

## OF WOODPECKERS AND FROGS

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When I started to work professionally on the herpetology of the Cuban Archipelago in 1982, initiating a major research project in the field of zoology was a real challenge for any Cuban scientific agency or institution. The big state budgets of the early socialist years were no longer available. My initiation as a researcher in the now extinct Institute of Zoology brought on a long period of financial poverty, for me and for the entire scientific infrastructure, that had developed from 1959 to 1980.

My aspirations to field biology were inspired by the scientific articles of Stanley Rand on the ecology of anoline lizards, by the many contributions of Albert Schwartz on nearly all aspects of Antillean herpetology, and by personally meeting Orlando H. Garrido. Unfortunately, my dreams of retracing the steps of Thomas Barbour, P. J. Darlington, and Schwartz were not to be realized — but the random destiny of a scientist under the capricious direction of a totalitarian government can work miracles — among them my involvement in a long ornithological search that led to some incredible herpetology.

### An Ornithological Quest

In 1985, I was working with the Empresa Nacional de Protección de la Flora y la Fauna (ENPFF), a department within the Ministry of Agriculture. In that same year, a colleague, Giraldo Alayón García, had been designated to serve as the host for the visit of Lester L. Short, principal curator of Ornithology at the American Museum of Natural History and world-renowned specialist on woodpeckers. Dr. Short was accompanied on this journey by George Reynard, an expert on bird bioacoustics.

Commander Universo Sánchez, an old retired guerrilla and an aficionado of the wild fauna, had invited these American visitors. Orlando H. Garrido,

who was to serve as the host, was attending a scientific meeting in Perú. Consequently, Alayón, a well-known arachnologist in the Caribbean area and an observer of birds for many years, found himself enrolled in an expedition financed by the American Museum and for which he had been able to make only some last-second preparations. The objective of the trip was to find the Ivory-billed Woodpecker (*Campephilus principalis*), a species extirpated in the United States and whose status in Cuba had been unknown since the mid-1950s.

At this time, one might question the relationships of a project that involved two American ornithologists searching for a potentially extinct species of bird with a famous Cuban arachnologist and a totally unknown Cuban herpetologist. During one of our routine trips to Topes de Collantes in the Sierra de Trinidad in south-central Cuba, Alayón described his brief six-day jaunt with the American ornithologist in February 1985 and their plan for a more extensive expedition in spring 1986 (Figure 1).



FIGURE 1. United States/Cuba Expedition, Ojito de Agua, April 1986: (first row, left to right) Alfonso Silva-Lee, photographer; Emma Romeu, journalist; George Reynard, ornithologist from Cornell University; Alberto Garzón, guide; Jennifer Horner-Short, ornithologist from the National Museum of Nairobi, Kenya; (second row) Aracelio Navarro, guide; the author; Giraldo Alayón, biologist from ENPFF; Noelio Pober, mule driver from La Melba; Roberto Gamboa, truck driver from MINAGRI; Lester L. Short, ornithologist and curator emeritus, American Museum of Natural History (photograph by Carlos Peña).

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FIGURE 2. Male Smallwood's Giant Anole (*Anolis smallwoodi*) from El Yarey camp (photograph by H. Hunecker).

From that conversation came the idea that Alayón and I, with the sponsorship of Garrido, proposed to our boss. Our brainstorming envisioned a project in which a group of Cuban researchers (logically headed by us) would conduct a series of rigorous investigations that would clarify the status of the Ivory-billed Woodpecker since 1956, the year in which the Lamb couple had tracked more than half a dozen pairs in an unpopulated area in the Sierra Cuchillas del Moa and Cuchillas del Toa in eastern Cuba.

Specifically, we sought to determine how much the habitat described by the Lambs had changed. They had ventured into an extensive forest of endemic pines (*Pinus cubensis*) that was surrounded by a mosaic of biomes, including tropical hardwood rainforests, xerophytic chaparral that Cubans called Charrascales, and wild mountains, from which the great rivers of Cuba originated. Thus, the imminent extinction of a most impressive bird created an ideal opportunity to explore one of the most unreachable and least-explored regions of Cuba — and a dream come true for a herpetologist and an arachnologist.



FIGURE 3. Male Tiger Anole (*Anolis rubribarbus*) from the western slope of Pico Toldo (photograph by H. Hunecker).

### The First Cuban Expedition

To our surprise, our project was approved, and we began the feverish preparations for an expedition, the importance of which exceeded any with which we had ever been involved. The ENPFF, over which another prominent retired guerrilla commander, Guillermo García, presided, sent me in September 1985 to the province of Holguín to attend to various urgent affairs, among them the presentation of a letter to the second-in-command of the Communist Party in that region (he would be in charge of logistical support). A series of meetings with provincial governmental officers, the Carlos de la Torre Museum of Natural History in Holguín (MHNH), and the provincial delegation of the Minister of Agriculture (MINAGRI) resulted in the provision of necessities for our dream expedition. The fundamental support came from MINAGRI: food, transportation, fuel, hammocks, machetes, batteries, the coordination with local guides, mules to carry the materials to the mountain, and permits for collecting specimens. The MHNH supplied technical personnel: Alejandro Torres, bird curator and photographer, and Eduardo Solana, a veteran taxidermist. In addition, the museum helped us obtain all the materials for collecting and preserving specimens of all kinds.

Communication in the mountains of eastern Cuba was almost non-existent. The inhabitants had little access to telegraph, telephones, or radios. To get information to persons in remote areas, the local radio station would transmit messages. The principal support provided by the government and the party was access to the radio; Alayón recorded a message with the call of the Ivory-billed Woodpecker and instructions for anyone who had seen such a bird to come to our camp or to the local government or party authorities. A description of the Ivory-billed Woodpecker completed the message: a bird a bit larger than a Cuban Crow (*Corvus nasicus*), with black and white plumage, a big ivory beak, and a crest of black or red feathers on its head.

On 12 October we set out in a truck of Russian manufacture toward La Colorada de Farallones, a small community of some 50 houses on the bank of the Moa River. The landscape consisted of the steep limestone cliffs, and the intense red soil stained the unpainted walls and floors of houses. The locals were warm and hospitable. Our work began immediately in the form of long walks looking for people who knew of the woodpecker. At the same



FIGURE 4. Nuevo Mundo Dam from the Calentura Arriba Observation Point, February 1993, during the expedition with Martjan Lammertink.

time, my wildest herpetological dreams were becoming a reality. I saw anoles I had never seen before, *Anolis argillaceus* (Dark Bark Anole), *A. smallwoodi* (Smallwood's Giant Anole; Figure 2), and *A. rubribarbus* (Tiger Anole; Figure 3), and the nights were filled with the unfamiliar voices of *Eleutherodactylus ronaldi* (Cuban Khaki Eleuth) and *Bufo taladai* (Cuban Spotted Toad), none of which I had ever heard or seen in their natural environment.

Our efforts to obtain information on the Ivory-billed Woodpecker were fruitful. The northern portion of the area explored by the Lambs in 1956 was totally deforested; the centuries-old pines had given way to crops and pastures. Another important part was flooded behind the dam that collected the waters of the Moa and Calentura rivers (Figure 4). However, a 71-year-old farmer, José Guerrero Sánchez (Figure 5), remembered the Ivory-billed Woodpeckers, and, in his opinion (shared by others we interviewed), the species could only remain on an abandoned farm, Cayo Probado.

Cayo Probado (Figure 6) was south of the area studied by the Lambs and near another site (Ojito de Agua) that would become inextricably linked with my most rewarding experiences as a field biologist. On 16 October, we — Alayón, Solana, Peña, Torres, and I — set out for Cayo Probado. We climbed via a long, steep road quickly baptized by the group as “The hill of three rests,” because it had to be climbed in three stages. We found a natural pine forest, but we also discovered a brigade of woodsmen busily felling the few remaining old trees — but we also found, for the first time, something we had only seen in photos: the marks left by Ivory-billed Woodpeckers in their search for food (insect-infested dead trees from which the bark had been

stripped in a most peculiar manner). Though excited by the woodpecker signs, I didn't neglect my herpetology; I found a yellowish-orange *Tropidophis melanurus* (Giant Trope) and I collected the *Eleutherodactylus* that would later be described as a new species. Unfortunately, on the morning of the 18th, a storm forced us to break camp and return to our base.

When we got back to Farallones, we had news from La Melba, a mining area 30 km to the southeast on the shores of the Jaguaní River and on the other side of a high plateau. The message made reference to a man named Alberto Garzón Martínez, who said that he had seen an Ivory-billed Woodpecker in June 1985 in the vicinity of Ojito de Agua. We quickly set off for La Melba, but the storm never let up and we feared that the road to La Melba would be blocked to vehicle transportation. Soggy and tired, we arrived at dusk but were unable to find Alberto Garzón. I walked through the village listening to the choirs of *Eleutherodactylus auriculatus* (Cuban Telegraph Eleuth) and *E. ronaldi* (Cuban Khaki Eleuth), and I was able to see the Arroyo Bueno unload vast volumes of turbulent water into the flooded, but relatively quiet Río Jaguaní. The local authorities provided cover in an agricultural workers' shelter, but we decided to suspend our activities and return to the provincial capital the next day.

The expedition ended on an unfinished note; we were unable to interview Garzón, but we knew



FIGURE 5. José Guerrero Sánchez, an old farmer, shared memories of Ivory-billed Woodpeckers, La Melba, spring 1991 (photograph by Martjan Lammertink).

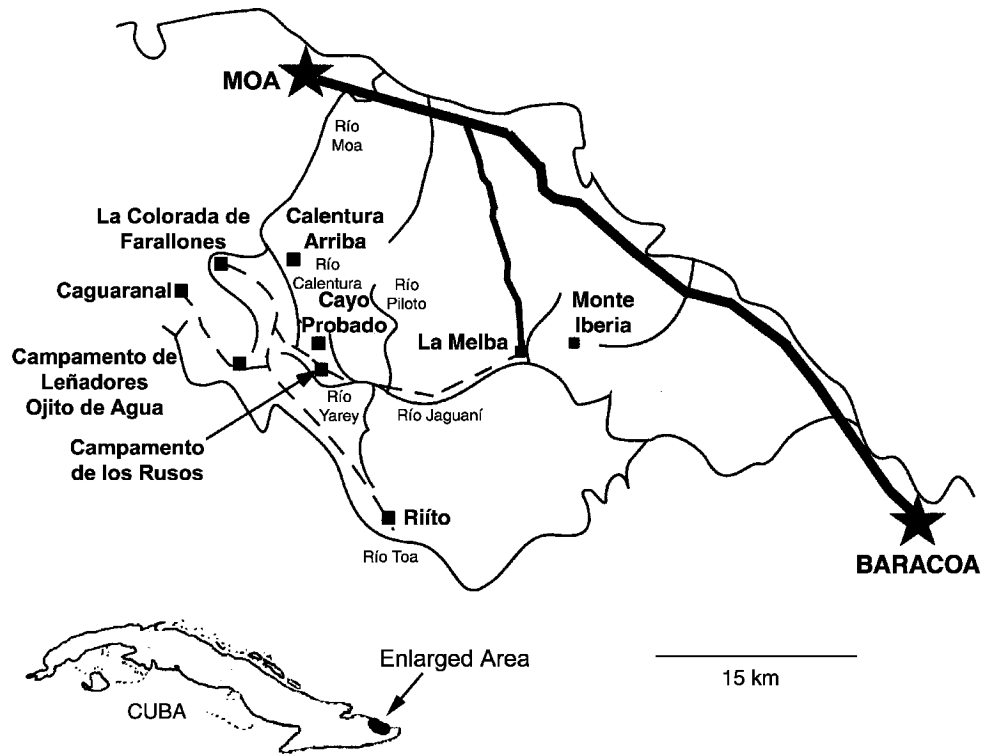


FIGURE 6. Area in which the search for the Ivory-billed Woodpecker was centered.

where to find him, and we had identified the habitat where we had to look for woodpeckers. On the plus side, we had collected dozens of samples of different amphibians, reptiles, and birds, had found evidence of the presence of endangered endemic mammals, the Almiquíes (*Solenodon cubanus*) and hutias (*Capromys* sp.), and a considerable amount of invertebrate material awaited its destiny in the MHNH or our research collections in Havana.

### The First Encounter

Excited by the results of the October experience, Alayón and I (Figure 7) returned to Holguín in March 1986 accompanied by Eduardo Solana and Carlos Peña of the MHNH and with the MINAGRI taxi driver, Roberto Gamboa. We arrived at La Melba in a Russian jeep on 12 March. Our interview with Garzón was very fruitful. He recounted a hunt for *machos jibaros* (feral pigs) in June 1985 during which he saw a single male Ivory-billed Woodpecker in the vicinity of the Campamento de Leñadores (Woodsmen's Camp) in Ojito de Agua. We showed Garzón color drawings of all of the woodpeckers known from Cuba, except the Ivory-



FIGURE 7. The author near Farallones de Moa, September 1986 (photograph by Francisco Conejero).

billed. He studied them very carefully and said: “I am sorry, comrades, but the bird that I saw does not look like any of these.” Then we showed him a drawing of the Pileated Woodpecker from the United States (*Dryocopus pileatus*), and he said: “This one is very similar!” However, when he saw a drawing of a pair of Ivory-billed Woodpeckers, the miner exclaimed: “Man! Why didn’t you show me this before? This is the animal you want. The one that I saw at Ojito is like this one; it had the red crest.”

In this manner, Alberto Garzón and his father-in-law, Aracelio Navarro, became members of our group — with the authorization from their bosses at the Merceditas mine in La Melba. On 12 March, we traveled from La Melba to Sagua de Tánamo, west of Moa, and from there south to Guantánamo, the capital of the easternmost province in Cuba. From Guantánamo, we continued northeast, passing through Yateras to Riíto, an agro-forest community some 15 km to the south of Ojito de Agua. Torrential rains had rendered the red-dirt forest roads impassable, so we decided to spend the night at Riíto before continuing on to the Campamento de Leñadores.

Our experience was similar to that on the first trip in October — natural pine forest, alternating with thorny Charrascales, and much evidence of recent deforestation. Recumbent pine trunks, 8–10 m long and 30–50 cm in diameter, paralleled the main road awaiting their fate. Tracks of enormous trucks and tractors were everywhere.

At noon, we arrived at the Campamento de Leñadores at Ojito de Agua, a rustic pine cabin with a tar roof. A dark and humid room was a barracks for woodsmen, and a small separate bedroom for the cook and her partner. The rest area, kitchen, and dining room had a roof, but no walls. The woodsmen welcomed us with abundant coffee made with water from the stream. After talking with the old woodsmen from the area, who undoubtedly knew the bird, part of our group went to the Río Yarey in the southeastern part of Ojito, and Solana, Alayón, Garzón, and I continued northwest to the area where Garzón had seen the male in June 1985. We walked silently, exchanging only low murmurs with our guide. After trekking up and down a slope, we heard a “pent-pent-pent-pent,” undoubtedly the call of an Ivory-billed Woodpecker. It came from the depths of a ravine some 100 m downhill from our position. We hid and waited for what seemed an endless period, then we slowly, carefully, and silently continued our

reconnaissance. We were looking for large dead or dying trees where a woodpecker might feed, nest, or rest.

Although anticipation was high, no woodpeckers materialized. As we headed back to camp, I was about 50 m ahead of the group, crossing the clearing where we had heard the bird, and climbing a steep slope. By now it was 4:40 PM, and the afternoon sun was low in the sky. All of a sudden, an enormous black and white bird passed some 30 meters in front of me, flying low and almost scraping the road first to my left, then to my right before disappearing behind a slope to our west. The entire episode lasted only 10 seconds, but I knew beyond any doubt that I had just seen an Ivory-billed Woodpecker. Further, I was sure it was a female, for I had not seen any red in its plumage. I was breathless because of the steep slope and unable to speak for some seconds, but then I called to the rest of the group still on the slope below me. We separated and waited impatiently for about 20 minutes, and then we all heard a distant “pent-pent.” This call and the one we had heard previously, along with the sighting of a female, led us to believe that a male was nearby — but we saw no more woodpeckers that evening.

For two days, we continued to explore the area where I had seen the female — without much luck. We did find some marks in the dead trees that were still standing that might have been made by feeding Ivory-billed Woodpeckers, and I continued my collection of anoles and *Eleutherodactylus* frogs (Figure 8). Still, we decided to move on, and set out early for the source of the Yarey River, in an area known as Campamento de los Rusos, near Cayo Probado. The morning was cloudy, I was walking ahead with Alberto Garzón and Aracelio. Alayón was about 100 m behind us with Solana and Elio



FIGURE 8. The author taking notes on amphibians and reptiles collected around the Campamento de los Rusos, March 1987 (photograph by Antonio Pérez Asso).

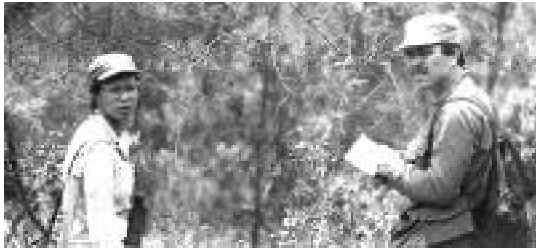


FIGURE 9. Aymeé Posada and her husband, Giraldo Alayón, at the Lester Short Observation Point, 16 March 1987, after the last sighting of an Ivory-billed Woodpecker at Campamento de los Rusos.

Bleth, a guide who had been sent from Riíto to join us in our quest. A little after nine, a ruckus caused by a couple of crows attracted the attention of Alayón (Figure 9), who focused his binoculars on a dry pine some 200 m in the ravine to their right. What he saw was two crows harassing a female Ivory-billed Woodpecker, which was moving around one of the uppermost branches. Alayón observed this spectacle for several seconds until the woodpecker disappeared into the depths of the ravine.

Excitement abounded, for we had invested many hours in a vigil that lasted days and covered a variety of sites, none of them easily accessible. Although we neither saw nor heard any more woodpeckers, the adrenaline had kept us going. Then reality hit, we were exhausted and hungry, so we decided to call it a trip. We sent Carlos and the driver ahead to Riíto to get our jeep, the comforts of which rivaled a modern luxury car right then. As we drove to Holguin that evening, we began to compose the press release for that same night.



FIGURE 10. United States/Cuba Expedition, April 1986, Campamento de los Rusos, near Ojito de Agua: Jennifer Horner-Short and Lester L. Short at the Lester Short Observation Point.

### Confirmation

Only a little more than two weeks after our initial sightings of Ivory-billed Woodpeckers in the vicinity of Ojito de Agua, Dr. Lester Short and his wife, Dr. Jennifer Horner (Figure 10), arrived with George Reynard, all of them loaded with recorders, microphones, and parabolic reflectors. Alayón and I served as guides to Campamento de Leñadores. Also accompanying us were Gamboa from the MINA-GRI, Peña and Solana from the MHNH, and our guides, Garzón, Navarro, and Bleth (Figures 1 and 11). This expedition lasted until 18 April 1986 and made the following sightings of Ivory-billed Woodpeckers: (1) 6 April, 12:45 PM, Jennifer Horner, unidentified sex in Yarey Canyon; (2) 7 April, 9:45 AM, Alberto Garzón and Elio Bleth, a pair in a dry pine in Yarey Canyon; (3) 10 April, 7:00 AM, George Reynard at some 300 m from his observation post near Campamento de los Rusos, a female flying over Yarey Canyon; (4) 12 April, 7:20 AM, Lester Short in the vicinity of Campamento de los Rusos, a female; (5) 14 April, 10:45 AM, George Reynard at more than 200 m from his observation post, a female flying over Yarey Canyon; (6) 16 April, 7:20 AM, Lester Short, at 6 m along one of the streams at the source of the Yarey River, a male that flew over his head and disappeared high in the forest upstream; (7) 16 April, 7:22 AM, Jennifer Horner, in the same ravine that had been walked by Short, a male flying over the pines that flanked the stream. Additional data collected by this expedition included recordings of the Bee Hummingbird (*Mellisuga helenae*) and many other calls of various birds and amphibians.

Although the expedition was exhausting, our American colleagues had confirmed our sightings — but now they faced the unpleasant reality that these birds, possibly two and maybe as many as four, were unlikely to last long. They were trapped in the last vestige of suitable habitat, around which the forest had been reduced to practically nothing. In his report to the Museum of Natural History in Havana, Dr. Short spoke to the difficulty of saving the species, but recommended that its presence should become the focus of a campaign to protect the remaining pine forest at Ojito de Agua and the many plants and animals that called it home.

### Repercussions

The newspaper coverage of our sightings in March and April 1986 generated considerable controversy. Although most specialists, reporters, and even the



FIGURE 11. United States/Cuba Expedition, April 1986, Campamento de los Rusos, near Ojito de Agua: (left to right) Aracelio Navarro, Elio Bleth, and Alberto Garzón during a break.

general public rejoiced at finding what was feared to be an extinct species, Félix Guerra, a writer for *Bohemia* (a magazine published in Havana), cast doubts on our discovery, describing it as “a fortunate coincidence that occurred a few weeks before Dr. Short’s visit.” Generally, however, both the Cuban and American press reported the events as told by the participants.

Immediate consequences of these expeditions included a cessation of all deforestation in Ojito de Agua and the modification of a plan to construct a road that was to enter the Farallones and Riíto areas. The Cuban Academy of Sciences (ACC, for its Spanish acronym) became involved in the project, although it had been indifferent to our efforts to that point. The Academy took over the project and quickly designated the region of Cuchillas de Moa and Toa as a Biosphere Reserve. Some other governmental agencies (e.g., Comisión Nacional de Medio-Ambiente) and various ministers responded to interest expressed by a number of international organizations (e.g., the International Council for the Preservation of Birds, or ICPB) by taking an increasingly active role in subsequent activities. The ICPB sent Christoph Imboden, its president at the time, Lester Short, and other well-known experts to Havana. Faustino Pérez, another retired guerrilla commander, received them, presented them with keys to the city, and organized a last-minute tour of Ojito de Agua with Alayón serving as a host.

In the meantime, promises by the ACC to do everything possible to protect the Ojito de Agua region elicited protests in the forestry section of the MINAGRI, which had been promoting the timber industry in the area (Figure 12). Also, the security agencies of the local and regional cells of the Communist Party became heavily involved in all scientific or cultural projects that involved an interaction of Cuban and foreign professionals (and

even more so if the foreigners were from the United States). Collectively, the publicity and the events that followed resulted in some fundamental changes in subsequent research on the Ivory-billed Woodpecker and the Ojito de Agua region.

### The Legacy of a Disappearing Species

As biologists, we have long been aware that a number of vertebrate species from Cuba are extinct or nearly so. Not only had individuals of some species not been seen in some time, critical habitats that once were common had been dramatically reduced or entirely eliminated, even in the most remote areas. Species on this sad list include the Cuban Macaw (*Ara tricolor*), the Zapata Rail (*Cyanolimnas cerverai*), the Hook-Billed Kite (*Chondrohierax uncinatus*), the Ratt Hutia (*Mesocapromys auritus*), Pigmy Hutia (*Capromys nanus*), and San Felipe’s Hutia (*Mesocapromys sanfelipensis*), as well as the Cuban Solenodon (*Solenodon cubanus*). Most disappeared without a whimper, and an uncaring public didn’t even blink. In contrast, I was able to say farewell to the Ivory-billed Woodpecker, to feel its presence in the air, to hear its enigmatic call, to record the marks left after it fed, and to see with my own eyes, at least for a few seconds, one of the last individuals of the species, a final dying spark of a star that is fading forever. It was the most unforgettable experience of my life.

Unfounded rumors abounded, but a number of subsequent expeditions to the region (some continuing even today) failed to find additional birds. Our scientific report had clearly stated the sad reality that the Ivory-billed Woodpecker was extinct in Cuba. Nevertheless, of at least 10 expeditions in which I participated, six were specifically devoted to finding evidence of more individuals in the region around the Ojito de Agua and in other seemingly favorable habitats, including relatively distant areas such as the Sierra Maestra.



FIGURE 12. A Russian truck loaded with pine logs cut by Castellanos’ woodsmen brigade, Ojito de Agua, March 1986.



FIGURE 13. Eggs and hatchling Dark Bark Anole (*Anolis argillaceus*) from Ojito de Agua (photograph by H. Hunecker).

Although failures in regard to woodpeckers, nine expeditions to the Ojito de Agua area, additional forays to Pino del Agua and Pico Bayamesa, in the Sierra Maestra, provided me with the inestimable opportunity to search for amphibians and reptiles in the few remaining tracts of natural habitat left in Cuba. After a collection of anoles from Cayo Probado and Campamento de los Rusos, that I described with Orlando H. Garrido, my first really exciting herpetological discovery was *Anolis inexpectatus* (Pine Bush Anole). During a later expedition with Lester Short, I discovered the communal egg-laying sites of *A. argillaceus* (Dark Bark Anole; Figure 13), took a series of photographs, and followed the development of the eggs through hatching. I collected a small boa of the genus *Tropidophis*, which was almost certainly a new species, in the vicinity of Cayo Probado. This specimen, and another collected at the Báez River in Baracoa by a joint Cuban-U.S. expedition, served as types for the description of *Tropidophis fuscus* (Cuban Dusky Trope). In addition, the vast collections and accumulated observations from the early expeditions led to the publication of a list of the amphibians and reptiles from the Cuchillas de Moa and Toa in collaboration with our colleagues from those expeditions.

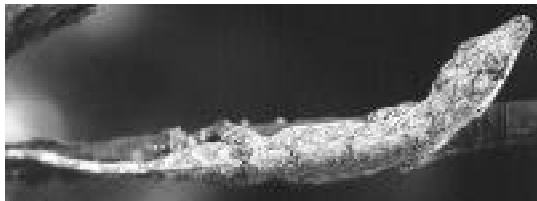


FIGURE 14. Male Alayón's Twig Anole (*Anolis alayoni*) from El Yarey camp (photograph by H. Hunecker).

I mentioned previously that I had collected some samples of a new species of *Eleutherodactylus* during the first expedition in 1985. I found more specimens during subsequent expeditions in 1986 and 1987. Similarly, in different areas around Ojito de Agua and La Melba, I had acquired a series of twig anoles that were very similar to *Anolis angusticeps* (Cuban Twig Anole). These and additional specimens collected during the Cuban-United States Herpetological Expedition to the province of Guantánamo in 1990 led to the descriptions of *E. toa* (Oriente Pallid Eleuth), and *A. alayoni* (Alayón's Twig Anole; Figure 14). Later, in the vicinity of La Melba and the Jaguaní Reserve to the east of Ojito de Agua, I made a series of observations of egg-laying by *Diploglossus nigropunctatus* (Cuban Pale-necked Galliwasp) and an equally extensive series of specimens and nests of *Eleutherodactylus guantanamera* (Guantanamera Eleuth), which then was considered to be a population of *E. v. varians*, the Western Bromeliad Eleuth). Those data led to descriptive notes on the egg laying sites, embryonic development of the embryos, hatchlings, and male parental care in the latter species.

### The Extinction of Our Project

My critical opinions of the conservation policies of Cuban governmental agencies led to my being designated as a "non-appropriate person" in 1987. From an ideological point of view, the government couldn't tolerate my central role in the well-publicized search for the woodpecker, my participation in expeditions with or without foreigners, and my coauthorship of the resulting reports. Subsequently, by explicit orders from the President Minister of the ACC, Rosa E. Simeón, I was excluded from participation in an expedition organized by the National Geographic Society in February 1988. Although I participated in other expeditions to eastern Cuba between September 1986 and March 1989, the original project conceived by Giraldo Alayón and me had been taken away, and I specifically was excluded from any active role. My arbitrary retirement from the project and the inherent contradictions that emanated from these purely political decisions were attributable to the highest level of the National Enterprise for the Protection of the Flora and Fauna and its president, Guillermo García — who continued to exclude me from various projects. I was forced to quit my position in June 1989, and was without a job for many months.





FIGURE 15. Martjan Lammertink in the cloud forest on Monte Iberia, April 1993.

been explored. An area with enormous trees, including some old pines, and a considerable number of standing dead trees was known from near the source of the Jaguaní River on the high plateau of Toldo Peak directly east of Cayo Probado. Another timbered area was known to remain in the western part of Ojito in the vicinity of the source of the streams that fed the Toa River.

We went directly to those sites, where Lammertink, now a biology student at the University of Amsterdam, Huub Huneker, a Dutch landscape gardener, Carlos Peña from the MHNH, a guide from Farallones de Moa, and I set up some observation posts at Cayo Probado, Campamento de los Rusos, and Ojito de Agua. In addition, we explored the regions around Cupeyal and Caguaranal at the source of the Toa and the steep canyons of Jaguaní (Figure 16) to the west of the Toldo and Piloto rivers on the slopes of the southern high plateau. We found no evidence of Ivory-billed Woodpeckers, neither active nor old, nor did we find many trees of appropriate age and size, much less the promised centenarian stands of natural pine. From recordings, Lammertink had learned to imitate to perfection the call of the Ivory-billed Woodpecker using a trumpet

### A New Focus and More New Species

How was my career rejuvenated (at least temporarily)? Martjan Lammertink (Figure 15), then a 19-year-old birdwatcher from the Netherlands, had explored the region around Ojito de Agua in the spring of 1991 with only the help of a guide from Farallones de Moa and copies of my maps and notes. He had contacted me in Havana while he made arrangements for his visa. At the end of the trip, having received all kinds of evasive answers to questions posed to other participants in the old project, he asked me to accompany him on a new expedition in 1993. At that time, I was working at the MINAGRI Instituto de Investigaciones Forestales in the Zapata Swamp. I told him that I would seriously consider his offer, but I would have to do it without the sponsorship of any official agency.

Obviously, I agreed. Thus, my last expedition to Ojito de Agua was in early 1993. The goal of this expedition was to fill in some informational gaps that had not been addressed by the earlier expeditions in which I had participated and by others organized by various Cuban and American groups. Two potentially favorable woodpecker habitats had not



FIGURE 16. Canyon of the Río Jaguaní at the base of Pico Toldo.

mouthpiece adapted to a small toy cornet (Figure 17). He could emit a call audible at hundreds of meters, but we never got a response.



FIGURE 17. Martjan Lammertink imitating the call of an Ivory-billed Woodpecker on Monte Iberia, Las Tetas de Julia are in the background, April 1993.



FIGURE 18. Lunch in the rain at Campamento de Leñadores, February 1993: (left to right) Martjan Lammertink; Carlos Peña, MHNH; the author; Huub Hunecker; Noelio Pober, mule driver from La Melba (photograph by H. Hunecker).



FIGURE 19. The Río Jaguaní at Mina El Yarey.



FIGURE 20. The Ojito de Agua pine forest from one of several observation points during the expedition in February/March 1993.

A few years earlier, an enormous piece of pine forest to the north of Campamento de Leñadores (Figure 18) at Ojito de Agua had burned. A large number of dead pines were left standing by MINA-GRI enterprises, based on recommendations in the reports of various Cuban and American expeditions that had visited the area. This area was located between the sources of the Jaguaní and Toa rivers (Figure 19), around the same springs as those that fed the streams at Ojito de Agua (Figure 20) and Culebra de Hacha. The latter entered Farallones Cave and emerged from the cavern as the Moa River. The pines did not bear signs of the Ivory-billed Woodpecker, but big grubs of wood-eating beetles and other invertebrates were abundant there. The size and nature of the area's standing trunks were not suitable for nests or shelter, but the habitat might have been a feeding area. Our observation posts and calls produced nothing.

I became more convinced than ever that the individuals seen fleetingly in 1986 were the last of their kind. Fortunately, much of the herpetofauna in the region remained a mystery (Figure 21). During the long nights in camp, I recorded the call of a sibling species to *Eleutherodactylus auriculatus*. Although morphologically very similar, these frogs had such different calls that, on several occasions, I had crawled out of my sleeping bag in an effort to identify the mysterious voice. I was able to collect an adequate series, describe their live coloration, and record a number of individuals, including calling males vocalizing in concert with *E. auriculatus*. As an appropriate tribute to the bird, the search for which had led to the discovery of the frog, we (Blair Hedges and I) named it *Eleutherodactylus principalis* (Oriente Greenish-Yellow Eleuth).

### From Monte Iberia to Pico Bayamesa

After having said farewell to our partners of six long weeks and a well-deserved rest in Havana, Martjan and I went back to the MHNH and from there, with the help of its director, Alfredo Rams, and his *Lada* (a Russian car based on a 1970s-era Italian Fiat), we went to La Melba. The objective of this trip was to explore the high plateau northeast of that village and which is known as Monte or Alto de Iberia. Some relictual hardwood forest with scattered stands of old pine were reputed to exist there. Martjan and I camped near Arroyo Sucio (Figure 22), a small tributary of the Jaguaní River. Our results were similar to those obtained on other recent



FIGURE 21. Cuban Side-blotched Curlytail (*Leiocephalus macrophus asbolomus*; top), Giant Trope (*Tropidophis melanurus*; middle), and Black and White Racer (*Antillophis andreae*; bottom) from El Yarey camp (photographs by H. Huneker).

trips to the region. Some years before, a competition among woodsmen had destroyed the taller trees in the primary forest, leaving only fallen trunks, 40–50 cm in diameter and 4–5 m long, scattered along some clearings and trails (Figure 23). These were now covered with a dense mantle of trailing ferns that rendered walking in the area next to impossible. Under a constant drizzle, we covered almost all of



FIGURE 22. Martjan Lammertink in the camp at Arroyo Sucio on the western slope of Monte Iberia, April 1993.

the southeastern area of Alto de Iberia using the main trails that cross near two conical, rocky promontories called Las Tetas de Julia (Julia's Teats, Figure 17).

There, along the banks of Arroyo Sucio, under the mantle of trailing ferns, we found some small frogs that produced a light hiss that reminded me of the voice of *Eleutherodactylus limbatus* (Yellow Striped Pigmy Eleuth). With considerable effort, I managed to catch two of these diminutive frogs under the ferns, one of them with an egg. The daytime choruses were similar to those of *E. limbatus*, and their general appearance made me think that they were the same species that I had collected in La Melba and Farallones de Moa — but at night, I happened to see an active individual crawling on a dry leaf. It moved its feet slowly, like a gecko, and my attention was riveted on the intense purple color of its body and the brilliant metallic copper of the lines that ran from its snout to its vent. These colors did not coincide with the brown and yellow-orange tones of *E. limbatus*! A more detailed examination of coloring and morphology left no doubt that it was a new species, subsequently named *Eleutherodactylus iberia* (Iberia Eleuth). It equaled the record of the smallest tetrapod in the world (Figure 24). A



FIGURE 23. The author sitting on the trunk of a log felled during a competition of woodcutters in the 1980s on Monte Iberia, April 1993 (photograph by Martjan Lammertink).



FIGURE 24. Iberia Eleuth (*Eleutherodactylus iberia*) with an egg (photograph by Martjan Lammertink).



FIGURE 25. A pair of small Tetas de Julia Eleuths (*Eleutherodactylus tetajulia*) in the stem of a hollow fern, April 1993 (photograph by Martjan Lammertink).

photograph of this small frog on a Cuban coin was published many times, with venues including *National Geographic Magazine*, *The New York Times*, and the world-wide web.

While resting on our walk near Las Tetas de Julia, Martjan called my attention to the vocalization of an insect or frog that he had not heard before. It was a light “tui-tui-tui-tui” that emanated from the leaf litter of the cloudforest. After hours of intense searching under the interminable drizzle, I found a pair of small frogs and an egg clutch inside the hollow stem of a fern. These frogs had a voice and appearance that were reminiscent of *Eleutherodactylus intermedius* (Oriente Dark-bellied Eleuth) from the Sierra Maestra, but it was undoubtedly a new species. In my field notes, I called it the Tetas de Julia Eleuth. A year later, Blair Hedges was looking at my notes and commented on the funny name — and, later, we formally described it as *Eleutherodactylus tetajulia* (Figure 25).

At Monte Iberia, I also was finally able to record *Eleutherodactylus toa* (Oriente Pallid Eleuth), which I had heard for the first time during the last night of our previous expedition at the confluence of the Yarey and Jaguaní rivers. Unfortunately, I had been unable to record it then because my recording equipment had been damaged in a torrential storm that almost flattened our camp.

We left La Melba for Baracoa, and from there we went to Santiago de Cuba, where we spent the night. The next day, we traveled on to Guisa, from where we planned to climb the northern slope of the Sierra Maestra in order to reach the foothills of Pico Bayamesa, and eventually get to the region called Pinar del Millón, on the northwestern slope of the peak. Although no report from Gundlach’s time (mid-19th century) mentioned Ivory-billed Woodpeckers in any part of the Sierra Maestra, the existence of composite pine and hardwood forest in an isolated and sparsely populated region had the potential for a pleasant surprise.

After overcoming some logistical difficulties, we climbed Pino del Agua Arriba, on the northcentral slope of the longest and highest mountain range in Cuba. Our goal was a former training camp for Communist Party youth, who, in the early 1960s, had alternated ideological indoctrination with reforestation work. One species of native pine had been of particular interest; *Pinus maestrensi*, the largest of all native species, which could reach 2 m in diameter and 20 m of height. In the 1990s, the camp was only a memory, and a few cement floors of houses and barracks and some scrap iron from abandoned vehicles or agricultural machinery remained as silent reminders of the youth camps.

We camped for eight days on a road that led to an abandoned small town that once had been Nuevo Mundo. Results were negative. The forest was all that had been promised, but we found no evidence of Ivory-billed Woodpeckers. We continued up the slope of Pico Bayamesa (1,730 m), but we quickly became aware that it would be impossible for us to proceed without an appropriate guide. We had intended to reach Pinar del Millón, on the southwestern slope (Figure 26), but the evidence that we already had did not justify continuing the search.

That short trip to the region contributed enormously to my herpetological endeavors. I recorded calls of *Eleutherodactylus auriculatus* and *E. glamyrus* (Turquino Fern Eleuth). I collected a female *E. melacara* (Dark-faced Bromeliad Eleuth),



FIGURE 26. Pinar del Millón from the top of Pico Bayamesa (1,730 m), Sierra Maestra, May 1993 (photograph by Martjan Lammertink).

which had not been collected before. I also found this species and recorded the call almost 30 km to the east of Pico Turquino, which dramatically extended the species' known distribution. I also recorded the calls of *E. ricordii* (Oriente Yellow Spotted Eleuth) and *E. cuneatus* (Oriente Stream Eleuth), and I collected important series of specimens that led to descriptions of several new species.

### Epilogue

I would return to Sierra Maestra a year later, accompanied by Richard Thomas, Blair Hedges, and some Cuban colleagues. This time, we were not searching for the Ivory-billed Woodpecker, a quest that had revealed so many of the region's secrets to me. Instead, the goal was purely herpetological, and I was able to focus exclusively on my first love — not knowing at the time that it would be my last expedition in Cuba before going into political exile.

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