy in Cambridge, Massachusetts. He assisted by correcting this manuscript and by examining the skull of an Ivory-billed Woodpecker which I succeeded in finding. Finally I wish to acknowledge the kindness of the officials of the American Museum of Natural History in New York, including Dr. Ernst Mayr, who first positively identified the Ivory-bill skull.

The entrance hole to the nesting cavity was about thirty feet up in a dead pine stub—low as Ivory-bill nests go. The top of the stub had been blown off, making for a jagged appearance. As we watched this site, we saw the male and female exchange places on the nest—a behavior which showed them to be taking turns at incubation.

The date of nesting is of interest. We were observing the site on April 17, and, of course, had no knowledge of how far incubation had progressed. Bent (1939) gives the nesting time for the American bird as March, April and early May. Occasionally nesting begins in February. In Louisiana the birds nested later than in Florida. Records for Florida show that the young are usually fledged by April. There is a chance that the site we observed may have been used by a pair making a second nesting attempt. There is one bit of evidence that gives a vestige of support to this theory. While examining the vicinity of the nesting site, I came upon the skull of a woodpecker which was later identified as that of an Ivory-bill. It was in good

condition. Later careful examination by Mr. James L. Peters determined that the skull was almost certainly that of an adult. If there had been an unsuccessful first nesting, it follows that the skull might have belonged to a victim of such an attempt. Against the evidence that this was a late nesting, is the unconfirmed information we received that another pair was nesting at that same time in the region. It also might be mentioned that the West Indian Red-bellied Woodpecker, *Centurus superciliaris*, was also nesting during this time.

The nesting site was in a comparatively open area on the western slope of a ridge, about three-fourths of the way up. A small stream flowed in the valley below. The western slope supported a better growth of trees than did the eastern one. Pine was the predominant growth. Dead pines in the vicinity of the nesting stub were from ten to thirteen inches in diameter. The nesting stub, about a foot in diameter, was quite advanced in decay, being split in places and wholly devoid of bark. There were two openings near the top of the stub, one used by the Ivory-bills. The one in use was several inches above the other opening and faced west. The second opening faced south. A remarkable feature of this opening was that it seemed to lead into the main nesting cavity. Looking up into it from the ground I could see daylight which must have filtered through from the main entrance. This opening was smaller and oval in shape, and probably too small to have allowed passage by the Ivory-bills. The main entrance, on the other hand, formed a square, roughly four inches by four inches. (This is clearly shown in photographs in our possession.) Tanner describes all the holes he saw in the Singer Tract as varying from oval through egg-shaped to nearly triangular. While the hole we observed was not a perfect square, it was far more angular than oval in shape. This hole was about thirty feet up, as previously mentioned, and a foot and a half from the top of the stub. Directly in a line below it were two other holes—these quite irregular and two and four feet, respectively, below the main entrance.

On the ground about the nesting site there was a pile of fresh chips. At a distance of twenty to thirty feet from the nesting tree, a dead pine lay on the ground. In the trunk of this tree I discovered a former Ivory-bill nesting site. This was a typical cavity with one entrance. The entrance hole was approximately three by five inches, being rectangular in shape. The inside diameter was nine inches, and the depth of the cavity was one foot. Tanner cites as a shallow nest one of fourteen inches. But he mentions that Audubon once found a cavity with a depth of ten inches. Tanner gives as an average, twenty inches. While the cavity I examined is not nearly this deep,

it must be remembered that the Cuban bird is considerably smaller. The American Ivory-bill averages about twenty inches in length while the Cuban bird (Cory, 1886) is eighteen and one-half inches. The finding of this old nesting cavity so near the new one suggests that the Ivory-bills have nested in this immediate vicinity for a number of years. In fact, this region, as I later discovered, was one of the areas that had been described to us as a nesting site in 1943. It is quite significant that the birds had continued here so long in spite of changing conditions.

For the most part our observations as to habits and behavior follow Tanner's description (1943) of Ivory-bills at the Singer Tract under the heading of 'General Habits and Behavior.' Tanner's description of the way the Ivory-bill clings to trees "with both feet wide apart and forward" and climbs "by springing upward and shifting the foothold near the conclusion of each leap" follow our observations exactly. There is one point that Tanner does not mention, nor have I seen it mentioned elsewhere, and that is the method the Ivory-bill uses to grasp a tree trunk with its toes. Allen (1925) states that it is usual in most woodpeckers for the first and fourth toes to be turned back and the second and third turned forward; this is called a zygodactyl or yoke-toed condition. Allen goes on to say that owls show an intermediate condition, and can turn the fourth toe back at will. From our observations we gathered that the Ivory-bill more nearly resembles the owl in this respect. For whenever we observed Ivory-bills grasping the trunk of a tree, three toes were turned forward and one was turned back. This characteristic method of grasping a tree trunk was one of the first things we noted when we saw the birds. Their long bluish toes, wide-spread and thrust forward, immediately attract attention. Unfortunately none of my photographs (all in color) show this characteristic. But plate 17 in Tanner shows this clearly. This photograph shows the right leg thrust forward with three of the toes widely spread and pointing forward. This is the typical method of grasping which we noted in the Cuban Ivory-bill. I might add that the colored plate, the frontispiece in Tanner's report, shows Ivory-bills grasping a tree trunk in the manner of other woodpeckers. This is true also in Audubon's painting of the American Ivory-bill.

Another dissimilarity to other woodpeckers is that the Ivory-bill does not seem to drum. Tanner reports that he heard no drumming or rolling. But in procuring food, the Ivory-bill taps like any other woodpecker. One other method of procuring food which we saw the birds employ was to knock off slabs of bark by using the bill as a sort

of mallet. This was done only on small pine trees where the birds were evidently seeking the grubs of beetles which lived beneath the bark. Tanner describes this method when he says: "They knock the bark loose with sidewise blows and quick flicks of the bill." Conventional tapping, as we noted it, was done quite leisurely. This was perhaps because most of our observations were made during the heat of the day. I watched the male bird for some twenty minutes perched upon the horizontal limb of a living deciduous tree where he was engaged in tapping upon one particular spot. Usually the taps were given in succession of threes and fours, followed by a quick flick of the bill to clean out the chips. My impression was that he was not using his full force in these blows. The tap was given slowly and deliberately, and the ensuing noise scarcely equaled in volume the work of the Downy Woodpecker. The only noisy tapping we heard was three or four taps given at slow intervals when the birds appeared to be starting work upon a new tree. Double raps, described by Tanner as given frequently when the birds are "disturbed by the presence of persons or when one of the pair is absent," were occasionally heard.

The only other prolonged activity in which either of the birds engaged while near the nesting site was preening and scratching. They spent so much time at this that I considered it unusual. Tanner, however, writes that "they often preen and scratch themselves, especially during the times of the day they are not actively feeding."

An occasional activity appeared to be defense of the nesting site. An instance of this was when a Sparrow Hawk (a pair was nesting in the vicinity) swooped down close to the entrance of the nesting cavity. At once the male bird, leaving his idle tapping, was off in hot pursuit. His flight was direct and rapid as he gave chase. My recollection of the flight of the Ivory-bill is that it was never undulating, but always in a straight line.

As to the Ivory-bill's voice, I have nothing to report from my notes. Mr. Crompton, however, took pains to record the exact interpretation of the calls he heard. He describes one note by the female only as a *hump* repeated slowly at intervals. The characteristic note, given by both sexes, he describes as a *hant* repeated six times.

No attempt was made to time the periods each bird stayed on the nest. Only a few general observations are available on the behavior of the birds at the nesting tree. When we first arrived in the vicinity, the birds appeared somewhat agitated. At no time, however, would I say that they were shy. The agitation manifested itself by considerable vocal activity and by frequent changes of place on the nest. But as the birds became used to our presence, they seemed positively

lethargic as they loitered in near-by trees. Later in the afternoon the birds disappeared—one evidently remaining on the nest while the other went on an excursion in search of food. Before we left the region, at least an hour elapsed without either of the birds showing itself. On all occasions when one of the birds came to relieve its mate, there was quite a flurry of activity. The relieving bird would nervously hop about at the entrance to the nesting cavity. The bird leaving the cavity, on its part, showed no hesitation, but would pop out unexpectedly and make for another tree.

My notes on the plumage of the Ivory-bill deal chiefly with the crest. The birds seem to have a certain amount of control as to the erection and lowering of the crest. But, strangely enough, the crest seemed to be in a state of complete disarray most of the time. This was due to the wind, which, although not strong, was enough to give the crest a disorderly and even grotesque look. The female, No. 2 in Audubon's plate on the Ivory-bill, has a tousled crest. This representation of the Ivory-bill is truly life-like. Even when the crest of the female was orderly, we noted that it never came to a sharp point, but rather to a blunt conical point. The male did have a relatively pointed crest when it was in order.

When one considers the future of the Cuban Ivory-bill, one of the most significant facts is that the pair we observed, as well as other pairs of which we had reports as having nested in the region at one time, nested in cut-over pine forest. Originally their preferred habitat had, undoubtedly, been virgin stands of pine forest. But as this was cut, some of the birds had managed to adapt themselves to the scrub growth that remained, finding their food supply in dead and dying trees. The pair we studied lived in a region that had been logged, as far as I could determine, seven years ago. And all evidence pointed to the fact that they had been there for five seasons at least. In connection with the Cuban Ivory-bill's apparent preference for pine woods, it is interesting to note that the largest member of the genus, the Imperial Woodpecker, *Campephilus imperialis* (Gould) of México, is found in pine forests. Tanner states that it inhabits the pine forests of the Sierras of northwestern México. The American Ivory-billed Woodpecker, however, does not show this preference. Tanner relates that its habitat outside of Florida consists of bottomland forests where sweet gum and oaks predominate. In Florida its preferred habitat is cypress swamps and swampy hammocks. Yet in Florida there have been cases where the Ivory-bill frequented pine woods. Allen and Kellogg (1937) give an instance of this. Writing of birds that nested in a cypress swamp, they state that "the birds apparently

did most of their feeding in the dead pines at the edge of the swamp, scaling off the bark of those small and medium-sized pines that had been killed by fire . . ."

During the first several days of our stay in the region where the Ivory-bills had been reported, Mr. Crompton and I spent our time searching through the most likely areas of the remaining deciduous forest. These areas had all been logged to some extent, but the growth was very luxuriant with huge trees towering above the forest floor. In such forests we saw no sign whatsoever of the Ivory-bill. Yet other types of woodpeckers were much more abundant here than in the cut-over pine forest. In the woods adjacent to the Ivory-bill nesting site, for instance, we found woodpeckers quite scarce. During the entire day we spent in these woods, we saw, at the most, two West Indian Red-bellied Woodpeckers, *Centurus superciliaris*, and one Cuban Green Woodpecker, *Xiphidiopicus percussus*. What accounts we had of the history of the Ivory-bill in this region showed that they had frequented pine forest. While we were in the region we heard of one other active nesting site. This too was in pine forest, and approximately three miles from the site we observed. Due to circumstances beyond our control we were unable to substantiate the existence of this site.

As Tanner has pointed out, the chief cause for the disappearance of the American Ivory-bill was the destruction of virgin forest. This meant the loss of a super-abundance of dead wood on which the Ivory-bill depends for its food supply. The larvae of cerambycid and other beetles which constitute the principal source of food for the Ivory-bill is found abundantly in dead and dying trees. But from observations in Cuba it would seem that the Ivory-bill can find such a food supply more advantageously in cut-over pine forests where millions of trees were already dead or were in the process of being killed by fire and, presumably, by the attacks of insects. The question here, however, is how much longer will a forest, deteriorating as this one is, support the Ivory-billed Woodpecker. Continued fire and cutting, added to the effects of erosion, will in time make this region a virtual waste-land. This, of course, will seal the doom of the Ivory-bill even if the bird is spared by humans. On the other hand, there is the possibility that the lumbering interests will move out and that the region will be given a chance to recuperate. Even if a certain amount of fire continues to burn certain areas, this is not necessarily unfavorable as the Ivory-bills may depend upon a continued supply of dead trees.

But whatever the outcome in regard to the forces at work upon the

environment, the few remaining Ivory-bills are in constant danger of being exterminated by humans. For example, early in 1948 a dead bird was seen nailed to the side of a native hut. We found that it was a common practice for the people in this region to take young woodpeckers out of their nest and use them for food. The common woodpeckers of the region were the usual victims, but there is no reason to doubt that the natives would not hesitate about robbing an Ivory-bill nest should they come upon one. With the region opening up for settlement, it can hardly be hoped that the Ivory-bills will escape observation.

We asked a very intelligent boy, who acted as our guide, what measures in his opinion would safeguard the Ivory-bill. He emphatically stated that if a warden were to be sent in to patrol the region, the people would respect his presence and leave the Ivory-bills alone. This simple expedient would seem to be well worth trying, particularly as it might mean the difference between the survival of a species and its total extinction.

Whatever the future holds for the Cuban Ivory-bill, one thing seems to be certain, and this is that on the long path of evolution from the origin of a species to its total oblivion, the Ivory-bill in Cuba has a slight edge on the American bird as the two go down to extinction—this, in face of the fact that Cuba was settled a hundred years earlier than our country and has suffered more from deforestation as the country was cleared for grazing and the sugar industry. The bird has not survived in Cuba, however, due to any innate gentleness on the part of Cubans toward birds. Just as in our country, the Ivory-bill was killed for every conceivable reason—sport, food, trophies, curiosity. Not as many were killed by professional collectors, simply because the birds vanished so quickly from all accessible parts of the country. The fact that a few roadless wilderness areas have remained up until the present time as well as the apparent ability of the birds to meet changing conditions seem to have allowed a few to survive. If present trends continue these few birds will quickly disappear.

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Moose Hill Sanctuary
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GEOGRAPHIC VARIATION IN *EMPIDONAX TRAILLII*

BY ALLAN R. PHILLIPS

OF ALL the birds of North America, the Alder Flycatcher, with its willow-inhabiting races in the west, is perhaps as difficult as any to the taxonomist. Except for the lack of pronounced sexual differences, these birds present nearly every possible difficulty. Indeed, the very similarity of the sexes poses a problem; a large female of one race may be confused with a small male of another, leading to doubt as to whether the bird was breeding or on migration when taken. The species migrates both very late in spring and early in fall; only from June 25 to July 20 may the birds be presumed to be on their breeding grounds; and at this time most of them are in poor plumage.[1] In cases of this sort, the inadequacy of the usual museum label (which gives no data on sexual condition or on plant association) becomes painfully apparent. Besides these difficulties, size varies rather independently of color; immatures differ from adults; adults migrate before their post-nuptial molt; and it is no easy matter even to distinguish this from other species of *Empidonax*. Perhaps the worst features of all are the manner of intergrading, by wide individual variation in intermediate areas, and certain peculiarities in the distribution of the races, which does not always coincide with the distribution of races of most other species (which we think of as 'natural' ranges). This last situation might well be suspected from the proximity of the type localities of *brewsteri* and *adastus*, both of which lie in the western Great Basin region.

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[1] Even as far south as Costa Rica (Agua Caliente, 4500 feet alt.), on May 24, 1920, Austin Paul Smith wrote on the label of a specimen of *brewsteri:* "No sign of breeding, and species rather common in old pastures—perhaps migrants!" But the extreme limits of the birds' stay in Central America are not clear; the June 4 specimen of *brewsteri* from Hacienda California, Guatemala, had sustained an injury to the right wing.