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Green Mansions of Tamaulipas

PAUL S. MARTIN

What was it like to collect birds and to conduct fieldwork in Mexico in the “early days”? For me it began not at Cornell University in Ithaca, New York, half a century ago, when I lost a ping pong game to Ernest P. “Buck” Edwards and won a trip to the tropics, to tropical Mexico, a dream come true. Instead, it began from the experience of growing up with parents who knew and loved farms and the rural-suburban interface. Their experience and the insight about ecology one gains from living on a farm, even one close to a major metropolitan center, is a gift from the gods.

A great deal happened before that ping pong game. Without numerous outdoor experiences and adventures, including field trips with the West Chester Bird Club members or on my own, and especially with summertime farmwork, I might well have ended up enmeshed in some more conventional career or profession. I might never have played ping pong on the top floor of a building housing ecologists before the word had gained much currency. I might not have applied for admission to Cornell, or been accepted, if I were not already an ornithologist on the launching pad, deeply interested in birds, their distribution, habits, and habitats, which is to say, their ecology.

“Ecology” as a discipline had not yet replaced “natural history,” which would soon become passé. Nevertheless, it is a serious error to discount natural history and natural historians. A society increasingly urbanized and given to congratulating itself for its street smarts and political sophistications misses the rich outdoor experiences of great value to ecology and would-be ecologists. Yes, field observations seem banal. Their net worth is lost in a cloud of urban sophistications.

I had the stupendous advantage (although I certainly did not reflect on or appreciate this when growing up) of being an only child of farm-raised, college-educated, middle-aged parents. That really helped. Both

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were anabaptists and not inordinately religious. The latter helped tremendously

Francis Earl (F. Earl) Martin, my dad, was a non-practicing Quaker; my mother, born Daisy Schultz Schultz, was Pennsylvania Dutch (“Deutsch” in German) and a Schwenkfelder. This small reformation splinter group was named for Casper Schwenkfeld von Ossig, who believed the reformation should excise baptism, contrary to the view of the Lutherans, who embraced baptism. Schwenkfeld wrote extensively on his beliefs, writings that my Aunt Salina Gerhard translated and helped to publish. William Penn encouraged Anabaptist immigrants, and many came to Pennsylvania.

In the absence of any congregation of Schwenkfelders in or near to West Chester, where we lived in Chester County outside Philadelphia, I attended a Presbyterian service and Sunday school, joining church at age twelve. Then I promptly quit, leaving traditional religion for good at age thirteen, having realized that a Sunday spent out of doors was much more illuminating than one in the confines of a church and its services.

Both my parents and most of their relatives—minus Daisy’s oldest brother, Eugene, a USDA geneticist working summers on potato blight in Aroostook County, Maine, and winters at Beltsville, Maryland—were rock-ribbed Abe Lincoln Republicans. Uncle Eugene was an FDR Democrat. In 1932 when she went to vote my mother took me along. When we left the polling booth, the monitor responsible for the voting process looked down and asked me, “Well, young man, who did you vote for?”

I loudly replied, “Hoover!”

Both my parents had grown up on farms. As a result they were very much at home in the out of doors. They knew the wildlife and the interesting habitats in southeastern Pennsylvania. After World War II, building booms irrupted in the suburbs around Philadelphia to overrun the Pennsylvania Piedmont. Sunday drives that we launched after church often included picnics when the weather permitted. The Sunday drive was special. On occasion we found gypsies camped near one of the piedmont streams where we picnicked, or gathered watercress while I turned over shallow stones in the streambed in search of crawfish.

By the age of fourteen I was a serious birdwatcher. I patrolled my neighborhood and wandered farther afield to adjacent farms, creeks, and woodlots, armed with a used pair of 9x binoculars on loan (and never returned) from a kindly neighbor. With Roger Tory Peterson’s new field

guide to birds, I began a life list. I joined the West Chester Bird Club, participated in their Christmas bird count and, later, participated with the DVOC's (Delaware Valley Ornithological Club's) Christmas count on the New Jersey coast at Cape May.

The first time I saw stuffed scientific specimens, the skins of waterbirds, they were being passed around at a meeting in Philadelphia at the Academy of Natural Science of the DVOC in preparation for their Christmas bird count. The exercise would help the members sharpen their ability to identify ducks and other waterbirds they might find in the count.

In my last year in high school I teamed up with a returning war veteran, Robert Newman, to carry out a daily census during the spring migration of waterbirds on the West Chester Reservoir. We took turns visiting the reservoir until we had covered most of the season. The results were published as a table in the journal of the DVOC.

But the West Chester Reservoir, like most, was not rich in nutrients (undesirable in drinking water) and therefore not highly productive as a waterbird habitat. In contrast, the Delaware marshes outside Philadelphia, where the Schuylkill joins the Delaware River and they are intercepted by tidewater, attracted large numbers of migrating pintail, teal, and other dabbling ducks. Despite pollution from industries around Chester, Pennsylvania, that was where the greatest number of dabbling ducks would be seen in migration.

I may have added one new bird to the Chester County bird list assembled by Albert Conway who, with Roger Whitworth, introduced me to the West Chester Reservoir. They had a key to the southwest gate, deposited for use of members of the West Chester Bird Club by the Borough of West Chester. Club members could enter and identify birds; the ducks were easy to approach closely through a fringe of planted conifers on the south side of the reservoir.

A classmate, Marple Lewis, also interested in birds, helped me in the search for other ways to enter the reservoir in order to spare us the trouble of having to borrow and return the key whenever we wanted to sneak up on the ducks screened by the conifers. To circumvent the locked gate we climbed over it or wiggled under the fence where runoff from erosion had left a natural crawl space or walked to the northwest arm of the reservoir where there was no fence.

Most reservoirs have clear water; they are relatively poor in nutrients and therefore poor in plankton, which means scant food for ducks. West Chester's was no exception. Nevertheless in season we found various grebes, coots, dabbling ducks, diving ducks, Canada geese, and on

occasion, a few gulls. Various herons and often a kingfisher haunted the shallows on the northwest corner, attracted to minnows and frogs.

One spring I found three birds flying around the reservoir that I did not recognize. They behaved like terns but were not as white as the common terns I'd seen on the coast. A search in Roger Tory Peterson's field guide, our invariable companion on sorties, indicated that they were black terns in their light winter plumage. At that time black terns were not in Albert Conway's Checklist of the Birds of Chester County. I called him to come see the birds, hoping against hope that they would not have departed. The next day he arrived at the reservoir to verify my observation.

At a farm auction outside West Chester I bought a stuffed red-tail hawk for fifty cents and set it up on a clothes pole in my back yard. It was late spring, the breeding season for many resident birds. I soon discovered what an impact that stuffed hawk with yellow glass eyes made on breeding birds. There were screams of protest from blue jays, cardinals, catbirds, house wrens, robins, and brown thrashers, as well as other resident birds of the neighborhood.

My parents believed strongly in education. Mother had her bachelor's degree from Oberlin College and had taught public school in Sussex, New Jersey. My dad had worked for Western Electric until his eyes failed during an emergency following severe flooding at Altoona, Pennsylvania, which ended his ability to install and repair telephone switchboards.

They found each other after my mother returned to the family farm from school teaching in New Jersey, to help her brothers following their parents' death. She served as housekeeper at Scholtop for two of her brothers, who managed the farm together for five years until they got into serious disputes. Dad trained to become a "cow tester," determining butterfat content and bacterial count of milk from dairy herds. Once a month he would spend the night in each of the various farms on his circuit, a social opportunity not lost on eligible members of the opposite sex. Their kin teased the single women about the monthly overnight visit of the bachelor "cow tester."

Dad and Daisy had savings, and they decided that he would study for his doctorate in veterinary medicine at the University of Pennsylvania while Daisy kept house in a cheap rental apartment on Bering Street, near the campus. It was not a slum, but close, and often too noisy for dad to study at night. Hammering on the pipes might briefly quiet the ruckus in the apartment overhead.

Then the stock market crashed, and one of the few securities that weathered the blow and helped to pull us through was the Boyertown

Casket Company, stocks that Schultz family members owned. Caskets were the last purchase a penny-pinching family would forgo in the economic squeeze that forced bankruptcies. Boyertown's products kept moving through the crash. As a result the Boyertown Casket Company was one of very few investments that paid dividends to stockholders throughout the Depression. I understood such financial mysteries much better when, at age eight, Santa came with the wildly popular Parker Brothers board game Monopoly.

Some of my fondest childhood memories are of outdoor explorations of the Schultz and Martin family farms. The Martins, less prosperous, farmed north of Marshalltown in Chester County, Pennsylvania. My Aunt Nell read Thornton Burgess' outdoor column in the newspaper to me, the stories often referring to "Mother West Wind and all the Little Breezes." She let me go alone on picnics above the farm on a hilltop swept by west winds. At the precocious age of four in Philadelphia I solemnly quoted Burgess to a Bering Street neighbor to the effect that "Mr. Blacksnake is discreet." Our windowsills were laden with soot, something unknown on the windows of farmhouses.

Many of the older farms in Chester County had "springhouses," tiny out buildings in the pastures fed by a trickle of groundwater from the discharge of a small stream or spring. My Uncle Dick had one of these at the foot of the hill where I liked to picnic. Water from the springhouse trickled down into a small room behind the main buildings where perishables were stored before the days of "iceboxes" with ice trucks delivering ice. Refrigeration and freezers were ahead of us.

In my uncle's springhouse I discovered an animal I had not seen before, a large, red salamander with smooth, moist skin. Years later when I learned more about salamanders at Cornell I realized that what I had seen was probably *Pseudotriton ruber*, a member of the family Plethodontidae with most of its species concentrated in the Appalachian Mountains of the unglaciated eastern USA. I never guessed that I would later find numbers of plethodontids in the caves and tank bromeliads in the Sierra Madre Oriental of Tamaulipas, Mexico, a secondary center of their speciation.

Another youthful adventure is revealed in an old photograph my mother took with her Eastman Kodak. It was summer of 1931 at Scholtop in upper Montgomery County near Palm, Pennsylvania. The view is of a pile of boards next to my uncle's corncrib, where a toddler and a dog tug at a board.

Barney the Airedale growled fiercely, showing sharp white teeth. He pawed furiously at the long boards beside the rat-haunted corncrib. The sides of the crib were covered with wire mesh against the rats. Attracted by spilled corn kernels, the rats lurked in runways beneath boards or any other cover they could find around the crib. Barney and I watched in growing impatience as my uncle lifted the boards slowly and deliberately, stacking them into a new pile. Finally, he came to the very last one. A sudden flip of the last board exposed two terrified rats that shot for cover behind the crib. In a flash Barney's jaws snapped shut on one that lost the race.

Barney dropped the limp torso and ran to join my Uncle on the other side of the crib at another stack of boards. I could inspect the relaxed, warm, soft, sleek body, tipped with a spot of blood on its nose. Carefully, I picked it up.

"Paul!" It was MM's (my mother's) voice. I ignored the disapproval in her tone. The killing field and, above all, the lovely limp treasure in my grasp, with its whiskered, pointed nose, naked tail and feet, beady black eyes, and still-warm body covered with soft sleek fur could not be abandoned. The animal deserved something, a requiem and a burial, with a few more strokes, however brief, to commemorate its last race.

MM pried my fingers loose. "This isn't Puppy Snups," she announced. I knew that well enough. Puppy Snups was a cloth rag doll that shared naps. The rat was limp and warm, and until just a minute ago, had been intensely alive. The rat had it all over Puppy Snups. Hand-in-hand MM marched me back to the house to wash us thoroughly at the pump and to change my clothes. I never learned the fate of my trophy.

As soon as I could after lunch and a restless "nap," I ran straight back to the corncrib kill site, still being patrolled by Barney. We both hoped for more discoveries. We circled the board piles but no rats appeared. Barney sniffed at promising holes and made experimental test digs. There must be more game here somewhere, but we didn't find any.

That snapshot, archived with MM's writing on the back, sharpens my memory: "PAUL AND BARNEY AFTER RATS, July 1931." The other participants are long dead. I am the sole survivor. My memory might be lost too without that snapshot. Now I see it for what it was, a rite of passage. With a grown male (my uncle, one of four brothers) and Barney, a skilled rat-catching Airedale, and my Daisy, my mother,

all farm-raised and thoroughly at home outdoors, I had been allowed to join the corncrib rat hunt. Age three is not too early for discovery and a chase, with a capture and a kill by Barney, at the scene of action.

I was no longer an infant or a toddler. I was the right age to begin to delve into the mysteries of the farm, fields, and wooded countryside. The initiation had ended. Down behind the corncrib that day in late summer I earned a valuable new name: Rat Boy.

Three years later, at our new house in West Chester, I found my mother in tears. The mail had arrived. She held a letter from my Uncle Wayne. It was about Barney. The milk truck had run over him and killed him. As was his habit, Barney took offense at the arrival of the big truck backing up to the barn, a routine operation for easy loading of the milk cans. Barney took this as an outrage and attacked the back tires as the milk truck backed under the overhang.

This time the brave Airedale, perhaps feeling his age, misjudged speed and distance and died in battle. Uncle Wayne knew how his sister would feel, but someone had to break the bad news. She cried for more than the loss of her faithful dog.

Dad earned his degree from the University of Pennsylvania and I was at his graduation, the only college or university graduation I have attended, my own included. One is enough. His classmates called him “Pops” since he was the oldest member of the class of 1932, married and with a kid, no less.

As we were in the city, Daisy took me to the zoo, a terrifying experience followed by a nightmare in which lions and tigers filled our tiny backyard; their eyes blazing in the dark, they made fearsome roars. Just possibly such a nightmare is not only the expected outcome of a zoo visit for a youngster but also a leftover from ancient traumas of the Paleolithic that still may linger.

In 1933 Dad started his practice in the Borough of West Chester, the county seat of Chester County. The county had no scarcity of well-established practicing veterinarians to accommodate most of the farms, and Dad saw few clients initially. Fortunately, the husband of one of his sisters operated a slaughterhouse. The connection helped. My dad became their USDA meat inspector. We benefited from gifts of the internal organs of little market value at the time. I soon learned to appreciate sweetbreads, calves’ heart, and calves’ liver. These minor gifts came in partial repayment for dad’s service as a meat inspector. My Dad took me along when he went to Uncle Paul’s slaughterhouse on federal meat

inspection. I checked out the odorous interior and found one pass by carcasses hanging on hooks over blood and gut piles associated with the butchering was enough. Seeing a dressed carcass hanging from a meat hook with purple inspection stamps from my dad's determinations and clots of blood on the cement floor left a deep impression on me. To a preschool kid a slaughterhouse with carcasses hung from hooks—not to mention the bellowing sounds of terrified animals about to have their throats cut—was unnerving.

One Saturday before I was old enough to join the Boy Scouts, MM and I launched a long walk to the Sharpless estate, a mile or two northeast of our house on the edge of town. The owners had gone broke in the Depression. Now a local bank held their property, with one caretaker in residence. The Sharpless cream separator company was one of numerous victims of the Depression.

Between two small artificial lakes there were deciduous trees, hemlocks, and some pines with (as I later discovered) roosts of long-eared owls. The tip-off was a pellet of rodent hair with mouse bones inside, under the owl roosts. It revealed the roost even if the owl had flown out silently and disappeared without attracting the attention of crows that delighted in mobbing owls in daylight. Lungless (plethodontid) salamanders lived under damp stones near small streams laced with micas in the streambed.

The lakes were popular among swimmers in summer and ice skaters in winter, with a little fishing, although given the nature of the bedrock the lakes were not highly productive. This was within a mile of a huge abandoned mansion made of serpentine rock. Southwest of the property there were serpentine barrens and a quarry face with scattered native scrub pines and abandoned rock quarries. Serpentine was occasionally used as building stone in town, including for a friend's (Bill Heed's) home on the corner of North Church Street and West Virginia Avenue.

Most Sundays after Sunday school and church, which my dad seldom attended, and after Sunday dinner, we left for our Sunday drive, to the Martin family farm just outside Marshalltown, to my Uncle Joel's place east of West Chester and south of the Sharpless estate, or to my Aunt Emma and Uncle Paul's home on the south edge of West Chester. Uncle Paul was a co-owner of the aforementioned slaughterhouse, which provided my dad some employment as a meat inspector. Behind Uncle Paul and Aunt Emma's place were woods with a strange plant that Daisy and Earl knew as Jack-in-the-pulpit, typically the first plant to flower in wet woods early in spring.

After we moved to West Chester and dad started his practice we lived on South High Street near the Teachers College. In the early 1930s drivers commuting to the college parked their Model A Fords or Chevys by the curb with keys left in the ignition. At an early age, five or six, I was allowed to walk around the block on my own. I returned home one day with a splendid collection of keys, removed from auto ignitions where I found them. I must have had keys from at least half a dozen vehicles, mainly belonging to faculty at the West Chester State Teachers College, now a state university. Daisy and Earl took my pilferage matter-of-factly, and I helped Dad return the proper key chains to the proper cars before their owners discovered the theft.

At least I did not have to suffer immediate punishment as an example to younger siblings. Being an only child had undeniable advantages. In the return of the keys I could begin to appreciate the meaning of private property. Monopoly, the new Parker Brothers board game that empowered kids because they might win over grown-ups, also helped. Kids with one or more sibs learned the realities more quickly.

Beyond his problems with the Depression in the 1930s and the oversupply of veterinarians in Chester County, my dad came down with undulant fever, probably caught in his practice. I suspect that Daisy had to dip into her savings to pay our bills until he recovered. A kid my age two doors down from ours invited me into his house. His older brother was fortunate enough to have a job in the Depression and went to work with a lunchbox harboring one edible item, a mustard sandwich. We kids thought that was a special treat.

Later, Dad inspected Texan steers shipped into the Buck and Doe Run farms in western Chester County for “finishing” before being butchered and marketed in Philadelphia. For treating their animals Dad was gifted with some outstanding steaks, never mind meat rationing in World War II. In those years Rocky Mountain spotted fever began to show up in Chester County. Did the western beef animals have something to do with it? Now, Pennsylvania, like many other states, is plagued with Lyme disease, a mysterious and chronic ailment that the medical profession appears unable to treat unless it is diagnosed early in its onset.

SUNDAY’S SCOUT

At age twelve, after near-perfect attendance in Sunday school and a turn or two at playing Joseph in the Christmas pageant, I joined the

Westminster Presbyterian Church. The same summer I promptly quit, having decided for myself that Sundays were much better spent out of doors hiking to the Sharpless estate or canoeing on the East Branch of the Brandywine or taking a bus (public transportation was very good before and during World War II) to East Nantmeal in north central Chester County, where I could walk four miles west to “the Marsh.” There, along Marsh Creek, a tributary of the Brandywine, there was a chance of finding bitterns or rails and other interesting marsh birds. Years later when I learned pollen analysis from Ed Deevey’s lab in Yale’s Zoology Department I analyzed fossil samples from the Marsh. Glacial-age mud was close to the surface and harbored a late Pleistocene record of pollen and spores. These findings have been replicated elsewhere in the East, not far from the full glacial ice margin.

At Lenape Park I’d rent a canoe and paddle up the Brandywine with friends. With luck we would see an osprey flying overhead. Once, in tenth grade with the high school band on the Teachers College playing field, I took the overflight of an osprey as a sign to drop band and spend more time scouting for birds along the Brandywine.

With neighborhood pals Bill Heed and Marple Lewis I began trapping muskrats. We discovered that muskrats might inhabit tiny streams, headwater tributaries of the Brandywine, near my home. We sold the skins of the few muskrats we caught for fifty cents each. Others in high school were out trapping, too; one student had the great luck to catch a mink, worth real money from those buying furs in the war. Another high school friend, Fred Otter, who became a research professor at the University of Connecticut later in his career, would return to class after a day’s absence smelling faintly but unmistakably of skunk. He would trap skunks, an animal worth more money than muskrats but with a higher price to pay in terms of odor. When Fred’s skunk smell was too strong, the teacher would send him home.

One weekend in World War II when I was out looking for spring migrants with my binoculars and inspecting the filled millpond a mile north of my house I heard the rumble of an aircraft apparently with engine trouble, followed by a loud crash. I ran as fast as I could, no mean feat across the marsh and under or over fences of fields to reach the crash site in (ironically) a cemetery. It was a two-motor Martin (no relation) bomber, a B26. The crew had bailed out but they were too low to the ground for their parachutes to function. No one survived. The cemetery was rapidly attracting townspeople to the scene, although I was among the first to arrive. Police and firemen soon herded us out. The next day

at school we exhibited aluminum scraps and parts of Plexiglas from the plane. It was a grim reminder of what was happening repeatedly in more active theaters of operation.

At the University of Arizona I learned that a close colleague and friend in my department had attended Hill School, a private boarding school in Pottstown just thirty miles to the north of West Chester. Our paths did not cross until we both became researchers interested in “near time” at the University of Arizona’s program in geochronology. C. Vance Haynes was sent to Hill School when his dad served in the Air Force. I thought I’d had my share of adventures in high school with my trap line and field trips in search of rare birds. But those of Vance Haynes in Hill School outside Pottstown were at least an order of magnitude more venturesome. He and some of his classmates slipped out of the school after hours to scout the junkyards outside Philadelphia where scrap was being converted to steel in furnaces. After the war in North Africa scrap was shipped to the Main Line for the manufacture of steel. The Hill School truants found Czechoslovakian machine guns that they pried loose from Italian tanks captured in the North African campaign. These were worth real money in the underground machine gun market.

Bill Heed was a patrol leader in Boy Scouts, and I joined him in the Leni Lenape Troop, named for the Delaware Indians once native to eastern Pennsylvania. We met in the basement of the Friends School in our neighborhood. Before December 7 of 1941 and the bombing of Pearl Harbor someone in a light plane flew over West Chester, dropping leaflets warning us what it might mean if instead of the leaflets he had been bombing us.

Around 1942 returned paratroopers, injured in training or in action, were encouraged to lead “war games” for scout troops. It was late October and the weather was getting cold. We were bussed out to the Sharpless estate, my haunts for ice skating in winter, fishing in summer, and searching for long-eared owls roosting in confers, a welcome addition to the West Chester Bird Club’s Christmas count, if the owls could be found.

As a kid I was fascinated with model airplanes, although building an authentic model took too much time to hold my interest. A high point (it is intriguing to realize how moved we boys were by close encounters with military aircraft) was the air show in Philadelphia around 1940, shortly before the attack on Pearl Harbor. At the airport we saw four Curtis fighters and a B15, the prototype of the B17 bomber, the Flying Fortress of World War II. There was a terrible traffic jam around the

parked aircraft, but we did get some close looks and my mother took some Kodak pictures with her folding camera. In the jam on the way home, we were struck on the rear bumper by another vehicle. Unfortunately, although we did not realize it at the time, the impact had driven one of Dad's instruments, a scalpel, into his new spare. We tracked the owner through his license and filed a claim, but although the justice of the peace we saw in Wilmington ruled in our favor he could give us no compensation. The guilty party had no assets.

My parents put their farming and gardening skills to good use when the appeal came for Victory Gardens in World War II. They already had a small garden with peas, carrots, snap beans, and tomatoes in season. Now a neighbor offered us some additional garden space on the back of his lot. On it we grew strawberries, lettuce, beets, tomatoes, peas, and other vegetables. Especially helpful was the purchase of a small ice-cream freezer where we could freeze and store surplus vegetables and, yes, keep ice cream without overloading the ice tray compartment in the fridge.

That, along with Dad's access to my uncle's slaughterhouse, meant that we ate much better in World War II than in the Depression. The only down side was the increase in rabbits attracted to our garden, especially to the lettuce. We were at the edge of town but still within city limits. Needless to say, no hunting was allowed. We had neighbors close to us on two sides, and we knew their habits rather well. They thought they knew ours. One neighbor, Mrs. Hilliard, a widow above us immediately to the south, was rarely outdoors and never in and rarely close to our garden.

The owners of a fuel supply service on the other side of us owned a sleek, large motorboat that they kept in their garage. They also had a Purple Martin house, occupied in season by nesting martins. Although in close proximity, each family stayed on its own property for the most part, the typical behavior of cautious suburbanites respecting neighbors' privacy.

Farther to the east and behind us were empty fields across an alley with very little traffic beyond the biweekly passage of trash and garbage trucks. My dad chose his next move carefully. He wanted to dispatch some rabbits without upsetting his neighbors. We lived in a bungalow with an unheated, uninsulated attic. From the east window one had a clear view of our yard, the weeping willow tree a landmark; the hedge hid the alley itself but not any vehicles there. With the east attic window cracked to muffle the sound of a shot and a clear field of view across yard, garden, and alley, and with no one to be seen out of the side windows, my dad cracked the east window enough to admit his .22 caliber rifle

barrel and telescopic sight, took careful aim, and hit his target. It was one more kill among many in behalf of victory in World War II. That night, we had extra meat for dinner from the herbivore fattening itself in our Victory Garden.

Our neighbor, Mrs. Hilliard, called my dad one day, but to his relief the irate words he heard were not about his discreet shooting of rabbits.

“Dr. Martin, do you know that your son is up on your roof? What are you going to do about that?”

“Well, if he got up he can get down” was his taciturn reply.

Only once do I remember finding my dad in tears. His brother Joel, maker of lovely furniture from Pennsylvania walnut that my Dad had helped locate and supply from barn lofts in the Depression in rural Chester County, could no longer pay his bills. In middle age Joel shot himself in the temple with his .22 rifle held in a vice and a yardstick to push the trigger.



No less than hiking over rural land, even in densely populated parts of the East, farmwork is a good way to begin to learn the fundamentals of ecology and animal behavior. At the age of thirteen I joined my uncles, Uncle Wayne, and Uncle Lloyd with his pump gun, plus the hired man and my dad on a small-game hunt in season. With our shotguns we walked around the conifers behind the barn, hoping to start a rabbit from cover. Then we walked all five abreast through the hayfields where there was stubble that could hide ring-necked pheasants or rabbits. In the line beginning with my Uncle Wayne was the hired man, my youngest uncle, Lloyd, my dad with a double-barreled shotgun, and me with a single-barreled one.

They let me bag a hen pheasant that flew up nearby. Hens were protected and shooting it was illegal, but the party let me take the shot. The breeding season was long past and my uncle felt he had enough pheasants in his fields. We could see a fair distance in all directions. No one else was in sight. Uncle Lloyd got the most game with his pump gun.

As we returned to the house with our bag I noticed that apart from a big stick that he used to start rabbits from under windbreaks of spruce, Uncle Wayne had no gun of his own. I asked about this. He said that we had plenty of hunters armed with guns. He didn't need to hunt anymore. It was over. Now I know the feeling. The most passionate hunters are the youngest. Uncle Lloyd was an exception; he went deer hunting annually with the same group of friends to Pike County in northern Pennsylvania and came back every year for fifty years, each member of the party with a

tagged deer. Although it was illegal, I suspect that he and other members of his group distributed the animals they shot until each licensed hunter could claim one deer, as permitted on his tag.

In World War II I spent summers working for Uncle Wayne at Scholtop, helping make hay, weed the garden, cut corn to fill the silo, run the buck rake and, when I was older, operate the mowing machine. Weekends I haunted the woods and both the east and west branches of the Perkioman Creek. I saw flying squirrels at dusk outside Arnold Adam's house at the edge of deep woods, and upland plover over the hayfields in late summer, but with the exception of an antlerless animal that skittered under a barbed-wire fence in my uncle's mule pasture, I never saw a deer.

An unforgettable surprise occurred after Arnold Adam and I had climbed to the top of a three-story abandoned, incredibly dusty flourmill. We wanted to see what the gears, mainly of wood, were like at the top of the mill that had run with waterpower from a millpond and race fed by the East Branch of the Perkiomen Creek.

Near the roof and the top of the roof beams covered with a thick layer of dust, with a fine view to the west, we were startled by a sudden, very loud, penetrating hiss. I grabbed my perch on the beam with all my strength so I would not fall while I looked into a cornice where the sound had come from. There staring at us was the heart-shaped face of a barn owl. The explosive hiss was its classic defense against interlopers. Arnold and I climbed down out of the old mill as fast as we could. The building might well have been a nesting site.

On all my "birding" field trips after school and on weekends around West Chester I rarely saw barn owls. Occasionally, they roosted under the railroad bridge near the southwest corner of the West Chester Reservoir. Despite the noise and smoke of the occasional engine pulling freight cars, the owls continued to roost in cornices under the bridge between supports of the roadway.

In many years of weekend and after-school streamside field trips into rural parts of Chester County, before the out-of-town real estate boom, I never saw a deer. Now I am told that they are abundant and destructive of plantings in yards and suburban botanical gardens. More than 1,000 white tail deer are said to inhabit Valley Forge National Park. Black bear are another mammal more common in eastern states now than seventy years ago.

Uncle Wayne grew up with horses and mules. Knowing them better, naturally he preferred them to his tractor, usually operated by a hired

man. It is a preference I have learned to appreciate as I struggle in my late seventies to master a computer, matched only by my feeling of hopelessness when confronted with attempting to learn to operate a cell phone. The problem is devaluation of age and experience. The speed with which some new and “improved” technology is inflicted on the consumer is unrelenting. Just as one thinks the new technique is comprehensible, if not fully mastered, critical “improvements” are added, and learning to incorporate them starts the process all over. To be sure, those young enough to adapt step to the plate.

Uncle Wayne had studied feeds, feeding and pasture rotation. Driving slowly in his pickup truck or Ford coupe along country roads on weekends, he would inspect the condition of crops and livestock in the fields of his neighbors to see what he could learn. The county agent was another great asset. Whenever something strange or unusual happened, the agent could be consulted and some new information usually emerged. Uncle Wayne had Holstein dairy cows and despite having no more than a high school education, over the years he learned enough about genetics, natural selection, and breeding to improve the butterfat content of his animals until he had a herd of prize-winning cows. But when spring came and it was time to plow the fields, a much faster operation with a tractor than with a team, he did not choose to attempt it himself. He hired someone from East Greenville who loved the meditative process involved in plowing half the night, opening furrows in the beam of my uncle’s John Deere tractor.

When I was fifteen, he decided I was old enough to run the mowing machine, pulled by two mules. This could be unsafe if one did not manage to control the animals. The cutter bar held a long serrate blade that slid rapidly back and forth within a spiked track. The bar was about six feet long and was held vertical when en route between fields and the shed where it was stored. Cutting the grass would scare up clouds of leafhoppers and other insects. These attracted barn swallows that circled the mower. They found plenty of bugs when the mowing was underway. The worst experience, all too frequent when nesting pheasants were numerous, was to slice into a hen brooding her eggs or to slice off the legs of a bird that instinctively hunkered down instead of flying away.

Uncle Wayne paid close attention to the weather. After the hay was allowed to dry in the field (we held off mowing if rain was threatening) I would go out with a side delivery rake to pick up the mown grass and lay it out in a windrow that could be retrieved by a loader behind the hay wagon. At an early age I was allowed to go out with a buck rake and

one mule to rake the dry hay and drop it up in a windrow, then rake the windrows into piles for loading into the hay wagon by pitchfork.

To avoid spillage, the hay wagon had to be loaded from back to front and from the outside to the middle, so that in the end when one stood on top of the last-to-be-forked hay in the front of the wagon there was enough weight to help anchor the entire load. Failure to load well could be blatantly exposed by spillage in the climb up a steep grade from the fields below to the level of the barn floor.

One of the stories told by my uncle when we worked in the hayfield had to do with a relatively sylvan farm surrounded by woods on boulder-strewn Mill Hill above the East Branch of the Perkiomen Creek. In the process of making hay below the woods, the field hands noticed something drop into the hay wagon from the forkful of hay just tossed into the wagon. A snake! A copperhead! The haying stopped while the field hands emptied the load, searching without success for the snake. The one time I found a copperhead was along the Delaware River in mid-May when it had recently emerged from hibernation. In my experience there was far more talk of copperheads and other poisonous snakes in southeastern Pennsylvania than there were sightings.

The most risky operation for me, a neophyte at making hay, was controlling the mules pulling the mowing machine. In the fields once the air was warm enough to dry the dews of night, barn swallows would be attracted to the bugs scared up from the grass being cut. They were most active in the morning or late afternoon. Midday the bugs flew higher and so did any swallows.

In the mid-forties my uncle noticed something new and unsettling. Perhaps he was tipped off by what he read in one of his farm magazines. The barn swallows, faithful bug catchers around the barn where the cows were fed and milked, as well as over the hayfields, nested between the beams. That summer they became scarce. Scarcity is often hard to notice when it happens after abundance, unlike the reverse. You expect that you simply saw more of what was typical, namely lots of barn swallows around the cow stalls. One does not immediately expect to observe the decline of a common bird, in this case, barn swallows under the eaves of the barn in a dairy operation. Where were the numbers of nesting barn swallows and their cheery chirps, my uncle wondered?

He had been spraying the stalls with DDT to reduce the pesky flies that annoyed his Holsteins at milking time. Annoyed cows switch their tails, stomp their feet, and end up giving less milk. Then Uncle Wayne read about DDT and its effect on birds and other animals, as well as on

flies. Was that involved in the decline in swallows? My uncle reverted to an older method of fly control in the barn, setting up an electric “fly zapper” with fly bait under wires strung like an autoharp, close enough together so that a fly would short-circuit the wires and be killed by the shock.

My uncle’s farm magazine had an enticing picture of a new device, a “buck rake.” To spare the team and not make the mules pull so hard uphill behind the barn, we decided to try one of these. He found and purchased an old secondhand Packard coupe with a big engine. The Packard was trimmed in back and a big fork made of wooden tines with metal tips installed, along with a forklift. After raking the hay into windrows, all one had to do was line up the Packard with the windrow and back the tines along the ground beneath the hay. Then with a power takeoff the driver could lift the load above the ground and drive to the barn.

As usual with these bright ideas in farm journals, one might run into complications. In this case, when one loaded the rake with hay, the combined weight was enough to unbalance the Packard. Instead of the power takeoff raising the hay, the hay and rake in back would raise the front wheels of the Packard, making it impossible to steer.

SOUTH FROM ITHACA

I entered Cornell in the fall of 1946, an eighteen-year-old freshman ready and eager to study zoology in general and tropical birds in particular. I pestered the ornithology faculty, both Arthur A. Allen and Peter Paul Kellogg, for their ideas on how to get to the tropics. I’d cut my teeth on bird-watching in southeastern Pennsylvania including the Jersey shore and Hawk Mountain, extended in Cornell from hitching through the Adirondacks in winter to exploring Florida’s Everglades in summer. Now, I wanted to visit the richest habitat of all, the New World tropics, with their magnificent biological diversity, so inviting to naturalists, as described by Alexander von Humboldt, Charles Darwin, and Alfred Lord Wallace. I wrote to William Beebe of the New York Zoological Society, volunteering to wash dishes at his tropical field station in Venezuela, never dreaming that it might be easy enough for him to recruit domestic help locally. Not surprisingly, my letter went unanswered.

In the mid-1940s a flood of World War II GIs supported by the GI Bill resumed or started classes and inundated the Cornell campus. I envied those that had tropical experience when they served in the military. Bill

Dilger had been stationed in India, and Ed Reilly in Panama. Dwain Warner had been to New Caledonia and collected the island's famous endemic, the kagu (*Rhynochetus jubatus*). Before World War II with George Miksch "Doc" Sutton and O. S. Pettingill, Dwain Warner and Bob Lea had collected birds in tropical parts of Mexico in the Gómez Farías region of southern Tamaulipas. While serving as an officer in the army, Sutton had taught arctic and jungle survival to troops. Sutton had conducted fieldwork in both regions, learning the natural history of the native birds and their environments. That qualified Sutton as an instructor of troops that would ship out for arctic or tropical duty.

At the northeast edge of the campus above hemlock woods on its north side, Fernow Hall was the home base of Cornell's ornithology, mammalogy, ichthyology, herpetology, and conservation faculty. They maintained collections of specimens used in teaching and research. Each field offered a course of its own. Although we didn't know it, we were living in the heyday of whole-organism natural history, untroubled by too many "test implications of quantitative models" and other scholarly refinements about to envelop us. Nor did we anticipate the impending doom of so many of our favorite haunts, as the suburbs overran natural vegetation and agricultural land alike.

Nevertheless, we were keenly aware of the historic extinction of the great auk, passenger pigeon, and ivory-billed woodpecker, and of the perilous status of the whooping crane, the California condor, the peregrine falcon (duck hawk) and even the American emblem, the bald eagle, declining in the face of an expanding American economy. We did not dream that American mammoths, mastodons, and ground sloths might also belong in the ranks of the dispossessed. We did not appreciate that their absence impaired the evaluation of loss. Wasn't it natural? In his mammalogy text Cornell's Prof. William Hamilton hailed the Miocene as the very best time for mammals, a golden age, followed by decline, for no apparent reason. Late Pleistocene extinctions of mammoths, mastodons, and ground sloths escaped comment. In a vast record of extinctions topped off by the loss of the dinosaurs, what's the big deal about loss of some mastodons and other big mammals not long ago. Weren't they victims of climatic changes in the ice age?

On the top floor of Fernow Hall, dormer windows (roof inserts) sheltered cubbies with desks for the ornithology grad students. Some, such as Bill Dilger, emulated Cornell's famous bird artists, Louis Agassiz Fuertes and Doc Sutton, drawing birds at easels. At times there were

interdepartmental conflicts. In the middle of May at the height of spring migration, the conservation biologist on the first floor, E. Lawrence Palmer, was sure he heard a muffled shot. George M. Sutton had spied a rare migrating warbler of a species poorly represented in the Cornell collection. Sutton loaded his gun and shot the bird by firing from one of the dormer windows. Racing down to the ground floor and marching to the spot under the tree where he hoped to find the victim, he encountered his colleague, fuming. Palmer despised collectors. A heated exchange erupted.

Another feature of the top floor was a refrigerator and gas range in a small kitchen. Kitchen privileges were not limited to grad students. Undergrads showing promise as ornithologists were welcome, too, provided they helped with cooking or KP duties, or contributed road-killed rabbits, squirrels, or pheasants to the larder (otherwise heavy on starch), “liberated” apples in season from the Cornell University orchards, or imported surplus food left over from the Home Economics cafeteria. I doubt the facility would pass current sanitary or safety codes.

On the other hand, as an educational resource the top floor of Fernow Hall was an inspiration for my subsequent attempts as a faculty member seeking to enhance habitat for students and staff at the Desert Laboratory of the University of Arizona on Tumamoc Hill, surrounded by 870 acres of saguaros, palo verde, creosote bush, and other native thorn scrub species on a desert reserve established early in the twentieth century on the west side of Tucson. The grounds had been under study by botanists who helped to start the Ecological Society of America here early in the last century.

One night in the fall of 1947 the ping pong table next to the kitchen cubicle on the top floor of Fernow was, as usual, the center of a vortex of activity. The student cooks, Brina Kessel and Bob Dickerman, were ready to convert the table to a dinner table, as soon as grad student Buck Edwards, who had collected Mexican birds for Doc Sutton, finished his game with me. I have a long reach but Buck’s is longer and he had a merciless slam that belied his benign temper; Buck won the game.

I didn’t know it, but there was more at stake. Afterward Buck asked if I would join his spring field trip to Mexico. I don’t think my losing at ping pong had anything to do with the offer. Beyond a strangled “yes!” I was speechless. What a lucky break! I knew that Buck was completing a dissertation on the birds of Lake Pátzcuaro (wherever that was) in the state of Michoacán (wherever that was—in central Mexico according

to Buck.) I knew that Mexico was tropical and I assumed (wrongly, I realized when we drove up into the Mexican Plateau) that Pátzcuaro and its lake were too. I'd drop out of school for a semester to help Buck observe and collect birds and put up specimens.

Because of its high elevation and interior location, we found that Peterson's field guide to the western birds of the USA was quite useful in identifying most of the birds we found in the Lake Pátzcuaro drainage. The adoption of a drainage basin was urged by Buck's doctoral committee, faculty members who, wearied of the political boundaries typically adopted to delimit a study site for a dissertation, had persuaded Buck to try something different. Accordingly, he selected the drainage of a permanent lake basin, Lago de Pátzcuaro, the heartland of the Tarascan people.

The entire Lake Pátzcuaro basin lies above 1,800 meters (6,000 feet) in elevation, above the range of most tropical species of animals or plants. Uncultivated parts of the mountains above the lake support oak, pine, or mixed oak and pine stands capped by fir forests at higher elevations and giving way to dry tropical forest at lower elevations toward the Pacific Ocean. While there are blue mockingbirds, white-striped wood-creepers, brown-backed solitaires, and Mexican trogons that do not or only barely range north of Mexico, the majority of the resident birds are temperate species that range widely through the Mexican highlands, north across the border, and in some cases throughout the western United States. Buck had been there once before, studying the native birds and their environments and had begun working on his own field guide to the birds of Mexico.

I wasn't the only winner of a ticket to Mexico. Roger Hurd, who kept an apple orchard outside Millerton, Pennsylvania, volunteered his services. Although not a Cornell ornithology student, he was keen for adventure, he could cook, and he proved to be a spontaneous, much appreciated "people person." In addition Roger had wheels, the chassis of a new International one-ton truck sporting a homemade metal shell fitted out with bunks. The corrugated aluminum roof of the shell extended out over the back door, reminding me of the overhang of a gypsy wagon. It was the prototype of a camper on a pickup truck. In early February we started south. I was too excited to sleep at night.

In 1948 all cross-country driving was slow. The best highways were two lanes or suicidal three lanes, the middle lane for vehicles passing slower traffic in either direction, a design that increased the speed of travel at the cost of more head-on collisions. The Pennsylvania Turnpike,

the only four-lane divided-median high-speed highway of its kind, ran at right angles to our southerly route, offering no help. In the absence of interstates or bypasses we could not escape strings of traffic lights stopping vehicles on Main Street of every burg along the route. The more towns we could drag late at night, when traffic was light, the better. We learned to keep an eye out for speed traps.

East of the Mississippi River we found that thirty-five miles per hour was a good average speed, not including stops for food and gas. Driving night and day in unbroken two-hour shifts, if all went well, we might make 700 to 800 miles in twenty-four hours. Texas was flat, with better roads and fewer towns. Near Corpus Christi, Atwater's prairie chickens, a trophy for my "life list," showed up in grassland where they were supposed to be. Roger and I would soon add many more.

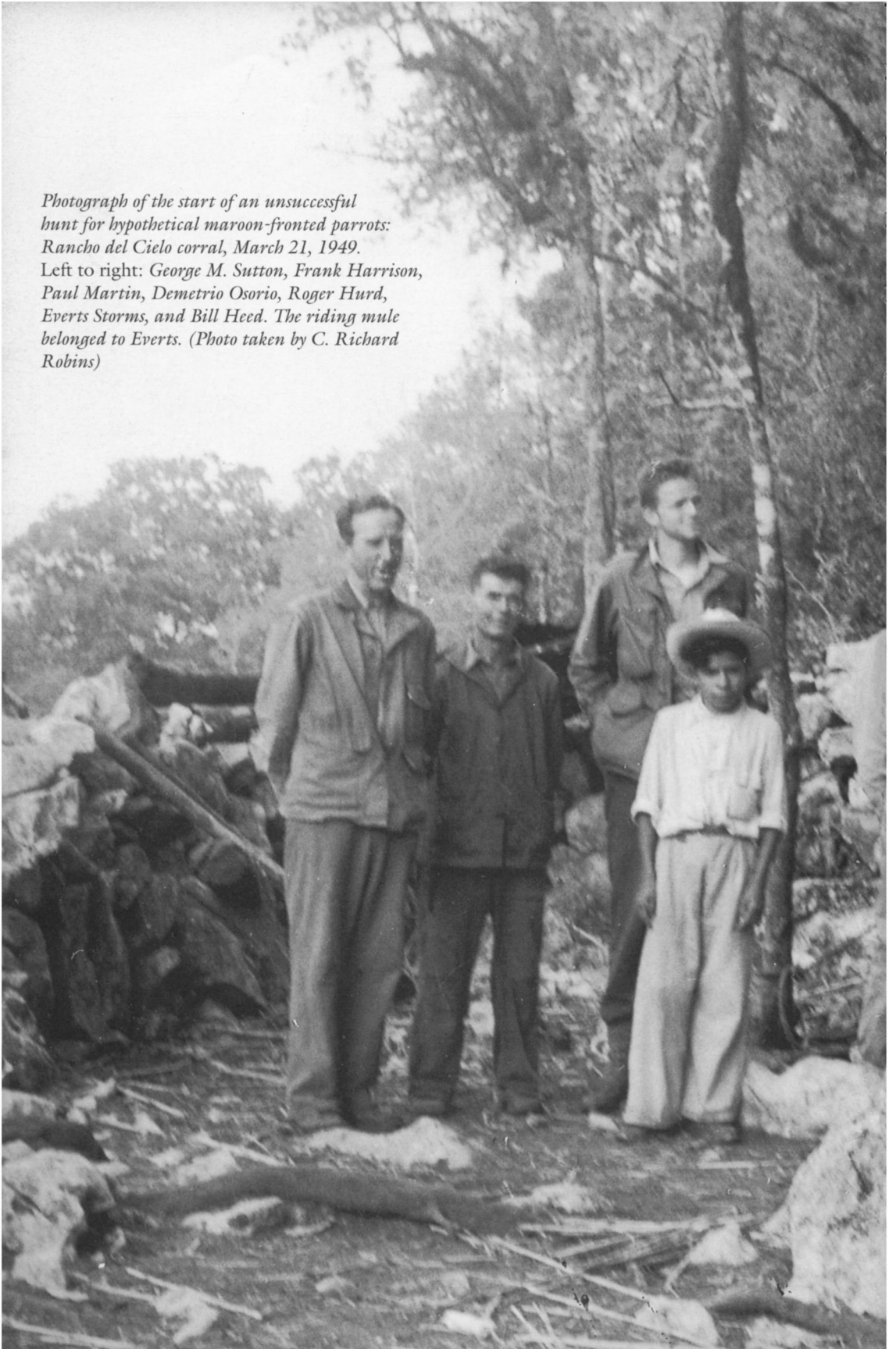
At McAllen, Texas, we crossed the Rio Grande, leaving the United States and entering Reynosa in the state of Tamaulipas. At Mexican immigration we presented birth certificates and received our tourist cards, and at customs Roger got a necessary permit for his truck. One more bureaucratic hurdle remained. A leftover from World War II, Mexico retained designated military districts along the border. Any weapons in the hands of foreigners required permits that had to be registered with the local *comandante*. We found the military barracks, and Buck presented our shotguns along with .410 and .22 auxiliary barrel inserts, the latter especially useful for obtaining small birds with minimal damage to their skin and feathers. The burly officer in charge inspected Buck's bird-collecting permit issued by the Departamento de Caza y Forestal in Mexico City, as well as Buck's gun permit, and then asked to see our weapons and ammunition. The .22 caliber shell casings loaded with tiny pellets caught his eye. Their minute size broke him up. "*Cartuchos de munición!*" he exclaimed. He waved us out the door, roaring with laughter as we obediently made our exit.

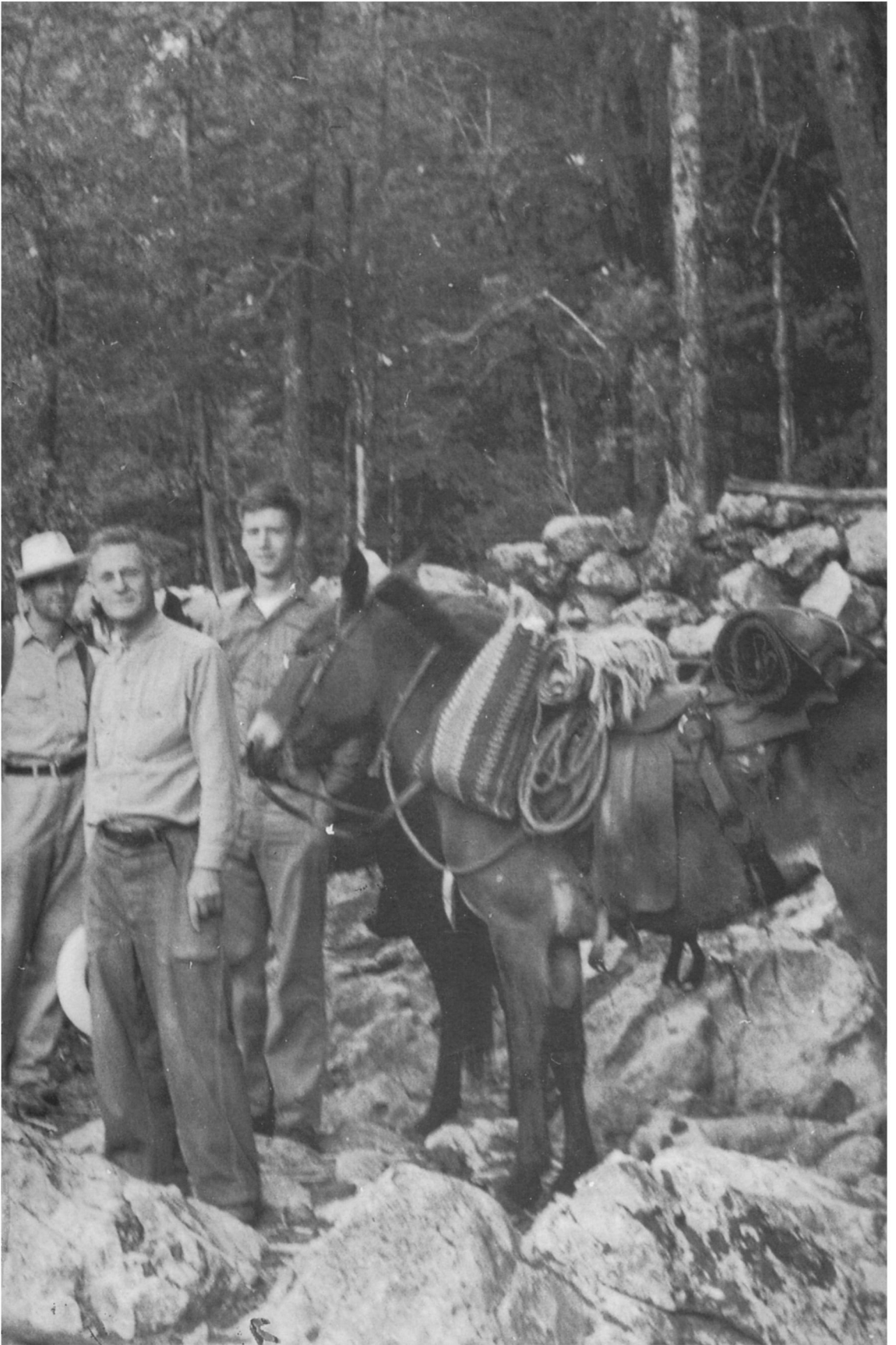
Beyond the border cities and irrigated fields near the Río Grande we entered the vast gray-green thorn scrub of northern Tamaulipas, sometimes called "chaparral," although it lacks the scrub oaks and manzanita of interior chaparral found in California and the mountains of the West. I was not thrilled. The shrubby vegetation—open, hot, dry, barren, and desolate—felt as bleak as the New Jersey pine-barrens. Compact desert shrubs with small leaves, stout twigs, and harsh-textured or thorn-protected foliage looked like a poor habitat for birds.

Exploring the scrub I felt totally exposed and kept looking over my shoulder for trouble, not that there was anything to worry about. This

*Photograph of the start of an unsuccessful
hunt for hypothetical maroon-fronted parrots:
Rancho del Cielo corral, March 21, 1949.*

*Left to right: George M. Sutton, Frank Harrison,
Paul Martin, Demetrio Osorio, Roger Hurd,
Everts Storms, and Bill Heed. The riding mule
belonged to Everts. (Photo taken by C. Richard
Robins)*





was a far cry from my dream of a dense, tall tropical jungle filled with parrots, monkeys, and toucans. Ironically, I would happily spend much of my life based at the Desert Laboratory of the University of Arizona at the edge of Tucson, surrounded by 870 acres of Sonoran thorn scrub in a climate and vegetation more arid than this. But it was not love at first sight.

We camped in the brush near a town of continuous (common) adobe walls with the intriguing name of General Bravo. Who was the general? Was his family name in fact Bravo, or was that a descriptive adjective earned by valiant conduct in battle?

Early the next day, as we neared Monterrey, magnificent mountains loomed up through scattered clouds behind the city. This was more like it! Outside Monterrey a few peaks of the breathtaking escarpment of the Sierra Madre Oriental shot up above tree line to an elevation of 3,600 meters (12,000 feet). The Rocky Mountains west of Denver are higher than the crest of the Sierra Madre outside Monterrey, but not relatively higher as seen from the Denver airport. One needs to remember that the lowlands around Monterrey are much lower in elevation than any part of Colorado. What a change from the vast flatness of the coastal plain in Louisiana, east Texas, and northern Tamaulipas. We'd arrived at the backbone of the continent.

Near Monterrey we stopped for brunch at a roadside restaurant, a chance for Roger and me to experience our first fresh, locally grown papaya, which was not to be found in most of the markets back home. The weather was delightful. We congratulated ourselves on escaping the icy blasts of a Finger Lakes winter in central New York state.

As we settled down at an outside table I had the disquieting feeling that we were being watched. Then I noticed black vultures roosting on the back wall of the patio, sharing our al fresco ambiance. They appeared to be waiting patiently for something, our garbage perhaps. There were more surprises to come in the months ahead.

Like other newly paved Mexican roads in those days, the Pan American Highway was unfenced. Livestock, including cows, burros, horses, pigs, and poultry, were accustomed to range freely and without risk on the old unpaved road, grazing the green strip on one side of the road before crossing at their leisure to sample the other side. Now, since the paving, speeding traffic took its toll. Until the government fenced the federal highways, the result was a bonanza for scavengers and a severe burden to those residing next to the lethal traffic. As we sped past the stinking, bloated carcass of a *burro* or a *vaca*, scattering its funereal retinue of

vultures, often accompanied by a Mexican eagle (crested caracara), we might spot more vultures circling ahead, portending the next roadkill. At Montemorelos the heady scent of citrus blossoms and bags of fresh tangerines in roadside stands, advertised at bargain prices, brought us to a stop. A gallery forest of tall, statuesque Moctezuma cypress, *Taxodium mucronatum*, lined a small river of blue water, providing riparian habitat for parrots and tiger-herons.

Forty kilometers (twenty-six miles) south of the main plaza in Ciudad Victoria, the capital of Tamaulipas, we passed a road sign indicating that we were now within the Tropic of Cancer. Less than a week from Ithaca, here we were at last! Bravo! Bravissimo!! Within another twenty-five to thirty kilometers the highway swung west toward the foot of the Sierra de Guatemala (the local name for that segment of the Sierra Madre Oriental), and the forest became taller, greener, and more luxuriant than any we had seen before. Here was the real stuff, a tall, dense tropical semi-evergreen forest, complete with smooth-barked *chaca* (*Bursera*), strangling figs (*Ficus*), *guasima* (*Guazuma*), spiny *huapilla* in the pineapple family (*Bromelia*), palms, bamboo, epiphytes (air plants), elephant ear, and, around small mud-and-wattle houses, dooryard patches of cultivated papaya, guavas, bananas, avocados, limes, and other tropical fruits. In the distance we could spot important ranch houses or tractor sheds (which also served as sleeping quarters) by their emergent massive, shady *orejón*, or monkey ear trees (*Enterolobium cyclocarpum*). (These are known in Costa Rica as *guanacaste*.) Here, just 330 kilometers south of the border, the *orejón* is one of many trees of the tropical lowlands of Central or South America found at or near their northern limit.

That night we camped under a tall spreading Moctezuma cypress by a mule-powered sugar mill on the bank of the Río Sabinas within the small Spartan ranch of Everts Storms, an expatriate Texan who had spent most of his life in eastern Mexico. Two years earlier while searching for Sutton's former field camp at Rancho Rinconada Buck had discovered and befriended Everts.

We were at the edge of the tropics that Sutton and Pettingill wrote about in "Birds of the Gómez Farías Region" in the *Auk* in 1942, to be followed thirty years later by Sutton's book illustrated with his color paintings, *At a Bend in a Mexican River*. Buck's contact with Everts would prove to be our key to the cloud forest and other ecological treasures of the region. Meanwhile, we indulged in an afternoon skinny dip in the sparkling waters of the Río Sabinas below Everts' ranch.

MOUNTAINS OF MYSTERY

A few miles to the north, between forested ridges at the foot of the Sierra Madre Oriental, the Río Sabinas emerges from its *nacimiento*, its birthplace, a magnificent big spring, full of large gobioid tropical fish, turtles, and freshwater prawns, which are crustaceans much larger and more attenuate than the crayfish we knew from streams in the USA. Not surprisingly since they percolated through cavernous Cretaceous limestone of the Sierra Madre, the powder blue waters were charged with calcium carbonate. Surrounding mountains support tropical semi-evergreen forest and, at higher elevations, cloud forest and wet pine-oak forest. Everts Storms assured us that those who bathe in the buff in the *nacimiento* of the Río Sabinas would return. My last such bath there, with a troop of University of Arizona students, was in 1978. While I haven't been back since, just writing about the place now is a form of returning, so maybe Everts had a point.

In Tamaulipas most of the Sierra Madre is cavernous limestone. No matter how hard it rains, even in hurricane season, most runoff in the mountains soon vanishes underground, to emerge thousands of feet below, at the foot of the mountain, in great springs. These are the sources of the Río Sabinas, the Río Frío, and adjacent rivers flowing east to the Gulf of Mexico near Tampico. In recent years the rivers beyond the mountains have been diverted to irrigate agricultural crops, especially sugarcane. Much marshland must have been lost in the process.

With his ranch close to the foot of the mountains where rainfall was heavy, Everts did not need irrigation to grow sugarcane, maize, tomatoes, and a variety of tropical fruits. Everts told us to help ourselves. When we shook his avocado tree we had to be quick to beat the pigs to the fall of ripe fruit. A wild species of avocado grows in the mountain forests. The much-praised mangoes were not yet ripe, so we dined on papaya and on unfamiliar varieties of locally grown bananas, another new and exotic experience. Through the 1940s papaya, mangoes, and more than one kind of banana were unknown in most grocery stores in the smaller cities and towns of the eastern United States.

Everts Storms came to Tamaulipas early in the century to work in the oilfields of Tampico. His father had been U.S. consulate in Victoria, Tamaulipas. For a while he and other American immigrants escaped the Mexican Revolution by hiding out in uninhabited parts of the rugged Sierra de Guatemala. He named his ranch on the Río Sabinas Pano Ayuctle, Aztec for *calabasas*, or pumpkin ford. In his letter to me of 12

October 1956 he spoke of it as the “Rinconcito de Dios,” or “God’s Little Corner.” The CETENAL map (1:50,000 scale) of the Gómez Farías region shows it as Rancho Calabasas.

Everts was known and loved throughout the Gómez Farías region. Once his valise fell off the baggage rack on top of a local bus, a loss he discovered only after he reached home. From El Encino to El Limón, word spread along the Pan Am Highway, and within a few days a passerby found Everts’ luggage and returned it, intact and unopened. Like many other properties, Everts Storms’ ranch was partially expropriated after the Mexican Revolution. Ejido La Azteca, a small settlement across the Río Sabinas, was one result. If there was any bad blood in the aftermath of his loss of land, it was not obvious to us. The *ejidatarios* at La Azteca were on good terms with Everts, and like all other people in the region, they treated us kindly. In 1953 Luciano García and his family guarded a hygromograph station I set up in a small patch of tropical evergreen forest hugging the base of the mountain near a trail between the ejido where Luciano lived and the municipio of Gómez Farías. I suspect that many local kids and their families knew where the mysterious instrument was; in any case it was not molested.

Everts’ friendship with those that had benefited from the expropriation of his land did not mean that he was a liberal. On arriving at his ranch one Sunday afternoon I found him in deep conversation with a visitor and friend in the region, an officer in the Mexican army. They appeared to be pleased with the work being done by Wisconsin Senator Joe McCarthy in hunting down those labeled Communists, as reported in a recent copy of *Time*.

Everts and his ranch hands made sugar in the traditional way, feeding a few cane stalks at a time into a small mill powered by a mule. From the teeth of the mill, the cane juice trickled into a bathtub-sized wooden trough, its bottom sheathed in metal. Through much of the night the cane juice was boiled until the concentrate could be poured into molds, where it hardened into brown cones of raw sugar (*piloncillo*) wrapped in the leaves of the sugarcane. When dry the cone was rock hard. Without a hammer or hatchet it was impossible to break *piloncillo* into smaller pieces, and soaking in water overnight would not dissolve the cone.

Many small-scale ranchers, including Everts, used oxen for plowing as well as for other heavy work, including pulling out vehicles stuck in the bottomless adhesive mud of dirt roads in the rainy season. Some of the farmers cultivating the rich, black soils cleared from former palm forests around Chamal, El Limón, and Ciudad Mante had small tractors. At

Ciudad Mante and at Xicotencatl large commercial mills refined sugar from sugarcane grown in fields irrigated by the Río Guayalejo and its tributaries. In the case of Rancho Pano Ayuctle and other properties west of the Inter-American highway and along the Río Sabinas north to its *nacimiento*, surrounded by forest, there was enough precipitation to grow crops without irrigation, thanks to proximity of the front of the Sierra Madre, looming above us to the west.

With alternating patches of deciduous forest, semi-evergreen forest, and cleared land bordered by living fences of *guasima*, *huapilla*, and other fast-growing trees and shrubs, the country teemed with wildlife. Everts' cane-fields harbored boa constrictors. At night huge toads, *Bufo horribilis*, big enough to fill the bottom of a bucket, lumbered into our camp after the bugs attracted by the intense light of our Coleman pressure lamp burning white gas. Large black iguanas (*Ctenosaurus*) lived in trees near Chamal and Gómez Farías. The strangling figs harbored a large fence lizard, *Sceloporus serrifer*, which I later described as a new subspecies, *S. serrifer cariniceps*, different from those that Michigan herpetologists had collected in the Yucatán.

The most exotic of all the lizards was the spindly-legged, slow moving, protectively colored (bright green) cacique iguana in the tropical genus *Laemantcus*, a new record for Tamaulipas (Peters 1948). The tropical viper, or fer-de-lance (*Bothrops atrox*), locally known and feared as *cuatro narices* (four nostrils) or *cola blanca* (white tail), occasionally appeared swimming with us in the Río Sabinas. Herpetologist Jim Peters at the University of Michigan also showed interest in our specimens of the tropical rattlesnake, *Crotalus durissus*, apparently another new record for the state of Tamaulipas.

The next year, in the woods near the Río Sabinas, Roger Hurd killed a tayra (*Eira*, locally *tepechichi*), a fierce tropical carnivore weighing four or five kilograms that made up in aggression for whatever it lacked in size. After Roger shot and wounded it in a tree, the animal dropped to the ground and attacked him. He managed to defend himself and to club the animal to death, smashing the stock of Doc Sutton's shotgun in the process. He returned to camp with bad news (he had destroyed their only collecting weapon) and good news (they now had a specimen of a rare tropical mustelid). Sutton considered Roger's experience "one of the most amazing reports I had ever listened to concerning an encounter between man and beast" (Sutton 1972:88-91).

Cow trails through the dry forest were infested with ectoparasites: full-sized ticks, tiny "seed" ticks, and minute chiggers. An allergic reaction

to the chiggers kept me up itching half the night. I noticed that Everts and his neighbors could walk the same trails with no ill effects.

However, they could not avoid malaria, a chronic health problem for many throughout the lowlands. We took our anti-malarial pills faithfully. To Everts' dismay we boiled our drinking water or chlorinated it with Halazone tablets. Everts teased us about "doctored" water and served river water at his table. Nevertheless, that summer another bird collector in southern Tamaulipas came down with typhoid. We felt that we had reason to be cautious.

Everts often invited us to share his meals, prepared by his cook, Doña Petra, and we slaked our unrelenting thirst with many *tasas* (cups) of aguacate tea made with water from the Río Sabinas and safe, we hoped, since it had been boiled. Everts introduced us to such local specialties as *nopalitos* (diced new cactus pads, akin in texture to okra, fried and anointed with salsa). Around holidays Everts invited us to share his *mole de guajolote* (turkey drenched with chile and chocolate sauce).

We stalked trails through the brush and along the Río Sabinas, hunting motmots, cotingas, ant tanagers, and anything that looked new and different from the bird list Sutton and Pettingill had compiled and published in the *Auk* for the Río Sabinas at Rancho Rinconada just to the south of Everts' place. Although the local people had Spanish or Huastecan common names for many of the native plants, especially the trees and shrubs, there seemed to be fewer local names for the birds other than game birds. In spring we found a variety of warblers and other migrants heading north, some to Canada. These we could identify with the help of Peterson's *Field Guide to the Birds of Western North America*. Nevertheless, to learn the native birds we had little to go on beyond occasional descriptions of calls or behavior in Sutton and Pettingill's annotated list. The first field guide to Mexico, *Birds of Mexico* by Emmet R. Blake, did not appear until 1953. The only secure record was a bird in hand, destined to become a specimen suitable for taxonomic study. These days, armed with excellent field guides, binoculars, and spotting scopes and familiar with a variety of bird calls, an experienced field team participating in the annual Audubon Society Christmas bird count can expect, in a good year, to identify within seven miles of the town of Gómez Farías more than two hundred avian species.

With no less enthusiasm we followed the classic procedure adopted by John James Audubon himself. When in doubt in new country "shoot first and ask questions afterward." Archaeologists rely on the testimony of the spade; we relied on the testimony of the shotgun. We selected our

ammunition depending on the size and distance of our prey. We hunted herons, ducks, and large hawks with a 12-gauge shotgun loaded with large pellets. For smaller (starling-sized) species we inserted a foot-long, 410-gauge auxiliary barrel (“aux”) into a chamber of the shotgun. The smallest birds at close range fell to .22 shot shells from a stubby “aux” the size of a 12-gauge-shotgun shell, an insert sometimes used by skeet shooters—the miniature armament that had amused the *comandante* in Reynosa.

The trick was to anticipate in advance the size of the next bird to be collected. It was pretty much guesswork. In addition, intended victims might fly away while the would-be collector struggled to add or subtract the proper aux. Then there was the matter of recovery. If not killed but only winged, the targeted trophy might drop to the ground to flutter into a thicket or hide under leaves. Proper procedure meant rushing up to the place where one thought the bird landed to mark the spot with a hat or bandana, and then hunt the vicinity very carefully in circles of increasing radii. Following Sutton’s protocol we did not give up until we had made a serious effort that might take several hours. Once in a great while the victim, given up for lost after a lengthy and thorough search, appeared under the hat. These were the days before mist nets, a less destructive method of banding and examining critically an unknown bird.

In the afternoon, when birds were less active, and sometimes long into the night by the intense light of a hot, hissing Coleman lantern, its delicate mantles burning white gasoline and requiring periodic pumping to restore pressure to the vapor tank, we worked at specimen preparation. Beginning with a midventral incision we carefully separated skin from body, scraped away any layers of fat with a scalpel, degreased the feathers with carbon tetrachloride, dusted the skin with borax as a preservative, tied wing bones together, stuffed the eye sockets, filled the body cavity with cotton spun around a short stick, and sewed up the abdomen. In dry air we moistened the thread as well as the skin on either side of the incision before sewing the skin shut, arranging the feather tracts and pinning out the specimen on cardboard. The task was not complete until labels and catalog entries had been written up in India ink, including locality, elevation, distance from nearest town, habitat, name of collector, date of collection, field number, sex, gonad size and condition, and anything else of note such as stomach contents or behavior. Some field parties carried scales and weighed their freshly killed specimens. Especially when supplies ran low, breast meat of the larger birds, or of all birds, found its way into the next day’s soup or stew.

Given that we were occupied with such arcane operations, our camp unfailingly attracted the attention of local people, initially venturesome small fry urged on by older siblings, and finally heads of households including various members of the Osorio family as well as Everts' cook, diminutive Doña Petra herself. The word spread quickly. Everybody around Rancho Pano Ayuctle knew about us or had seen us wandering along the trails looking at *pájaros* (birds) with our binoculars and shooting the ones we wanted for specimens. Now they knew about the strange things we did with them.

Until his generosity began to deplete our stock and Buck asked him to quit, Roger Hurd won friends among the grandmothers and mothers with small gifts of needles and thread. On occasion, Roger's boundless enthusiasm for befriending anyone at any time pulled us through some heart-stopping encounters after dark when strangers happened upon us in some bootlegged campsite we hoped was remote enough not to attract the attention of potential *bandidos* (bandits).

Everts promised that when we returned from Michoacán in April he would help us outfit a collecting trip up into the mountains, where he said there were monkeys, a lost mission, and a lake at a settlement called La Joya de Salas. From down below, when not enveloped in the clouds, the montane forests west of the Río Sabinas looked dense, unbroken, and mysterious. To the best of our knowledge no other biologists had explored the place. I looked forward to being in the first party to do so. But first we would study Michoacán.

BIRD SKINS AND THE NEW SYSTEMATICS

South of Tamaulipas in San Luis Potosí we stopped at El Salto, following a river and travertine-rimmed pools of blue water upstream to a majestic waterfall encrusted with travertine draperies. I'm told the site has been lost to a small generating station. Military macaws haunted tall *sabinos* (*Taxodium*). Buck attempted to capture some of the macaws on film with his new movie camera.

After two days we broke camp and returned to the Pan American Highway, driving out of the tropical lowlands above Tamazunchale, around hairpin turns, into cool fog through mossy forest. Farther above, the highway left the pines and oaks of the mountains and entered a sun-blasted plateau of thorn scrub with rope cactus (*Opuntia imbricata*),

yuccas, and other spiny, spiky, or oily shrubs. Goatherds lived in low, scattered stone huts behind stone walls that extended to the far horizon. In Mexico City we braved heavy traffic to return some Sutton bird skins promised to the Departamento de Caza y Forestal, the source of our permits.

From Chihuahua to the Isthmus of Tehuantepec the higher parts of the Mexican Plateau support forest or woodland with dozens of species of pines and hundreds of species of oaks, most of them endemic to Mexico. Above the Lake Pátzcuaro basin in Michoacán we found a variety of pine, oak, and pine-oak communities, least disturbed in the *pedregal* (lava boulder fields) too rough for farming and even for livestock. Until we were invited to stay in Pátzcuaro at the Estación Limnológica, we camped out in the pine forest south of town or on the southeastern shore of the lake near a large marsh where we studied the marsh birds.

Soon, another field team composed of Charles Sibley and his student assistant, both from the University of California at Berkeley, showed up at the Estación Limnológica. Few specimens existed of the waterbirds that wintered on Lake Pátzcuaro. While Roger took off on his own to visit the erupting volcano at Parícutín, the rest of us joined forces for a day of duck shooting from a motor launch. Sibley occupied the bow, Buck and the boatman the stern, while Sibley's assistant sat across from me, both of us amidships.

Approaching our first target, a bufflehead, presumably not collected before in the Pátzcuaro basin, Sibley raised his gun when, to his horror, out of the corners of his eyes, he detected double-barreled shotguns aimed forward on each side of his head, close to his ears. The nimrods behind him were ready to shoot too! Profanity erupted from the bow and, somewhat crestfallen, we lowered our weapons. That wasn't enough. We were instructed to empty the chambers and point our guns away from the boat. We were led to understand that shooting at birds from the bow of a boat is the exclusive prerogative of whoever sits in front. Then we resumed our cruise until Sibley bagged his duck. I began to appreciate Buck's wisdom in his seat selection. We motored on after our next target.

That night Buck and I eyed a major problem, the large number of waterbirds to skin and stuff. Sibley scoffed at our concern.

"You do Sutton skins? Don't waste your time. All you need is enough of the specimen to measure the beak and the tarsi, with the skin supported by a stick jammed into the base of the skull. Don't try to build back the body with cotton or sew up the midventral incision. Don't

you know the importance of sample size? Have you looked at Ernst Mayr's *Systematics and the Origin of Species*? We deal with populations and intraspecific variation. That requires a series of specimens to make a definitive quantitative sample from each region within the range of a species. Are you evolutionary biologists or amateurs?"

While we set to work Sibley cooked dinner for us, offered to share his gallon of wine (no takers), and helped with some of the skinning. After writing up their field notes for the day he and his field assistant climbed into their sleeping bags and soon began snoring, long before Buck and I called it quits with our Sutton skins.

A few years later our much-beloved professor of ornithology, Arthur A. Allen, retired. He was popular in upstate New York and throughout the East for his radio broadcasts, and nationwide for his sound recordings and photographs of rare birds in *National Geographic*. A search committee was appointed to seek his replacement. Some committee members felt the Cornell tradition was lacking in academic rigor. The solution would be new blood and the hire of a new systematist, one conversant with modern evolutionary theory. Out of a wealth of candidates the search committee selected Charles Sibley. On his initial inspection of Fernow Hall, Sibley arrived at the grad student bullpen on the top floor where he found Bill Dilger, his pipe in his mouth, at work behind an easel. At times Dilger supported himself drawing parakeets or canaries for the French's Bird Seed Company. I suspect that both men had anticipated this moment. According to legend Sibley entered the room, stared at Dilger, and asked who he was and what he was doing, which was quite obvious.

"Pleased to meet you, Sir. I'm Bill Dilger, painting these parakeets."

Sibley bristled. "Mr. Dilger, don't you know you are wasting your time? Are you a student of ours? Name me one eminent scientist that has drawn birds." Aimed at Sutton and Fuertes, not to mention Audubon and Wilson, and the heart of the Cornell tradition of illustrating bird books, the question was loaded. Bird artists were lightweights, not scholars. But Bill was ready with his answer.

"Why, that's easy," Bill replied, "Leonardo da Vinci, Sir."

At Pátzcuaro I was dismayed, in part because I felt that Sibley might be right in speeding up the preparation of skins if they were not crucial in taxonomic and evolutionary analysis of bird speciation. To detect significant variations in morphology, the evolutionary biologist needed large population samples, up to a dozen individuals each, and from many different localities.

At the same time and at his own expense, Doc Sutton was our sponsor. He had a deep interest in our discoveries. Buck also talked of writing and illustrating a Mexican field guide, which would require stuffed specimens of high quality. His *Field Guide to the Birds of Mexico and Adjacent Areas* (1998) was the result. The best Sutton paintings were rich ecological vignettes. With identifiable plants in the backdrop, Doc Sutton's birds came with their habitat. Like Audubon's elephant folio, they communicated artistic, ecological, and emotional impact all rolled into one. Had the academic critics gone too far?

Still, the Sibley pronouncement resonated. A new breed of evolutionary-oriented zoology students at Cornell such as Dean Amadon, Max Hecht, Danny Marien, and Ken Parks expounded the virtues of the new systematics. Its foremost theoretician, Ernst Mayr, was invited for a talk and hosted a very popular open house afterwards. "Evolution," a new course at Cornell taught by a geneticist, filled the lecture hall with students and faculty.

I was interested in biogeography, which also required large samples for critical analysis. In fact, if one wanted to collect large numbers of specimens in minimum time for the study of population variation, the future lay, so it seemed, not in the tedious process of preparing a bird skin but in reptiles and amphibians, animals that did not need to be skinned and stuffed like birds or mammals but relaxed in chlorotone, tagged and injected with formaldehyde. Then their scale rows and ventral scutes could be counted. Some claimed that small mammals were the wave of the future. They could be trapped and didn't have feather tracts to complicate specimen preparation.

Plants were the best of all. They defined habitats. Collecting plants was less likely to offend those who did not care to see animals killed for any reason, scientific or otherwise. Except for succulents like cacti and agaves, a mass collection, one yielding ample material for study of population variation, could be pressed quickly. To be sure identification could prove to be complicated if the plant was not in flower or in fruit when collected. Now, with the help of mitochondrial DNA (mtDNA) even leaves or digested tissue in manure may be sufficient for identification. A variety of plant species ingested by extinct ground sloths and found in their dung was identified by mtDNA (Poinar et al. 2003).

Admittedly, in wet weather and especially in the wet tropics, the drying process could be tedious. Some plants like *Sedum*, a small succulent, were so durable they resisted any amount of air-drying in the press, retaining enough green leaves to propagate, months later, in the greenhouse. I

was beginning to think of switching from ornithology to experimental plant taxonomy. Nevertheless, birds were the reason I was in Mexico. Birds were the real grabbers. I didn't often admit it, but shooting birds and examining them in the hand, fresh dead, was such a rush!

Now why was that? Was it an ancient response of the psyche of a one-time Paleolithic hunter? In the mid-1950s we did not pursue or even frame such a formidable question. At present, bird collectors are a vanishing breed. On the other hand, what motivated those like my dad to shoot rabbits in a garden out an attic window? In the fall, what unleashes an army of hunters in the fifty states? They are so potent politically that no one can find a way to reduce the out-of-control deer herds overrunning suburbs and Valley Forge, and destroying rare plant collections in botanical gardens and relict plant populations in nature.

So I now suggest, many years after the fact, that the bird collecting in Mexico had more to it than simple ornithological science. After a month in the Lake Pátzcuaro basin we hit the road for the pine-oak forests of the Sierra Madre Occidental in western Durango. There we searched without success for one of Mexico's rarest birds, which Buck had hoped to photograph, the imperial ivory-billed woodpecker (*Campephilus imperialis*). Occasionally 1:50,000-scale topographic maps of the least traveled parts of the Sierra Madre Occidental of Chihuahua carry the name Rancho Pito Real—the Spanish name for the Imperial Ivory-billed Woodpecker. Perhaps as recently as the 1950s, before 22-caliber rifles became common, the birds were still present in the most rugged and remote parts of the pine-oak forest.

In early April we left the pines and drove east across the grasslands of Durango through Torreón and into the Chihuahuan Desert across the sparsely inhabited creosote bush plains of Coahuila. No less than the xeric scrublands of the Southwestern United States, the arid interior ranges of the Mexican Plateau also harbor fossil deposits of disjunct plant remains from the last ice age, preserved in ancient pack rat middens.

Back at the historic city of Monterrey we retraced our route south into the tropics of eastern Tamaulipas, contemplating that trip Everts had promised into the mountains with the monkeys, a lost mission, and a lake. Everts greeted us with mail. Besides news from my parents in Pennsylvania there was a letter for me from Ann Arbor, from Doc Sutton. He'd heard of our plans to explore the mountains above the Río Sabinas and that I would spend a month up there. He sent reprints I'd requested, most notably his groundbreaking "Birds of the Gómez Farías Region." He offered guidance:

I call to your special attention that at the Pano Ayuctle you are practically at the type locality of *Chaetura vauxi tamaulipensis* [a swift] and of *Hesperiphona abeillii saturata* [a grosbeak], so either of these birds would be especially desirable as specimens. I assure you you'll not shoot too many of the swifts. They come too close to sitting in the lap of the gods for that. As for the grosbeak, the last specimen I shot fell into a deep fissure among rocks on one of those slopes to the west of the River [Río Sabinas] and I never even saw it after it fell. Perhaps it had only been crippled."

The swifts and grosbeaks immediately became "targets of opportunity" for me. Sutton continued: "Paul. Be sure to take full notes on breeding activities. More information on the wren *Nannorchilus* would be welcome. Do those birds build those fine nests, or does some other species of bird build them? Any information on the breeding of the Ant Tanagers would be good to get. I suspect that they nest semi-colonially. But the differences in the nesting of the two species should be looked for." I did what I could. I did not find the wren *Nannorchilus* in the cloud forest, and the ant tanagers did not breed there.

HEAVEN'S RANCH IN THE CLOUDS

Like many days in the spring in the coastal lowlands of eastern Mexico, the early morning of April 10, 1948, was clear, warm, and rapidly getting hot. Buck, Roger, and I were hard at work repacking our gear once again, the inevitable task of backcountry travelers. Faced with four days in the mountains for all of us, and at least a month for me, the operation involved some fine-tuning. What guns, ammo, specimen panniers, grub, and personal gear could we pack up on our backs or on those of two mules? Until Buck returned the rest would go home in Roger's truck or remain in storage up in the eaves in Everts' house, unavoidably exposed to packrats, mice, snakes, and who knows what other species of vermin, conceivably including some "critters" new to science.

Everts' house, like most Huastecan dwellings, was a simple affair, made of poles set vertically in concrete, partly sealed with mud and open for ventilation beneath a thick, overhanging palm-thatch roof that shed most of the rains. The thatch provided suitable habitat for mice, lizards, scorpions, and snakes. Everts enjoyed one luxury, a cement floor. His cook shack and small dining table were in a separate *jacal*.

Already we were dripping perspiration and we hadn't seen the mules yet. Everts had recommended an early start, not because the trip would take all day—although we started so late that it did—but because that way we'd be far enough up into the mountains to escape the heat of the lowlands. No such luck. By 9:00 our hope of an early start had faded. In their large woodland pasture the *bestias* eluded discovery and capture. By 10:00 I was beyond impatience. By 11:00 three mules finally appeared.

Recovering from a bout of malaria, Cruz, our intended guide, did not want to go. With the promise of a riding mule and extra wages, Everts persuaded Cruz to change his mind. By noon the mules were packed, we topped off our canteens, splashed across the pumpkin ford of the Río Sabinas, and strode past the village huts at Ejido La Azteca, where kids and their mothers peeped at us through cracks in their walls. The sun beat down.

We cut around boulders and entered the forest to begin climbing, first up to a bench at 300 meters, then steeply to switchbacks along a *malacate* (including the ruins of a rusted winch and cable from earlier logging days), then up a steady ascent, dripping sweat. The mountains ahead looked just as formidable as they had at the start. Stopping for breath, I drained my canteen. An hour later, thoroughly dehydrated, I was happy to see Cruz holding the mules back from a *charco*, only to find that the odorous tea-colored water was scarcely potable; we would not drink such fluid on the farm. The mules didn't hesitate to drink when their chance came. Cruz said there was a better source ahead.

Later in the afternoon, we left the old lumber road to find ourselves on a narrow trail enveloped by cool air and the blessed shade of dense, tall mesophytic forest. I detected the refreshing scent of rotten wood and trod through a deep, rich mulch of freshly fallen leaves. In response to Roger's question, Cruz assured us Rancho del Cielo was "muy cerca" (close by).

"Que distancia?" Roger persisted.

"Una legua" came the reply. In my dictionary a league is about three English miles. In my experience it is a rubber band. It can be any unknown distance up to five miles or more.

Along with oppressive heat we'd left behind the great kiskadees, red-billed pigeons, which were not collected in or known to breed in the cloud forest until after lumbering, and the low-flying red-crowned parrots, screaming their deafening "heelo, heelo, cra, cra, cra!" We'd left the tropical lowland plants that I was just getting to know, such as

strangling figs (*Ficus*), *palo de rosa* (*Tabebuia*), *chaca* (*Bursera simaruba*) with its thin papery bark, and the conspicuous blue-flowered vine known locally as *bougainvillea de la montaña* (*Petra*).

More to the point and guaranteed to stir the blood of bird hunters no matter how trail weary, we heard bird calls completely new to us. On the forest floor Buck collected a game bird whose melodious whistle ended in “pitch-wheeler, pitch-wheeler, pitch-wheeler.” It proved to be a long-clawed or singing quail (*Dactylortyx*). We recognized other calls belonging to birds of the montane and not the lowland forest, like spot-crowned woodcreepers and mountain trogons. Here, the trogons found plenty of rotten snags to excavate for their nests. Most memorable of all the bird songs was the heart-stopping, cascading, liquid chant of the brown-backed solitaire (*Myadestes obscurus*), especially composed, I thought, to add value to the magnificent mountain forests and barrancas of the Sierra Madre. Sutton’s splendid portrait of the bird, together with some of the plants found in its habitat, lacks only the solitaire’s enchanting call. Audubon could not have done better, had he known the bird and added it to his elephant folio.

Roger rushed up to report a dead coral snake on the trail. With its red, black, and yellow rings, it indeed looked like a coral snake. We saved the specimen. It proved to be a harmless colubrid, the coral snake mimic *Pliocercus elapoides*, said to feed on small salamanders. One distinction—the number of scale rows, seventeen instead of fifteen—is not a feature likely to help anyone hoping to distinguish the mimic from the real thing as quickly as possible. Who wants to pick up what looks exactly like a live coral snake to determine its identity by counting its scale rows? In the cloud forest I found only mimics. The venomous coral snakes (*Micrurus*) lived at lower elevations (Martin 1956). Do avian predators leave *Pliocercus* alone because they fail to count the scale rows at mid-body?

Following Cruz, we picked our way through the trees and around lichen- and moss-covered rough-edged boulders. Buck recognized sweet gum (*Liquidambar*), tall, slender trees more than thirty meters high, their trunks clear of branches beneath a surprisingly small leafy crown in a tight canopy. In place of the woody vines that drape tropical trees of the lowlands, especially around clearings, we found epiphytic orchids, ferns, mosses, and abundant tank bromeliads (*Tillandsia*), the latter topped by pink flowering spikes resembling budding gladioli. Their clasping leaves might hold a pint of water attractive to a variety of small animals, including salamanders and many invertebrates. We threaded our way

between limestone pillars or spires blanketed by clumps of succulent-leaved agaves (*Agave celsi*).

Besides sweet gum Buck noticed hickory, walnut, red bud, and other trees found in the eastern United States. The forest was taller, denser, and much richer in epiphytes than any I had known. Occasional small palms (*Chamaedorea*) added an exotic touch, as did blue millipedes on the forest floor. Although the place only lacked Rima the Bird Girl to qualify as Hudson's *Green Mansions*, I did not envy naturalist W. H. Hudson, who wrote his novel about an imaginary Venezuelan forest and its guardian that he never actually experienced himself. Here in the mountains of southern Tamaulipas we were not just imagining Green Mansions, we were in them, alas, minus Rima.

In the gathering gloom Cruz had trouble following the twisting, narrow trail. As night enveloped us, Cruz gave his riding mule free rein to help find the trail, obscured by fresh leaf fall from the oaks, none of them belonging to species that we recognized from the United States. Unlike those of the eastern United States and Canada, many oaks in Mexico defoliate not in autumn but in the spring dry season.

We hoped to reach our destination soon. Cruz warned us that on a foggy night without a flashlight or moonlight it was impossible to find the way "sin ayuda de los vestios" (without help from the mules). Finally, in our flashlight beam we saw the forest opening into a clearing bordered by a rough worm fence connecting rock piles. A short, wiry man in his mid-forties with dark, curly hair and bushy eyebrows and wearing blue jeans and huaraches (stout leather sandals soled with old automobile tire treads) sounded a gruff word of greeting. Instantly, I felt at home.

News of our coming had preceded us, and Frank Harrison (Don Pancho) had supper waiting. Cruz and Frank saw to it that the mules would get theirs as soon as they were unloaded. Wasting no time with introductions, we headed for Frank's water bucket. Even here, in all this moss-draped dampness, surface water and springs were surprisingly scarce. Frank caught runoff in a rain barrel beneath his roof and carried drinking water in buckets from a small spring. Ducking under the low sweep of the eaves, we assembled in Frank's small log cabin to be served Frank's specialty, thick buttermilk pancakes drenched in honey from beehives in Gómez Farías, with fresh butter from milk from his cows and peach preserves from his orchard. To our protestations of a supper worthy of kings, Frank demurred: "t'ain't nothin', boys, just hunger's sweet sauce." After supper Frank fielded questions about this magical place. He'd been there since April 1933 (letter to PSM, 9 October 1954).

“Are there jaguar?”

“Yeah, I’ve hunted *tigres* into the caves and shot them. The *tigres* and occasionally the bears come after my *becerros* [calves] and *novillas* [heifers].”

“Army ants?”

“Every year or two they pour through my cabin and clean out all the packrats, mice, scorpions, centipedes, and *vinegaroons* [whip scorpions]. When the ants come in, I move out with the grub. In a day or two I can move back.”

“What’s that flapping around under the eaves?”

“Probably vampires. They attack my cows, and screwworms infest the wounds. They don’t bother people. And don’t worry about taking your quinine. The mosquitoes up here don’t carry malaria.” We had Atabrine.

“When you are out in the woods and off the trail, watch out for balanced rocks over ‘trapdoor’ sinks. If you fall in and break a leg, or even if you don’t, you may not be able to climb out. You’re done for unless someone happens along.”

Frank shared our biological interests and briefed us with little prompting.

“Yes, the swifts nest here in hollow trees, and also in caves, along with motmots, hummingbirds, and owls. No, this is not the season for *faisán real* [as Frank referred to the “royal pheasant” alias great curassow, *Crax rubra*]. They come up in late fall when the acorn crop is ripe. Keep an eye out for *ajoles*” (the crested guan, *Penelope*; both it and *Crax* are game birds larger than their relative, the chachalaca, all in the family Cracidae. All are excellent fare).

“So that big leaf stung you? Don’t touch it!” Attracted by tiny bumblebee hummingbirds at the edge of a clearing, I’d brushed a tall spreading shrub with big, deeply dissected leaves beset with tiny translucent spines and small white flowers. My arm still smarted. “It’s *mala mujer* [bad woman, genus *Cnidoscolus*, spurge family]. Down in Veracruz they have one even worse, *mal hombre* (bad man, genus *Urera*, nettle family; after lumbering it apparently increased in the cloud forest). Perhaps Frank was wrong about *mal hombre*. Marie Webster of Austin says the stinging hairs of *mala mujer* are more painful.

In reply to another question Frank explained: “It’s true, when he comes up into the mountains Everts spends most of his time at La Joya. He’s a Texan and he likes the wide-open country, with good places to hunt *berrendo* (mule deer). Here we have the *verenda*. (Buck had heard

of the tropical brocket, *Mazama americana*, a diminutive cervid even smaller than the dwarf deer in the lower Florida Keys.) We'll go out some night with your flashlight and hunt them.

"I don't know where Everts gets his idea of monkeys up here. [Nevertheless, Everts Storms may have been right. In his *Mammals of Mexico* (1959) Starker Leopold lists the spider monkey, *Ateles geoffroyi*, from Tamaulipas.] Félix Burgos says there are flying squirrels over at Casa de Piedras." A year later among the small mammal bones from owl castings littering a cave floor near Casa de Piedras I found jaws of flying squirrels, *Glaucomys volans* (Koopman and Martin 1959).

"No, there is no more lumbering than what you saw from before the war (ten years earlier) along the trail above the *malacate*." Most of the cloud forest remained uncut. That situation would soon change. Within two years four-wheel-drive, World War II surplus trucks, some with Cyrillic writing on the instrument panel and originally intended for the Eastern Front, hauled logs to mills in the mountains. Others loaded with boards or railroad ties lurched down incredibly rough, narrow, rocky tracks from Rancho del Cielo, San Pablo, Casa de Piedras, and, eventually, from many other parts of the mountains to unload in drying yards in the lowlands east of Gómez Farías.

In the 1950s the University of Tennessee plant taxonomist Professor Jack Sharp narrowly escaped severe injury or death when the lumber on the truck he was riding down the mountain broke loose on a pitching turn and spilled him off, along with his plant presses. Félix Burgos, who later became mayor of Gómez Farías, lost his son, Hilario, when a lumber truck turned over on him in the mountains (ES to PSM, 11 October 1956).

We were thoroughly impressed with Frank's knowledge of the mountain forests and their natural history. Frank told us of two other ranches in the cloud forest. One nearby belonged to a neighbor, Paul Gehrlich (or Gellrich), a German national. In World War II Mexican soldiers came to arrest Paul at his ranch on dubious spy charges. For the duration he was interned at the cold damp prison on Cofre de Perote in Veracruz.

At the only other ranch lived Félix Burgos and his family from Gómez Farías; according to Frank a half-day's walk southwest of Rancho del Cielo at a place called Rancho Viejo near Casa de Piedras was where some Americans may have hidden out in the Mexican Revolution. If our initial experience was a fair example, we had considerable respect for what a "half-day's walk" in this rough country might be like.

We didn't ask a personal question: What was Frank doing living a hermit's life up in the cloud forest? Later, Everts told us that Frank had been a schoolteacher at Chamal (now named López Mateos), a small, partly gringo colony in the lowlands. Immigrants from Oklahoma established the colony early in the century (Webster and Webster 2001). Others, including Frank, came from Canada. *Chamal* is the local common name for *Dioon edule*, a native cycad of sunny limestone cliffs.

According to one version, in the 1930s, after he came out second best in an affair of the heart, Frank left for the mountains. Or perhaps it was to escape malaria. I prefer to share the view of many who befriended Frank over the years—that he was wise enough to appreciate the incredible beauty of Rancho del Cielo and its forest and did not waste his time in a vain search for something better (Webster and Webster 2001).

Frank had a green thumb. In his orchard he grew peach, plum, and crabapple trees, and blackberries. One summer his English walnut tree yielded twenty-five quarts of walnuts (WFH to PSM 6 Sept. 1954). He raised flowers for various lowland markets, especially gladioli, and also amaryllis, gloxinias, and Easter lilies. On clear days Frank would open the sides of his small plant house, which served very well as a greenhouse, given the warm, damp air of the mountains. When he could, he admitted sun on his potted plants, including native begonias found growing wild in the region. He received copies of the American Begonia Society's journal, *Begonian*.

Around holidays, especially Easter, local buyers would come up to Rancho del Cielo for lilies and other cut flowers, which they would pack down the mountain by burro to Gómez Farías and then by bus to cathedrals in Ciudad Victoria. In other seasons the burros would haul out loads of fruit.

When I was back at Cornell making plans for a second spring trip, Frank wrote (WFH to PSM 21 Jan. 1949) asking me to bring Cellotex for his plant house, some paint, a tin of udder balm for his milk cows, two cards of Mendits (light tin washers for mending pots and pans), "and if you have room, about five pounds of muriate of potash and five pounds of super-phosphate." In 1951 in his Jeep Byron Harrell of the University of Minnesota brought up a woodstove for Frank, a gift from Leland and Sherwood Blalock, Texans whose ranch adjoined Everts'.

In 1957 when there was plenty of scrap lumber around the new sawmills Frank built a frame house to replace his old, drafty log cabin. In those years his sister, Ethyl (Mrs. Fred Williamson), came from Romeo, Michigan, to visit Frank in his mountain sanctuary.

As more biologists learned of the cloud forest and the Río Sabinas, both Rancho del Cielo and Rancho Pano Ayuctle became de facto biological field stations. Whether they intended it or not, both Frank Harrison and Everts Storms found themselves cast in the role of field station managers! Scientists, professionals, or students in training that we knew or that I find mentioned in documents or in publications in the ten years since Buck Edwards, Roger Hurd, and I tramped up to Rancho del Cielo in 1948 included the following: Dean Amadon, curator of ornithology, American Museum of Natural History; Jean T. DeBell, ornithologist, University of Minnesota; Robert T. Clausen, professor of botany, Cornell University; Howard Crum, botanist, Michigan State University; Rezneat Darnell, ichthyologist, University of Minnesota; Irby Davis, ornithologist, Harlingen, Texas; Robert Dressler, botanist, Harvard University; William Fox, botanist, University of North Carolina; and Byron Harrell, ornithologist, University of Minnesota. Byron was the first to undertake research at all seasons. For reasons I do not fathom, his splendid master's thesis apparently was not published.

In addition, Frank Harrison hosted Bruce Hayward, studying mammals at the University of Michigan; William B. Heed, zoologist, Penn State University; Efraím Hernández, ecologist, and students from Monterrey, Nuevo León; Joyce Heckenlabel, ornithologist, University of Minnesota; Pauline James, biologist, Pan American College, Texas; Marshall Johnston, botanist, University of Texas; Edgar Kincaid, ornithologist, Austin; Eugene LeFevre, ornithologist, University of Minnesota; John Maciewicz, zoologist, Cornell University; Richard MacNeish, archaeologist, National Museum of Canada, Ottawa; Marian Martin, zoologist, Ted Miller, ornithologist, James E. Mosimann, zoologist, and Jim Poppy, ornithologist, all students at the University of Michigan; C. Richard Robins, zoologist, Cornell University; Royal Shanks, ecologist, University of Tennessee; William Shaldach, zoologist, University of Kansas; George M. Sutton, ornithologist, University of Oklahoma; Thomas Uzzell, herpetologist, University of Michigan; Charles F. Walker, curator of amphibians, University of Michigan; and John Wolfe, botanist, Ohio State University. Undoubtedly, there were many others. Everts Storms considered those completing a thesis on their field studies in the Gómez Farías region to be graduates of the "U.P.A.," the self-styled "Universidad de Pano Ayuctle." In his letter of 7 Aug. 1955 he wrote to me with avuncular pleasure: "U.P.A. is proud of her graduates."

In 1953 Frank Blessie built a cabin next to Frank's, and later sold it to John Hunter, also from Brownsville. Both discovered Rancho del Cielo

through articles Frank wrote in trade journals about his hybrid gloxinias and begonias. The interest and encouragement of John Hunter led Frank to will his land to Texas Southmost College (now the University of Texas at Brownsville); Hunter was a member of its board of trustees.

In 1962 as part of the First International Palynological Congress held at the University of Arizona in Tucson (palynologists study fossil and modern pollen grains and spores) Ike Russell, and Carlos Seravia of Cordova, Argentina, helped me plan and Jim Mosimann helped to lead a field trip to Rancho del Cielo. In March 1962, by commercial flights or in vans two dozen ecologists, paleobotanists, and palynologists assembled in Brownsville, Texas. We entered Mexico and drove south through the sugar-mill town of Xicotencatl into thorn forest to inspect a recently excavated fossil mammoth. Then the party proceeded to Encino and the dirt road west to the crossing of the Río Sabinas, where Frank had arranged for two lumber trucks to take us up to El Cielo and on over the mountain on a new truck road to La Joya de Salas.

Obviously, all this activity, along with a growing stream of visitors, ended any possibility of Frank's living the life of a hermit. He took it in stride.

THE JEWEL OF SALAS

But this was April of 1948, my first trip to Rancho del Cielo. Well fed and comfortable in the fresh mountain air, we congratulated ourselves on our arrival at the Heavenly Ranch, a translation for Rancho del Cielo that I sometimes substitute for Ranch in the Sky. Buck and I traced an overpowering sweet scent to the large, bell-shaped crepuscular white blossoms on Frank's *reina de noche* (queen of the night, *Datura suaveolens*), a cultivated shrub that is a magnet for pollinating hawk moths, as are its wide-ranging, sweet-scented, and herbaceous relatives. We dug out our sleeping bags. Frank said it didn't look like rain, and the dense, short unmowed carpet grass outside his cabin provided a natural mattress.

My last question to Buck concerned soft low hoots coming from the edge of the forest. Buck thought it might be a mottled owl or wood owl (*Ciccaba virgata*), not found in the United States. Just before dawn as the mottled owls wound down with their last hoots the blue-crowned motmots tuned up for the new day with owlish "poots" of their own. Among the birds, I find owls to be especially fascinating. For one thing, the bones and skulls of mice or other small mammals in regurgitated owl

pellets can be identified. They provide an excellent record of the small mammals found in the region. Not anticipating the misadventure that would result, I yearned to collect that owl, whatever it was.

The next day Cruz returned to Pano Ayuctle and Paul Gehrlich appeared to guide us northwest over the top of the Sierra to the mountain village of La Joya de Salas. A few miles north of Rancho del Cielo, and back on the main trail between La Joya and the Rio Sabinas in the lowlands, we stepped aside for a string of six burros heading down with loaded grain sacks. Barely the height of the burros, by himself and on foot, came their young wrangler with a *morral* (sisal string bag) containing tortillas for his lunch. He looked no more than twelve years old. He and the burros seemed quite at home in this uninhabited tract of shady forest.

Following custom, Demetrio (one of the boys from the Osorio family that would host us in La Joya) solemnly bid us “adios” four times as he shook hands with each of us in turn before he continued on his way to Rancho Pano Ayuctle to deliver shelled corn. Obviously, despite his youth, Demetrio Osorio was as trail-wise as our guide, Paul Gehrlich. The scene was deceptively peaceful.

A few years later Demetrio was bushwhacked at a narrow pass on a trail outside La Joya, victim of a mountain feud that involved his older brothers and some rival clan. In the country, blood feuds and killings are not unusual. Southern Tamaulipas may not be as lethal as rural Oaxaca, where a man has a better than 30 percent chance of being killed before he turns fifty (Greenberg 1989). Nevertheless, even before the days of the drug wars, the campo knew deadly feuds, and more murder was ahead of us, although we did not know it.

The owner of the new sawmill at San Pablo, Sr. Luis Ubando, had a reputation for missing payrolls until, in desperation, his destitute employees would leave the mountains to seek work elsewhere. When least expected, Ubando would reappear at his mill, pay back wages to the few remaining workers, recruit replacements for those that had left, and start afresh. He was widely despised. In a cowardly confrontation he gunned down an unarmed man in El Limón, later settling with the widow for 10,000 pesos (ES to PSM, 17 July 1953; WFH to PSM 20 Oct. 1953).

In 1966 outside his cabin, two assailants shot and killed Frank Harrison. The murderers were thought to include some of the agrarian newcomers to the cloud forest from Michoacán. They expected to rob Frank of money he didn't have. In addition, they wanted his ranch (see

Webster and Webster 2001). Frank could be gruff and bristly to those he did not regard highly. It was a terrible loss. He lies buried beneath a white stone marker near his cabin.

As soon as we climbed out of the cloud forest and entered the pines, noisy Mexican jays (*Aphelocoma ultramarina*) announced their presence with distinctive squawks. At an elevation of around 1,400 meters they replaced green jays (*Cyanocorax yncas*) while *pino triste* (drooping-needled pines, *Pinus patula*) replaced *Podocarpus*, the cloud forest gymnosperm widespread in the Southern Hemisphere and here at its northern limit in the Americas.

After more climbing we reached a partly eroded sinkhole, El Agua Zarco, where an intermittent spring was one of the few sources to be found in the dry season of “semi-potable” water, drinkable if one was thirsty enough to ignore adjacent cow pies. A few tall evergreens known as *cedro* (*Cupressus*) grew here, relatives of the cypress trees found in the Desierto de los Leones outside Mexico City. Other trees and shrubs included the following: basswood (*Tilia*); magnolias (*Magnolia*); small yew trees (*Taxus*); two species of dogwood (*Cornus*); bay (*Myrica*); and an attractive evergreen shrub, *Ternstroemia*, in the tea family. Later, we learned that a rock rattlesnake we collected here would be described as a new subspecies of *Crotalus lepidus*. On big boulders Buck collected specimens of a stonecrop (*Sedum*, a succulent in the Crassulaceae) of a species that a year later would bring down Cornell’s plant taxonomist who studied the evolution of *Sedum*, the late Robert T. Clausen.

Thanks to the scarcity of surface water and the roughness of the karstic terrain, livestock did not thrive in the pine-oak forest at the top of the mountain at an elevation of 1,800 to 2,300 meters (6,000 to 7,500 feet) any more than they did in the cloud forest around Frank’s, paradoxically poor in springs and with no streams except in torrential rainstorms. Despite high rainfall, Frank had to save runoff from his roof. Ironically, there was more surface water on the dry side of the Sierra. Apparently, in this part of Tamaulipas no one lived at the top of the Sierra Madre Oriental. According to Larry Lof (*The Ranch News, Newsletter of the Gorgas Science Foundation, Inc.*, Winter 1990, p. 1) there was at least one transitory exception.

During the Mexican Revolution the arrival of U.S. gunboats at Tampico ended any hope of claiming neutral status by American immigrants, and all foreign property was confiscated. In 1916 a member of the Chamal Colony, William Frazier, wrote of proceeding with Ed Schafer and their families, a party of fifteen (including two little girls three years old)

and packing in to Lonesome Cove, 7,500 feet above sea level: “rather a sudden change for we lived 750 feet above sea level [at Chamal] . . . colds and tough times with rain as our portion.” Lonesome Cove would have been somewhere to the south of the trail to La Joya, perhaps in the mountains above Casa de Piedras.

Along with other wilderness attributes, the high elevations supported black bears, large parrots (possibly macaws, later found to nest west of La Joya de Salas), and three species of lungless (plethodontid) salamanders. Nevertheless, the La Joya trail above El Agua Zarco could hardly be considered to be remote. By listening closely from a ridgetop on a damp day when the air was still I could detect a familiar rumble. It was the faint sound of unmuffled truck traffic beyond the foot of the mountains on the Pan American Highway some thirteen kilometers due east and two kilometers lower in elevation.

From the relatively wet pine-oak forest on the east side we crossed over the crest of the Sierra Madre Oriental into drier forest on the west side, which had similarities to the dry pine-oak communities I had or would see in Chihuahua, Michoacán, and Durango. Temperate forests rich in species of pines and oaks crown the Sierra Madre Oriental and Sierra Madre Occidental. They extend into the Southwest of the United States (Marshall 1957). In addition we found handsome spreading *madroño* (*Arbutus xalapensis*) whose smooth red trunks brighten the pine-oak forests of the Mexican Plateau, with outliers in the USA.

Northwest of La Joya, trails descended below the oaks into the arid intermontane valley of Jaumave, dominated by creosote bush (*Larrea*), candelabra cactus (*Myrtillocactus*), arborescent yucca, and other xerophytes typical of southern parts of the Chihuahuan Desert. The linear distance from the cloud forest near Rancho del Cielo to desert scrub with creosote bush around Jaumave is less than forty kilometers (twenty-five miles), a remarkable climatic and biogeographic juxtaposition typical of the rim of the Mexican Plateau.

Like opposing folds of an accordion, the wet and dry sides of Mexico’s sierras feature a rich mix of highly diverse wet and dry biotas in close proximity by virtue of steep climatic gradients. The transect we had experienced in the last few days reflected the basic change in forest composition and structure to be expected as one ascends in elevation from the lowlands, or *tierra caliente*, into the cool *tierra templada* of the mountains beneath the cold *tierra fría* also found in the high mountains outside Monterrey.

Almost two hundred years ago in his exploration of the route between the tropical lowlands of Veracruz, the cloud forests in the Sierra Madre Oriental near Jalapa, and the glaciers on the high volcanoes outside Mexico City the geographer Alexander von Humboldt with team members Bonpland and Kunth collected plants labeled “HBK” that became the types of many new species of trees previously unknown to science. Some of the oaks and other trees first collected and described by “HBK” from fieldwork in the Sierra Madre Oriental along the *camino real* from Mexico City and through Jalapa to Veracruz were among the species that we found in Tamaulipas. Von Humboldt’s Mexican travels were of great interest to Thomas Jefferson, given Jefferson’s imperial dreams. Jefferson invited von Humboldt to visit Washington, D.C. for debriefing.

Distributed along the gradient from the lowlands around Xicotencatl to 2,100 meters at the pass east of La Joya de Salas and down to 1,400 meters at La Joya itself on the dry (west) side are at least eight common species of oaks (*encinos*, genus *Quercus*), none found in the United States. This is but a hint at oak speciation in this region. From 20° to 24° N and 97° to 101° W, in an area embracing less than half of eastern Mexico, the French ecologist Henri Puig reported sixty-eight species of *Quercus*, an amazing number, far more than any concentration of oaks to be found regionally in the USA (Puig 1976).

At La Joya de Salas, a settlement of perhaps forty-five *jefes de familia* (heads of households), we found Everts’ close friends Doña Gerónima (a sister of Félix Burgos) and Don Cayetano Osorio, who introduced us to their sizable family. Displacing some of their older *niños* they offered us their *casa de cocina* (cookhouse) for sleeping quarters and for specimen preparation.

The cookhouse had one drawback to which we could hardly object. At first light when the roosters began to crow and flap their wings Doña Gerónima and her daughters, María and Chucha, would enter, chatting softly. In the traditional way they ground *masa* (corn kernels soaked in lye) with a *mano* (stone roller) on a *metate* (stone trough), soon accompanied by the gentle pat patting of hands shaping corn tortillas, to become a crucial part of our breakfast. Gradually, the delightful scent of hot tortillas on a small grill perfumed the tiny room. Sun splashes glinted through cracks in the walls. I heard a distant gunshot and looked around to find that my companions were already on task, not slugabed under the feet of the women at their early-morning chores.

The small fields and dooryard gardens of the tiny houses around the lake of La Joya are surrounded by low stone walls. These in turn may

be topped by large clumps of prickly pear cactus or the sharp, stout, bayonet-like leaves of agave, a much larger species than the flaccid, easily crushed agaves growing on limestone spires in the cloud forest. In season, the living fence provide food and fiber for the villagers. In addition, it is habitat for packrats and other small mammals, towhees, wrens, fence lizards, and snakes. Believing it must be another tropical specialty of Mexico, I admired the bell-shaped, intensely red flowers of a dooryard shrub. Later, I discovered it was not a native of the region. It was *granada* (pomegranate, genus *Punica*) introduced from the Mediterranean and widespread in gardens in highland Mexico and the southern United States, including my yard in a historic district in Tucson.

Although we missed Everts up here in his favorite haunts, we remembered his stories. He once told us the legend of how the lake at La Joya originated. By stitching together four cowhides the local people sealed a mid-valley sink. Briefly, they had a lake, until the cowhides rotted and once again water drained down into the sinkhole. The villagers tried again, first sealing the sink with rocks. This time the seal held.

My doubts about Everts' story didn't alter the fact that the mountains were cavernous, with one tremendous *sotano* (sinkhole) on a bench to the east of La Joya de Salas (ejido Veinte de Abril) featuring four straight drops totalling 850 feet (Contreras y Medellin 1994: 72–74). Spelunkers from the University of Texas explored and mapped the sink.

Everts told us of the time he landed at La Joya in a light plane. Everts and a pilot friend from Chamal, said to have been General Eisenhower's personal pilot in World War II, had their eye on the sizable crop of epiphytic orchids flowering in trees near La Joya. In the dry season orchid pseudobulbs the size of a cigar supported beautiful lavender blossoms that festooned the limbs of *encinos* (oaks). Everts had determined that the orchid market in south Texas would be lucrative and that he and his pilot friend could fly with airplane loads of live orchids from La Joya directly to a wholesale florist in the Rio Grande Valley.

At the height of the late spring season when the orchids flowered, Everts and his pilot friend left the lowlands at dawn and soon landed up in the mountains at La Joya. While they denuded oaks of flowering orchid pseudobulbs, Don Cayetano and other men and boys at La Joya moved rocks to grade a short *pista de aterrizaje* (airstrip). Everts and his friends filled all the available cargo space in the plane with boxes of live plants. Eager to get the orchids out of the midday heat and off to market, the pilot taxied "downwind" (of which there was virtually none) to the end of the homemade runway and turned for takeoff.

In the mountains at noon on a hot day with still air, a plane lacks lift. Everts' friend normally operated in the lowlands, where the air is denser. He did not anticipate the risk. The problem was their elevation and lack of any air movement in the midday heat. Approaching the end of the *pista* under full power, Eisenhower's pilot pulled back on the control column. The plane's wheels reluctantly left the ground, but not quite high enough for the undercarriage to clear a stone fence beyond the end of the runway. Although the plane was totaled, no one was killed or seriously hurt. A year later on one of his trips to La Joya de Salas, Byron Harrell was bemused to see children in the village playing with a wheel of the airplane.

When roads finally came to La Joya de Salas, Fred Webster told me that the oaks were soon stripped, and all the epiphytic orchids were taken to market by truck.

Everts would live many more years, to die of a heart attack during his favorite moment of the day, while taking his accustomed late-afternoon dip in the refreshing waters of the Río Sabinas. He is buried in a small *campo santo* (cemetery) on the bank of the river.

After three days of bird collecting around La Joya, Buck, Roger, and I returned to Rancho del Cielo. There they left me with plenty of cotton, the drying rack for bird skins, a pannier for storing them, a shotgun, ammunition, a .410 auxiliary barrel, and some extra pesos. Until Buck's return from Ithaca a month later I would be able to explore the cloud forest, thanks to Frank's hospitality.

The first day I followed Frank's suggestion that we investigate "Crystal Cave" and other sinkholes near his clearing. There must be many thousands of caves and sinkholes in the tropical evergreen forest, cloud forest, and pine-oak forest in the mountains above Gómez Farías. In them spelunkers would find new genera and species of cave invertebrates, including a blind scorpion. I was interested in the vertebrates, and beyond such nesting birds as Vaux's swifts, mottled owls, and motmots, the caves yielded amphibians, including a rare species of barking frog, *Eleutherodactylus hidalgoensis* (now *E. decortatus purpurus* Lynch) that haunted damp caves in season.

The prize was a new species of lungless salamander, later described by my major professor, Michigan's amphibian specialist Charles Walker, as *Pseudoeurycea scandens*. The specific name *scandens* refers to the climbing habit of the animal. It was one of several species of local salamanders that ascended trees, to find its way into tank bromeliads. In addition,

we collected the salamanders underground, where they clung to the vertical walls of caves.

The second day I decided to explore the forest on my own. Beyond Frank's fence at the south edge of his field, I discovered a mixed flock of green jays, blue mockingbirds, mountain trogons, and a squirrel cuckoo, all screaming their alarm calls and mobbing something. Their breeding season was approaching, a time when birds are especially prone to mob predators. A medium-sized owl slightly smaller than a barred owl flew out of a tree and on into the forest. Not noticing the fog drifting in among the trees, I rushed after the avian mob. Harried at each stop by screaming birds, the owl sought to escape by flying deeper into the forest. Finally, I managed to get close enough to bag my prey; it proved to be a mottled owl.

While mottled owls were fairly common in the cloud forest, I did not know that at the time. Stalking, shooting, and capturing a trophy triggers an adrenaline rush familiar, I suspect, to hunters and bird collectors alike. Some say the rush is genetically rooted in hominid behaviors accompanying the evolution of our species, and of males in particular, as ardent hunters or fearless warriors.

At the time I was suspicious of such socio-biological theorizing, which I've come to appreciate. Why wouldn't young males still reflect their adaptive ice age predispositions, encapsulated as a passion to hunt? How else to explain the passion of small-game and deer hunters enthusiastically hunting now as ever? A sense of adventure, genetically embedded, may help to lure young males into joining the military, making the efforts of peacemakers far more difficult than politicians and their public can imagine. On average young males are mentally prepared to fight; negotiating peace treaties comes later, with age.

While wrapping my trophy in a cone of newspaper to protect its feathers, I noticed that the woods were well supplied with hungry mosquitoes. Then I realized that while chasing the mob of birds chasing the owl, I had paid no attention to where I was going. In pursuing the owl I had entered woods I had not traveled before. Where was Rancho del Cielo? Somewhere to the north, I guessed. Very good, and which way was north? Fog blankets prevented line-of-sight travel. The old Boy Scout trick of looking for moss on the north side of the tree did not work down here in the tropics where the sun was often directly overhead.

Frank had mentioned trails, and the one we had taken the night we arrived had been blazed. South of Frank's was the main trail to Gómez

Farías. Would I spot it if I crossed it, hidden by the fresh leaf fall? Before the invention of global positioning instruments, the classic Boy Scout solution to being lost in mountains without a compass was simply to head downhill until you came to water, and then to follow the water downstream. Sooner or later you can be sure to come to a road or a house or at least a path along the stream.

In this case the Boy Scout rule of thumb would not help. According to Frank, between his ranch and the Río Sabinas at the foot of the mountain there was no surface water. Despite very heavy annual rainfall, there were no streams or creeks. I was on an extensive bench with no more idea of which way was down than of which way was north, and the water was down underground in cavernous rocks. If there were no springs or waterholes, I need not worry. Sips could be obtained from leaf bases of the tank bromeliads, mosquito larvae included.

Instead of searching for a way down, perhaps the solution was to invent a new Boy Scout trick and climb higher still, hoping to get a view of Frank's or some other landmark from above the fog. Frank had said there were only two clearings in the forest besides his own: the cornfield of his neighbor, Paul Gehrlich, immediately to the west, and Rancho Viejo, inhabited by Félix Burgos and his family, miles away and higher in the Sierra to the southwest. I had to find a clearing or wait for the fog to lift and search for a trail. The main north-south trail, the way we came in, was not well marked and could easily be obscured by fresh leaf fall, as we learned when Cruz had his troubles while trying to follow the trail to Rancho del Cielo at night. Would I notice a trail if I crossed one? Later, I realized that in fact I had crossed the Gómez Farías trail without spotting it.

After walking aimlessly through the fog, I found a steep hill beneath a small patch of blue sky. The climb up looked like a simple matter and at first it was, until the trees gave way to dense, tangled agaves, blackberry vines, and my nemesis, *mala mujer*. The stinging shrubs guarded loosely jumbled, sharp-edged karst limestone boulders notorious for their "tear pants" weathering. Ground orchids favor the habitat. Botanist Bob Dressler (1962) reported eighteen orchid species on North Hill north of Rancho del Cielo. At the time I was focused on birds and other vertebrates and oblivious to most plants, ground orchids included. Eventually, as I peered from a perch on a boulder, the clouds parted and I caught a glimpse of a clearing. Although it did not look like Frank's, faint sounds of chopping meant it was inhabited.

I descended and found Paul Gehrlich repairing the fence around his cornfield. He couldn't believe that I had managed to get lost, had to climb South Hill to find my way, and did not notice the well-marked trail to Gómez Farías when I crossed it. He showed me to a faint path through the forest that led to Rancho del Cielo.

Two years later Paul's health deteriorated (according to Frank, Paul had syphilis) and in 1950 Frank's neighbor hanged himself from a beam inside his house. Within another year Paul's clearing became the site of a new lumber mill. Paul's great ambition had been to make his fortune, or at least to earn a good living, when lumber mills arrived, as he knew they would. Although he missed his chance, the name of the lumber mill established on his property, now immortalized on the 1:50,000-scale topographic map of the Gómez Farías region, is San Pablo. Well, why not?

The weeks I spent at Rancho del Cielo, rich in new experiences, passed rapidly. Mid-May and the end of my stay arrived all too soon. I assembled field notes on nesting behavior and prepared a representative collection of the breeding birds along with some of the transients or visitors from the tropical lowlands below and the pine-oak forest above, and of North American passerine species on their spring migration northward.

Among the non-passerines at Rancho del Cielo I put up specimens of a thicket tinamou, a sharp-shinned hawk, a great black-hawk, an ornate hawk-eagle, a bat falcon, a singing quail, a white-tipped dove, a white-crowned parrot, a squirrel cuckoo, a Tamaulipas pygmy-owl, a mottled owl, two Vaux's swifts, an azure-crowned hummingbird, two amethyst-throated hummingbirds, a bumblebee hummingbird, a blue-crowned motmot, a golden-olive woodpecker, an acorn woodpecker, a yellow-bellied sapsucker, two smoky-brown woodpeckers, and a pale-billed woodpecker (which Sutton preferred to call the flint-billed woodpecker).

Among the passerines I shot and stuffed two olivaceous woodcreepers, three ivory-billed woodcreepers, two spot-crowned woodcreepers, three gray-collared becards, a dusky-capped flycatcher, an olive-sided flycatcher, a wood-pewee, a tufted flycatcher, a green jay, a spot-breasted wren, a blue mockingbird, and a northern mockingbird, the latter feeding on mulberries. Frank's mulberry tree was a great spot for novelties. Mockingbirds are common throughout the drier parts of Tamaulipas and in my experience virtually unknown in the cloud forest. Blue mockingbirds are not close relatives.

Other passerines included three white-throated robins, two clay-colored robins, an adult male and an adult female brown-backed solitaire, three black-headed nightingale-thrushes (*Catharus mexicanus mexicanus*), a rufous-browed pepper-shrike, a solitary vireo, a warbling vireo, a crescent-chested warbler, a MacGillivray's warbler, a hooded warbler, three Wilson's warblers, a Canada warbler, a hepatic tanager, a pair of white-winged tanagers, two flame-colored tanagers, a red-crowned ant tanager, five hooded grosbeaks (*Hesperiphona abeillii*), three rufous-capped brush-finches, an eastern towhee, two grasshopper sparrows, a chipping sparrow, and a Lincoln's sparrow.

Alas, according to Frank, there were no toucans north of San Luis Potosí. What a disappointment! The most common breeding bird, accounting for about a third of the breeding birds in Harrell's census, was the black-headed nightingale thrush (*Catharus mexicanus*). Surprisingly, it also bred in dry oak-pine woodland in the Sierra de Tamaulipas.

While the resident species included many that were new to me, the black robin (*Turdus infuscatus*) collected by Frank Harrison was the only bird that, to my knowledge, was new to Tamaulipas based on museum collections from northeastern Mexico. After the severe *norte* of February 1–3, 1951, when temperatures descended to minus 6°C at Rancho del Cielo, Frank Harrison collected one, a bird he had not noticed before.

The *norte* killed most of the tank bromeliads growing on the trunks of trees in the cloud forest (Martin 1951). Their loss eliminated most of the favored habitat for lungless salamanders. Everts Storms wrote that around his ranch in the lowlands “we had the worst freeze that we have ever had, and all the tomatoes were frozen. So were the mango trees, the paguas [a variety of avocado], the bananas, limes, and most everything else but the orange trees and the aguacates [another variety of avocado]. It sure was ugly here and still is” (letter to PSM 23 March 1951).

If biogeographic novelty was my objective, I was looking at the wrong taxa. I was so focused on the birds, and increasingly being beguiled by “herps,” that I failed to consider the trees and the rest of the flora. Within a year, botanists and plant geographers would begin to set that right after the next collector, well trained in ecology, sent them herbarium specimens. His name was Byron E. Harrell. At the University of Minnesota he wrote a superb master's thesis on the birds of Rancho del Cielo (Harrell 1951, not published to my knowledge), supervised by Professor Dwain Warner from the Cornell ornithology group. Byron took a census of the trees as well as the breeding birds. The former included both eastern temperate and mountain tropical elements, a remarkable association first reported

by Hernández and others (1950) and Sharp and others (1950).

In mid-May when Buck arrived with his Jeep and trailer, we drove to El Salto in San Luis Potosí to search without success for macaw nests. Then we continued on to Lake Pátzcuaro for more collecting and field observations in the critical season for breeding birds. We collected 238 specimens in 104 species, eight of them new for Michoacán (Edwards and Martin 1955). For me the field experiences overshadowed everything else. As a result I'd begun to appreciate research opportunities that transcended ornithology. I'd already begun to plan to return, "*For the Pleasure of Finding Things Out*" as Nobel Prize winner in physics Richard P. Feynman entitled his book.

DOC SUTTON: PRINCELY MENTOR

In Ithaca in the fall of 1948 I learned that Buck did not plan to return to Mexico that spring. I couldn't wait. Fortunately, two close friends were eager to go. Bill Heed, a hometown neighbor and West Chester Bird Club member, would take a semester break from Penn State University to join a Mexican trip. So would C. Richard "Dick" Robins, a classmate at Cornell who had spent the summer of 1948 collecting birds in the West with Bill Dilger. Dick's family in Harrisburg, Pennsylvania, of which his dad had been the mayor, knew Sutton from Doc's position before World War II as state ornithologist of Pennsylvania. Sutton had roomed with the Robins. State ornithologists preceded the non-game biologists now staffing state fish and game departments.

Meanwhile mail arrived from Sutton, in residence at the Museum of Zoology, Ann Arbor. The majority were full-page, single-spaced letters rich in content about what birds to look for, how to prepare specimens, his rebuttal of my tilt toward "Sibley skins" (both methods had their merits); a succinct comparison of the goals of a professional (bread-and-butter) collector, oriented toward sale of specimens, versus the researcher or field naturalist, oriented toward learning more about birds, their taxonomy, distribution, and behavior. Sutton wrote of his own professional life at the time, in transition from freelancing to a more secure faculty position at the University of Oklahoma; of his plans for contributions to the *Arctic Encyclopedia*; of his problems with publishers in not getting promised advances for his paintings; and of his plans to come to Mexico very soon with Roger Hurd. He wrote all this in the spirit of a long-term friend and devoted mentor. Here are samples:

November 9, 1948: By this time you may have written to Van Tyne. [Josselyn Van Tyne, curator of ornithology at the Museum of Zoology, University of Michigan, was much more interested in the Yucatán] I'd like to have you know, however, that I am deeply interested in good Tamaulipas material of all sorts, and especially in material from Soto la Marina and Alta Mira. And the important fact is that between now and your departure time you can be doing something by way of turning out a perfect skin. By this I mean perfect. You'll be down there at a season when the birds are in fine plumage. By this time there's no reason why your specimens should not average better than good. This is where I may be of real help. How can we work it out? . . . It isn't clear to me how everything is going to get done in the next few weeks [Sutton was working on plates], but I'm a great believer in charging ahead, so keep right at the skins and let me help in any possible way. The important thing is for you to be ready to do a bang-up job.

November 16, 1948: Because your letter seems important to me I am dropping everything to answer it. I enjoyed the talk I had with you [in Ann Arbor with Buck in June] and I believe in you. I therefore want your friendship—to put the matter bluntly. I hope that there will be no misunderstandings between us. First of all, I suspect I have neglected to acknowledge the Rancho del Cielo notes. They probably are the major basis for a forthcoming paper, which will get written when Roger and I return. They are just that important. My plan may change, of course, but I'm sure such a paper is in order and I want to write it.

Sutton's plan did change. The obvious person to write about the birds of Rancho del Cielo turned out to be Byron Harrell, who spent much more time in cloud forests, especially in Tamaulipas, over the next few years studying their biogeography and bird life than anyone else of those years. To my knowledge George Sutton made only one brief visit to Rancho del Cielo. If his field collectors showed serious interest of their own in an interesting new area they would be encouraged to publish their findings. Such was the quality of the man.

There are two sorts of collecting. Worthington used to charge a flat rate, and he'd go after enough catbirds and the like to get his day's wages and then dig for the rare things as the remainder of his time allowed. That is not good ornithology. It is good business, but not

good ornithology. See the difference? [I did indeed. We left the catbirds, mockingbirds, and thrashers pretty much alone.]

December 13, 1948: In that whole area [the Gómez Farías region and southern Tamaulipas] we must constantly be on the lookout for wholly unexpected tropical things. The best proof of this to date (to my way of thinking) is that lizard *Laemancetus*. No slow-moving creature of that sort could have made its way to the Río Sabinas without finding tropical conditions contiguous from Tabasco to Gómez Farías. I'm especially interested, too, in the northernmost tip of this tropical finger. I think it must be west or southwest of Linares. Leopold [Starker Leopold of the University of California, Berkeley] wouldn't have found motmots there without good reason . . . keep working at the bird skins. . . .

I never took his courses. Except in Michigan in the summer of 1949 and on a few other occasions, our paths never crossed. He left Ithaca for Ann Arbor before I entered Cornell, and he left Ann Arbor to become a professor at the University of Oklahoma before I entered the University of Michigan as a grad student in the Museum of Zoology.

To help us work up our collections at Ann Arbor in the summer of 1949 he found accommodations for Dick Robins, Bill Heed, and me, along with zoologist Shirley Windnagle of Cornell. At the Museum of Zoology we crowded into Sutton's office and, between forays into the bird range for specimens to compare with our own, plowed through his extensive file drawers of reprints and correspondence. In its own way I found the process of comparing and identifying our Mexican specimens almost as fascinating as collecting them in the first place. It was a very happy time, with folk songs in the evening, Doc playing a small pump organ for accompaniment. Over a three-year interval he helped us through the publication of various manuscripts in the *Wilson Bulletin*, which he edited, our first attempts at scientific writing (Martin 1951; Martin, Robins, and Heed 1953; Robins and Heed 1951; Robins, Martin, and Heed 1951).

RETURN TO TAMAULIPAS

Thanks to a thorough introduction into Mexican fieldwork through assisting Buck Edwards in 1948, and with strong encouragement from Sutton, I returned to Tamaulipas, this time accompanied by two other

zoologists. In early February 1949, Bill Heed, Dick Robins, and I, all college juniors raised in Pennsylvania, escaped winter by somehow wedging ourselves into a Willis four-wheel-drive Jeep that my parents financed. We loaded our gear in a Sears and Roebuck trailer, the type of rig favored by Buck Edwards. It would have been a tight fit for the three of us even if we had all been under five feet, not over six feet tall.

Heading south we made a few stops. In Baton Rouge we descended on Dr. George Lowery, a sponsor of tropical research in Mexico and Peru and curator of the bird collection at Louisiana State University. In Harlingen, Texas, we visited Mr. and Mrs. L. Irby Davis. Irby Davis was using the Arthur A. Allen technique, bird sound recording, to help identify tropical birds. His recordings revealed that different populations within a species might vary not only in their feather color, as seen in traditional museum collections, but also in their songs, preserved with a tape recorder. On a return trip to Brownsville, Mrs. Davis invited us to bring any live specimens to her high school biology class and to explain our interest in Mexico's fauna. We had two magnificent six-foot-long yellow-and-black tiger rat snakes (*Spilotes pullatus*) from the forest near the Río Sabinas. They stole the show.

Lowery and his associates assembled field collections from around Xilitla in San Luis Potosí, just south of Tamaulipas. How we longed to find Tamaulipan populations of toucans, king vultures, spider or howler monkeys, and in the case of plants, tree ferns to match the exotic touch evident in the spindly, slow-moving, and gaudy casque-headed lizard *Laemanctus* that Sutton mentioned in one of his letters. Those collecting specimens for Louisiana State University found the *paca*, a large tropical rodent, just to the south of Tamaulipas in eastern San Luis Potosí. The ratio of tropical to temperate birds (and other plants and animals as well) increased steadily on the gradient from south Texas south through eastern Mexico to Tabasco, just as it does in western Mexico from southern Arizona through Sonora and Sinaloa to Nayarit. We wanted to enrich what was known of southern Tamaulipas before more of it was cleared of trees and converted into cropland.

Like so much in biogeography and natural history, it all turned on knowing how to find both the special places where a species lives and those where it doesn't. The latter may take just as much if not more fieldwork. Establishing presence is straightforward. Classically, it meant specimens in museum or university collections. Establishing absence, a negative record, is another matter entirely. Being intangible, "absence,"

unlike “presence,” cannot be stalked, shot, skinned, stuffed, or even photographed and sound recorded. The most one can hope for is some sort of consensus or shared opinion among a peer group of fieldworkers. For example, while we had not and, to our knowledge, no one else had found toucans in Tamaulipas, that didn’t mean we could be sure that they were not there. Maybe toucans lurked in tropical habitats in Tamaulipas that no collectors or qualified observers had visited in the right season. Maybe like the black robin at Rancho del Cielo or a snowy owl in winter in Ithaca, they were occasional under unusual climatic conditions. Perhaps by now the toucans are known in Tamaulipas and in my preoccupation with extinct megafauna of the last ice age I have not heard the latest news. Such details are crucial in natural history, which is what we were investigating. The Gómez Farías region is on a gradient of increasing “tropicality” as one proceeds north to south. We had had our fair share of experience with the drier segments of that rainbow, the tropical gradient between mesquite grassland and, near the mouth of the Rio Grande, palm trees in south Texas, south into dry tropical deciduous forest near Ciudad Victoria and cloud forest above Gómez Farías. There were rain-forest elements, including toucans, in San Luis Potosí and full-blown rain forest in southern Veracruz through Central America, accompanied by pockets of cloud forest and, in dry interior valleys, tropical deciduous forest.

All of this proved helpful when I turned to another gradient, the Pleistocene extinction of large animals that occurred suddenly and very late in America at the end of the Wisconsinan ice age some 13,000 years ago. In contrast, the extinction of large animals transpired over more than a million years in Africa, balanced by evolution of new species, resulting in many more large mammalian survivors than in America (see Martin 2005).

At the start of our 1949 trip Dick Robins, Bill Heed, and I decided to test the idea that some tropical birds reached their northern limit near the coast, rather than at the foot of the Sierra Madre. Sutton had encouraged us to try both Soto la Marina east of Victoria and tropical lowlands near Altamira, north of Tampico. We decided to work our way south to Tampico, first exploring the thorn forest of the coastal plain northeast of the Sierra de Tamaulipas. I understand that the region has since been extensively cleared, cultivated, and irrigated.

We left the new Matamoros-Victoria highway at the entrance of a small dirt road heading south. We spotted “Soto la Marina” printed on a very small sign; this was our route!

At the junction I stopped at the wave of a young woman, seemingly alone except for the infant she was nursing. She approached, verified that this was our road, and asked if she could she ride along with us.

“Como no!” I replied gallantly from the driver’s seat.

“Con mi familia?” she added, as six or seven people of all ages, mostly male, swarmed up as if on cue out of a ditch where I had not spotted them. It was a classic case of bait and switch.

We thought our Jeep and trailer were already pretty heavily loaded with field equipment, food, and duffels in addition to the three of us, not to mention Cellotex roofing for Frank’s plant house and spraying equipment for his orchard when we reached Rancho del Cielo. Interpreting any response short of an outraged “NO!” as affirmative, the multitude somehow managed to pile onto the Jeep and trailer and we were off, with Bill and Dick clinging to the small side steps on each side of the Jeep, having yielded their front seat space to the mother and her infant plus an elderly woman. The Jeep tires bellied out ominously with the load. We kept scraping bottom, and I could find no part of the route where we could avoid raising clouds of dust.

There was a bright side. Our passengers promised us a warm reception in Soto la Marina. Hours later when we arrived the whole town turned out to welcome us. We felt like liberators in Western Europe at the close of World War II.

We negotiated for a suitable campsite in the thorn scrub (*monte*) outside town. Local *muchachos* brought us slider turtles from pools in an arroyo, along with an armadillo. The field catalogue indicates that in our first two days in the thorn forest we collected a red-billed pigeon, a brown jay, a plain chachalaca, and a crimson-collared grosbeak, all birds one might find as far north as the Rio Grande Valley (although the grosbeak is accidental there). Before we could explore the uncleared brush country closer to the coast, as planned, we packed up and returned the way we had come.

By the third day at our field camp, Dick had lost his appetite and that night he could not sleep. Never one to complain, in the morning Dick did admit to a severe backache. He was running a high temperature. Bill and I consulted our book on tropical medicine with little to show for our efforts. We decided not to tempt the fates, loaded up, made as soft a bed as we could for Dick in the middle of the Jeep with his head next to the transfer case and his feet in the extension box, and drove back to the highway, unencumbered this time by hitchhikers. Since Brownsville

was much farther away, we decided to seek medical aid immediately in Ciudad Victoria.

By mid-afternoon Dick had been admitted to the hospital. With out air mattresses and sleeping bags Bill and I camped in Dick's room to help him translate if necessary. We received our share of attention from the nurses: "Vienen tres gringos, juvenes, guapos, en el cuarto 102!" (Three yummy young gringos have come to room 102). A young doctor who spoke good English examined Dick and took X-rays. Spots on Dick's lungs were diagnosed as pneumonia. Not to worry, he would treat Dick with penicillin shots, and the prognosis was good.

In less than two days Dick's temperature was down, his back pains had disappeared, he could sit up, and X-rays verified that the spots were gone. Could Dick's illness have been triggered by overexposure to heavy dust and fungal spores on the track to Soto la Marina? Our hospital expenses were modest, no more than what we might have been charged for two nights at a local hotel.

We left Ciudad Victoria for the Río Sabinas, where we rented mules from Everts, then trekked up to the cloud forest where I collected salamanders and snakes while Bill and Dick continued on to La Joya de Salas to stay with Cayetano Osorio's family while starting a project on the local oak-pine birds. In the middle of March Doc Sutton and Roger Hurd came up to Rancho del Cielo for a few days, and we spent them together in the pines, scrambling through very rough karst country, hunting without success for high-flying and elusive maroon-fronted parrots (or were they macaws?). In later years macaws were found breeding on the dry side of the Sierra Madre. To the best of my knowledge no one has obtained specimens in the Gómez Farías region of the maroon-fronted parrot, a relative of the thick-billed parrot, known from Nuevo León.

TINAMOU AND TEXANS IN TAMAULIPAS

In early April we left the mountains to investigate new country to the east, in an isolated low range, the Sierra de Tamaulipas. When we reached Rancho Pano Ayuctle we discovered a venerable 1929 Ford, a panel truck with Minnesota plates parked under Everts' *orejón*. Everts emerged from his siesta and greeted us warmly.

"Why hullo, boys; how's La Joya and Don Pancho?"

“People up there are fine; Frank says the peach crop should be good this year. Who is your Minnesota visitor?”

“I think he said ‘Brian Harold.’ He’s out in the *huapilla* hunting *perdiz* [tinamou]; it’s for his thesis.”

Bill, Dick, and I exchanged glances. “Hmm. Lots of luck! That’s a hell of a project,” I muttered. While Everts and his *vaqueros* didn’t seem to mind the ticks and chiggers that infested the trails through dense *huapilla*, where the tinamou lurked, the ectoparasites infesting trails around and through the *huapilla* raised hell with *gringos* new to the country, especially when their immune systems overreacted to the unfamiliar bites, as they often did, triggering uncontrollable itching. After hiking through the *huapilla*, newcomers commonly suffered sleepless nights.

To make matters worse, the margins of the swordlike leaves of the ground bromeliad locally known as *huapilla* (*Bromelia pinguin*) came armed with recurved hooks behind a terminal spine. Any attempts to make a new trail into deeper parts of the thickets could result in painful punctures. It paid to cut a new trail, a slow job requiring skilled machete work.

Tinamou can be amazingly elusive. In the breeding season we heard their soft, low whistles much more often than we saw the birds themselves. Possibly one could study them from above the *huapilla*, in a blind on stilts. In the breeding season males might be lured into view by an imitation of their whistle. Most of the time the birds stuck to their haunts in the *huapilla* thickets like clapper rails hiding in a cattail marsh. One could hear their calls but they rarely emerged.

Streaked with sweat through his hunting jacket and wiping his glasses, Byron Harrell (alias “Brian Harold”) emerged from a trail through the *huapilla*. No, he hadn’t seen any tinamou, although we could plainly hear them from where we stood. “When do they nest?” Byron asked as we shook hands.

“They are easier to see up at Rancho del Cielo in the cloud forest,” Bill volunteered. “It’s cooler up there; the forest is free of ticks, chiggers, and malaria, and besides there is no *huapilla* in the understory.”

Byron scratched himself absentmindedly, a serious sign, I thought, of chigger trouble portending a sleepless night ahead. He was considering his options.

“Here, have a look at some trophies.” We showed Byron some of our cloud forest specimens, including nightingale-thrushes and euphonias. Then to our amazement he said he’d check their ranges in Ridgeway’s

Birds of North and Middle America. It came in many volumes and being out of print it was prohibitively expensive. What was he talking about?

We followed Byron to his panel truck. Inside on a rack on one wall he had not only a complete set of Ridgeway, but also a set of Hellmayr and of various other crucial reference works on taxonomy of tropical birds, or on Mexico, all checked out of the University of Minnesota's library for the spring semester.

"The few people at Minnesota interested in Mexican birds," Byron claimed, "promised not to recall any of these till I'm back."

On the opposite side of the truck on another set of shelves were shiny tin cans of various sizes with large numbers printed in grease pencil on the sides of the cans where labels had been removed.

"What's with the numbers on these cans?" Dick asked.

"Before I left Minneapolis my major professor (Doc Sutton's former graduate student and field assistant Dwain Warner, who knew the Rio Sabinas) and other friends held a shower. They knew I was traveling on a shoestring. They gifted me their extra canned goods for the trip."

"And what about the numbers?"

"Well, they claim I don't ever write home and now they say that I will. When I write they will reply with a key to the numbers indicating the contents of some of the cans."

"Yeah. So you just open anything and take your chances?"

"Actually, it's not hard to guess contents by can size and shape. It's a break from eating frijoles, fideo, and tortillas down here. Want some sweet pickles?"

While Byron arranged with Everts for a mule and guide to go to Rancho del Cielo, we loaded the trailer for our trip to the Sierra de Tamaulipas. Just before we left, Everts remembered he had another letter for us from Doc. It could not have come at a better time.

At Ann Arbor on April 3, 1949, Doc wrote: I believe I should undertake to underwrite your entire Sierra de Tamaulipas enterprise even if I can't promise to take all the rest of the birds. The point is that that region needs to be better known. I have no desire to monopolize the field, so will take the collection and even allow you publication rights, the understanding being, of course, that I will be consulted concerning selection of possible types, etc. I am really keen to help you fellows get going—and am possibly just as much interested in that as I am in the birds themselves. So hop to

it; get big birds and small; and put them up the best you can. I'd say the average of those at hand is very good. Fortunately there has been no destruction by insects and no molding. That is good. Don't let up on that ten-dollar owl. Soon may he die!

At the time Sutton especially wanted screech owls from southern Tamaulipas. We collected one. And, with his blessing, we did hop to it in the Sierra de Tamaulipas and north of Tampico, collecting big birds and small.

We squeezed into the Jeep and started our trip east across the coastal plain from Ciudad Mante toward Tampico and a distant landmark, a volcanic plug, Bernal de Horcasitas. It rises abruptly above a gentle fan. From a distance the plug and encircling fan look like the crown and the sizable brim of a mighty sombrero.

Here, leaving the pavement, we headed north toward the distant blue dome of the Sierra de Tamaulipas. We found ourselves on a surprisingly good dirt road through dry tropical thorn forest. This was mysterious. There were no houses, very few clearings, scant traffic, no road signs pointing to any towns, and no one to supply any information. There were no bait-and-switch hitchhikers as on the road to Soto la Marina. In a few miles the monotonous thorn forest suddenly gave way to a big clearing sporting a well-graded airstrip, long enough to accommodate a commercial passenger plane like a DC-3. What did this mean? Could it be part of some new oil exploration, perhaps? We heard that there was extensive prospecting for petroleum north of Tampico. What was going on?

As the road climbed up out of the tropical lowlands we came to another surprise. In front of us we found a *brecha*, a narrow gap in the scrub forest, cleared to accommodate a brand-new five-strand barbed wire fence strung tight. Then we arrived at a large gate complete with a guardhouse! We had not seen its like before, certainly not in rural Mexico. The gate was unlocked and no one was in the guardhouse. We opened the gate and drove on through, taking care to close it behind us. The road climbed up past huisache and mesquite grassland into woodland of spreading oaks draped with Spanish moss, ideal habitat for the tropical *parula* and other warblers. We could see pine trees topping distant ridges. The oaks and pines looked like the dry pine-oak country around La Joya de Salas at 1,500 meters, above and to the west of the cloud forest. Nevertheless, here we were at only 900 meters—the lower limit of the cloud forest below Rancho del Cielo—but in dry pine-oak woods, not cloud forest.

Out here, at the same elevation, the mountains were much drier, there were no dry-season mists, and none of the local oak, hickory, or pine trees resembled the species to be found at the same elevation near Rancho del Cielo. Nevertheless, we were high enough to feel some relief from the bake-oven temperatures we'd experienced in the dry tropical thorn forest near the big airstrip. It was another demonstration of Humboldt's life zones, this time on a drier gradient than in the Sierra Madre Oriental.

So what was the meaning of the big airstrip, why was the road so good for a rural track in this seemingly uninhabited region, and who owned the gated land on which we were trespassing? Where was everybody? We topped a rise and gasped.

Down below us was prize real estate, like nothing we had seen before in rural Mexico. Within a spacious valley and enclosed by a new stone wall behind a massive portal, we viewed a luxurious new stone hacienda with tiled roof, at least an eight-bedroom spread, and all in late stages of construction. There were modern new outbuildings, a large corral, new pickup trucks and cattle trucks, a grader (hence the good road), breed Brahma steers, and horses and mules of a size we had not seen before in rural Mexico. Nowadays, one would suspect that such opulence reflected the spread of a mighty Mafioso, a very successful drug lord.

This was a far cry from the rural villages we had visited, like Soto la Marina, Jaumave, Gómez Farías, La Joya de Salas, and the Ejido La Azteca. Well, wherever we went in rural México we had been made welcome, and here we were, about to collect more birds for George M. Sutton. In at least a few circles in the USA that name meant something. Perhaps the owners of this operation in the Sierra de Tamaulipas shared our enthusiasm for ornithology. We drove up to the main gate and proceeded to make ourselves known.

At siesta time we had bungled into a retreat of Clint Murchison. In the late 1940s, according to *Time* magazine, he was one of the ten wealthiest Texans. Besides half of the top of the Sierra de Tamaulipas, his Mexican holdings included Isla de Lobos (named for its sea lions) off the coast of Veracruz. From what I knew of the history of Mexico, this sort of foreign ownership supposedly ended when the Díaz dictatorship lost out in the Mexican Revolution. Nevertheless, what we saw certainly appeared to us to be brand-new foreign ownership.

We were welcomed to Hacienda Acuña by its manager, Howard Reed, another Texan, who answered our questions and invited us to spend the night at the hacienda itself. We decided to give luxury a try.

The next day we asked for and received help in locating a field camp. We were relieved that Howard Reed didn't insist that we base out of one of the spare rooms inside the hacienda. Switching from a field camp routine to plush indoor accommodations is not as easy as one might think. And shooting birds around the hacienda might well spoil our welcome. This was not Everts Storms' Rancho Pano Ayuctle, Frank Harrison's Rancho del Cielo, or Cayetano Osorio's tiny casa plus casita de cocina in La Joya de Salas.

Howard Reed took us a few miles northwest of the hacienda to inspect a potential campsite under spreading oaks. He promised to supply riding mules and a guide so we could expand our operation. Close to our camp Reed pointed out tinajas (rock cisterns), the only source of permanent water that we had seen. Brahma steers from the hacienda polluted some but not all of the tinajas. We filled our five-gallon can from one that was clear. We discovered larval newts (*Diemictylis*) in another tinaja, an added bonus since we knew of them only in the eastern United States. Howard invited us to join a party for dinner in a few days, when he said Mr. Murchison would want to receive us.

When the day came, we washed up in a tinaja, combed our hair, shaved, polished our boots, and dressed in our cleanest khakis. We selected two of our bird skins, an elegant trogon and an acorn woodpecker, to serve as house gifts. Inside the great house Mr. Murchison received us as though we were old family friends and relatives from Dallas. He introduced a much younger "citified" woman bedecked with jewels and dressed like a movie starlet. At dinner we learned that the Duke and Duchess of Windsor had flown in recently for a visit (we knew the airstrip). We also learned that the famous herpetologist Raymond Ditmars had collected the tropical rattlesnake at Murchison's island, Los Lobos.

That caught our fancy and we expressed a keen interest in visiting the island. Eventually, Howard Reed mentioned a motel and a date when he'd meet us in Tampico to take us to the island. When the time came we drove to Tampico, rented a room in the designated motel, and spent two nights there with no sign of Howard Reed. The motel manager could give us no information about him. So we left Tampico driving north to Zamorina and east to the coast along newly blazed tracks made by trucks of geologists with Petroleos Mexicanos prospecting for new oilfields.

The tracks near the coast led us into sparsely inhabited, undisturbed tropical deciduous forest, ending at the edge of mangroves bordering an *estero* (coastal lagoon). Fresh water was hard to find. I discovered that boiled saltwater does not substitute for fresh in cooking breakfast

oatmeal. With the exception of some new records of shorebirds for the Tamaulipas coast (Robins, Martin, and Heed 1951) we found no novelties. A local vaquero had a big skin of a mountain lion. There were tinamou but we could find nothing novel like toucans.

In June we returned to the Sierra de Tamaulipas to discover nesting black-headed nightingale-thrushes, *Catharus mexicanus*, a dominant species at Rancho del Cielo. There we knew them only from the cloud forest and did not find them in dry open pine-oak woodland such as this. An even bigger surprise was the presence of red crossbills. The small size of their gonads contrasted with those of all the other passerines we collected, some of which had raised young. The crossbills had come for the seed crop in local pines, not for breeding. We wondered where and when they nested.

Thanks to a guide and big riding mules from Hacienda Acuña we were able to explore lower elevations where there were tinamou in the dry tropical forest. Judging by bones in Scotty MacNeish's archaeo-faunal collection from the Sierra de Tamaulipas, identified by Karl Koopman at the American Museum, the prehistoric people in the Sierra de Tamaulipas hunted the brocket deer, *Mazama*, which we knew only around Rancho del Cielo in the cloud forest.

A year later through our encouragement the Chicago Field Museum herpetologists Karl Patterson Schmidt and Hyman Marx wrote to Mr. Murchison for permission to visit the Sierra de Tamaulipas. From his reply they understood that they would be welcome. But when they arrived a few months later the guardhouse was occupied, the gate was locked, and nothing they could say or do would induce the guard to let them through. Had we poisoned the well, so to speak? To our knowledge, nowhere else in rural Mexico in those days did gringos interested in professional collecting under permit or exploring or anything else find themselves locked out. It portended things to come on both sides of the border, when the discovery of rare or endangered species clashed with property rights, at least in the minds of some landowners, and later with the activity of *narcotraficantes*.

FAST-FORWARD THROUGH FIFTY YEARS

In mid-June Dick and I started home, leaving Bill at Rancho del Cielo. He would return north with Byron Harrell, helping nurse Byron's ancient Ford out of Mexico, a major adventure in itself. By the end of 1949 my

interests had shifted from birds to herpetology and biogeography. In the 1950s, married to a Cornell zoology student, Marian Wallach, and with help from other field parties and from local residents, we assembled a collection of 2,500 reptiles and amphibians representing 100 species from the Gómez Farías region (Martin 1956). Byron Harrell and I reviewed the biogeography of the Mexican cloud forest and concluded that interconnections with temperate forests in the eastern United States predated the Pleistocene (Martin and Harrell 1957).

After Ed Deevey published *Biogeography of the Pleistocene* (1949) it was clear that to probe the dynamic world of the last ice age and its mysteries would require a historical approach such as fossil pollen analysis or other techniques of Quaternary paleoecology. Armed with advanced degrees and a Rackham Postdoctoral Fellowship from Michigan, which I spent at Yale with Ed Deevey, followed by a National Research Council of Canada Fellowship at the Université de Montreal in Quebec, plus a National Science Foundation grant for work on fossil pollen, I managed to land what became a permanent job at the Desert Laboratory of the University of Arizona. The American Southwest proved to be especially rich in fossil evidence of climatic and faunal change in near time and in the Quaternary, just what we had suspected but could not demonstrate rigorously in our biogeographic work.

From the remarkable contents of dry caves in Arizona and adjacent states, and “not finding game large enough in this or any vegetable wilderness” (to steal a few words from Thoreau’s *Walden*) University of Arizona students helped me pursue the late ice age fossil record of the last ground sloths and other extinct megafauna of near time (Martin 2005).

Dick Robins and Bill Heed also followed rewarding career shifts of their own. Dick became an ichthyologist and marine biologist at the University of Miami, and now is emeritus curator of ichthyology at the Museum of Natural History of the University of Kansas (Courtenay and Robins 1997).

Bill Heed fell under the influence of Dobzhansky’s *Genetics and the Origin of Species*, studied evolution of wild *Drosophila* (fruit flies), took his Ph.D. at the University of Texas, and joined me at the University of Arizona, where he taught genetics and evolution. He discovered the secrets of wild species of *Drosophila* inhabiting yeasty cactus rot of columnar cacti found in the Sonoran Desert and throughout thorn scrub and thorn forest of the arid tropics (Fogleman 1990).

During these changes Doc Sutton kept us on a mailing list that included queries for guidance about what to do with his Mexican bird

collections, since he felt we were a part of them. He and Dick Robins kept in close contact. Dick told me that our specimens are now in Wilmington, Delaware, at the Pierre Dupont Museum.

In the Sierra Madre above the Río Sabinas, on land he purchased and gave to Texas Southmost College in Brownsville, Doc Sutton financed habitat preservation for royal pheasants, crested guans, and jaguars. The “Sutton Reserve” and Rancho del Cielo are a part of Mexico’s biome reserve.

In the 1950s, in recognition of the unique ecological features of the region, including the cloud forest, Byron Harrell and I began an abortive campaign for habitat protection supported by scientists on both sides of the border including Enrique Beltrán; Irby Davis; Efraím Hernández X.; Karl Koopman of the American Museum of Natural History; Jack Sharp, professor of botany at the University of Tennessee; and others. We raised more than \$800.00, a trivial sum but enough in those days, we were told, to purchase (if not to guard) a sizable tract of uncut forest. In effect we could own it but, as we later realized, unless we had effective guards on location, anyone could come and poach the trees.

We left our money with Everts Storms, who promised to act as our agent in any transaction. In the early 1960s our hopes died with Everts and we failed to recover our modest assets in the settlement of his tangled estate. I suspect it was just as well. Land acquisition by foreigners, especially in parts of Mexico close to the international boundary, can be a legal challenge. Only the genius of John Hunter and his friends in Tamaulipas and Texas, not to mention the interest and influence of Mexico’s leading conservationist at the time, Enrique Beltrán in Ciudad México (Simonian 1995), and especially the enthusiastic collaboration of Frank Harrison, could have succeeded in turning El Cielo into a field station and reserve maintained by Texas Southmost College, now the University of Texas at Brownsville. Fred and Marie S. Webster (2001) tell the story of that incredible effort. In addition, they redid the breeding bird census on the Harrell tract and updated records of wildlife at Rancho del Cielo.

Although we failed in our attempts to purchase a tract of uncut cloud forest, I feel that our research efforts and publications helped to fuel Mexican conservationists in their establishment in 1985 of the El Cielo Biosphere Reserve embracing 144,530 hectares in the Gómez Farías region and administered through the Universidad de Tamaulipas.

In July 1988, thanks to an invitation extended by Humberto Sosa, who collaborated with Gary Nabhan to protect threatened endemic

cacti and succulent species in the dry parts of the Gómez Farías region, I participated in the first Simposio de Investigación en La Reserva de la Biosfera “El Cielo,” held in Ciudad Victoria. It was an opportunity to meet Gonzalo Halfter, the scarab beetle specialist who founded Mexico’s Institute of Ecology and succeeded Enrique Beltrán as a leader of Mexico’s conservation movement (Simonian 1995). Along with faculty and students from Mexico’s Universidad Autónoma de Tamaulipas (UAT), Universidad Autónoma de México, and Programa Hombre y Biosfera, and France’s Université Pierre et Marie Curie, Paris, as well as participants from seventeen other institutions, I attended a three-day session held at the UAT in Ciudad Victoria.

The program covered many aspects of ecology, basic and applied, a stimulating and moving experience that showed the value of the Gómez Farías region as a tropical study site for university students from Mexico City, Tamaulipas, Texas, and elsewhere in North America. There were heated verbal exchanges among the Mexican ecologists regarding the effectiveness of their country’s national parks in which protection of biota runs up against hard-won rights of unrestricted land use by rural people. The value of the research in guiding conservation, management, and sustainable use of El Cielo and other reserves was obvious. It was my first exposure to the concept of community based management (CBM), in which local people who derive some economic benefit from a reserve become stakeholders with a personal interest in the fate of the reserve (Western and Wright 1994).

There have been awesome changes. From Barbara Warburton at Texas Southmost College I learned of a terrible fire in 1971, following lumbering of the decade of the 1960s, a hurricane, and an unusually severe drought. The fire raged for months. Hollow trees turned into virtual blast furnaces as flaming gases roared upwards (Webster and Webster 2001). I never imagined a firestorm could burn through the cloud forest where the estimated mean annual precipitation for Rancho del Cielo based on twenty-two years of data supplied by Larry Lof, director of the Rancho del Cielo Station, is 100 inches (2.54 meters). Normally, wildfire would be out of the question.

Recent findings in historical ecology and the earth sciences reveal that the natural environment has been and is exposed to more destructive changes over time than we imagined. Archaeological remains around Rancho del Cielo indicate prehistoric human activity and presumably prehistoric disturbance, perhaps at a scale even beyond what happened in the second half of the twentieth century. Fire, drought, freeze, and

hurricanes are among the historic natural hazards, preceded around 13,000 years ago by extinction of mammoths, giant edentates, and other megafauna. The failure of the Gómez Farías region to support more tropical species like toucans and spider monkeys may reflect a turbulent history with more human impact than we imagined during our collecting trips in the late 1940s and 1950s. “Pristine wilderness” is a misconception we labored under.

I understand from Fred Webster that the reserve on the forested slopes west of the Rio Sabinas—initiated by George Miksch Sutton followed by Texas Southmost College—still harbors crested guans. If great curassows survive, it would be there. Jaguars persist and have been seen in the streets of Gómez Farías. There has been a seismic shift in consciousness regarding natural area management since the 1940s. Still, there are major problems in sustainability, as the conference on El Cielo held in 1988 in Ciudad Victoria, the capital of Tamaulipas, indicated. The Estados Unidos Mexicanos has a variety of splendid biosphere reserves (Simonian 1995). Mexico and Tamaulipas can take particular pride in the one within the Gómez Farías region that includes El Cielo.

The interplay of ecologists and conservationists from both sides of the border in eastern Mexico can be used as an example for efforts underway in northwestern Mexico. The tropical life of Sonora and Sinaloa also invites ecologists from both sides of the border to explore rough country, including the barrancas of the Sierra Madre Occidental. The barrancas are terra incognita for ecologists with a passion for the wild. At the University of Arizona the Southwest Center is a focus for such efforts and interests. I have found that what is truly unknown—despite great strides made by fieldworkers in the region—is close comparison of the borderlands in both northern Mexico and the southern USA. In both regions a rich gradient of increasing tropicality unfolds southward from the latitudes of 30° to 20° N. I remain amazed at how few field ecologists at the University of Arizona succumb to the temptation to drop tamer study sites for the exploration of borderland barrancas. Thanks to support and interest from students and friends at the Desert Laboratory and the Southwest Center, I helped to initiate and complete a revision of Howard Gentry’s *Río Mayo Plants*, including some new insight into the barranca and 850-foot waterfall at the head of the Río Mayo (Martin et al. 1998).

While the bird-collecting days are largely past, there is much more to learn about plants, animals, ethnology, and not least, about sustainability and its handmaiden CBM in a hemisphere bereft of most of its natural

megafauna. In near time, some 13,000 years ago, a strange revolution, natural or manmade or both, swept away most of America's large mammals (Martin 2005). George Sutton urged us on in our investigations, admonishing us to "hop to it!" The people, the land, and its remarkable biota that not long ago included mammoths, ground sloths, and glyptodonts, deserve no less. ❖

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LITERATURE CITED

- Contreras, A., and S. Medellin
 1994 Plan Comunitario de Manejo de Recursos Naturales de Ejido Veinte de Abril (La Joya de Salas): ¡Proyecto Organízate! Serie Desarrollo Comunitario No. 1: 88 pp.
- Courtenay, W. R., Jr., and C. H. Robins
 1997 C. Richard Robins: Yesterday and today. *Bulletin of Marine Science*, 60: 629–42.
- Deevey, E. S., Jr.
 1949 Biogeography of the Pleistocene. *Bulletin of the Geological Society of America* 60: 1315–1416.
- Dressler, Robert L.
 1962 Tropical orchids near the Texas border. *Missouri Botanical Garden Bulletin* 50: 15–19. [RD treats orchids collected near El Cielo.]
- Edwards, E. P.
 1998 *A field guide to the birds of Mexico and adjacent areas*. 3rd ed. Austin: University of Texas Press.
- Edwards, E. P., and P. S. Martin
 1955 Further notes on birds of the Lake Pátzcuaro region, Mexico. *The Auk* 72: 174–78.

- Fogleman, J. C.
 1990 William B. Heed, a biography. In *Ecological and evolutionary genetics of drosophila*, J. S. F. Barker and others, eds., pp. 1–10. New York: Plenum Press.
- Greenberg, J. B.
 1989 *Blood ties: Life and violence in rural Mexico*. Tucson: University of Arizona Press.
- Harrell, Byron E.
 1951 The birds of Rancho del Cielo: An ecological investigation in the oak–sweet gum forests of Tamaulipas, Mexico. Master’s thesis, University of Minnesota, Minneapolis. [Copy in possession of PSM.]
- Hernández X., H. Crum, W. B. Fox, and A. J. Sharp
 1951 A unique vegetational area in Tamaulipas. *Bulletin of the Torrey Botanical Club* 78: 458–63.
- Koopman, K. P., and P. S. Martin
 1959 Mammals from cave deposits in the Gómez Farías region of southern Tamaulipas, Mexico. *Journal of Mammalogy* 40: 1–12.
- Leopold, A. S.
 1972 *Wildlife and game birds of Mexico*. Berkeley: University of California Press.
- Marshall, J. T.
 1957 *Birds of pine-oak woodland in southern Arizona and adjacent Mexico*. Pacific Coast Avifauna 22. Berkeley: Cooper Ornithological Society.
- Martin, P. S.
 1951 Black robin in Tamaulipas, Mexico. *The Wilson Bulletin* 63: 340.
 ——— 1956. *A biogeography of reptiles and amphibians in the Gómez Farías region, Tamaulipas, Mexico*. Miscellaneous Publications of the Museum of Zoology 101. Ann Arbor: University of Michigan.
 ——— 2005. *Twilight of the mammoths: Ice age extinctions and rewilding of America*. Berkeley: University of California Press.
- Martin, P. S., and B. E. Harrell
 1957 The Pleistocene history of temperate biotas in Mexico and eastern United States. *Ecology* 38: 468–80.

- Martin, P. S., C. R. Robins, and W. B. Heed
 1953 Birds and biogeography of the Sierra de Tamaulipas, an isolated pine-oak habitat. *The Wilson Bulletin* 66: 38–57.
- Martin, P. S., D. Yetman, T. R. Van Devender, and P. Jenkins, eds.
 1998 *Gentry's Río Mayo Plants*. Tucson: University of Arizona Press.
- Peters, J. A.
 1948 The northern limit of the range of *Laemanctus serratus*. *Chicago Academy of Sciences Natural History Miscellanea* No. 27: 1–3.
- Poinar, H. N., M. Hofreiter, W. G. Spaulding, P. S. Martin, B. A. Stankiewicz, H. Bland, R. P. Evershed, G. Possnert, and S. Pääbo
 1998 Molecular coproscopy: Dung and diet of the extinct ground sloth *Nothrotheriops shastensis*. *Science* 283: 402–6.
- Puig, H.
 1976 Vegetation de la Huasteca, Mexique. Mission archeologique et ethnologique Francaise au Mexique.
- Robins, C. R., and W. B. Heed
 1951 Bird notes from La Joya de Salas, Tamaulipas. *The Wilson Bulletin* 63: 263–70.
- Robins, C. R., P. S. Martin, and W. B. Heed
 1951 Frigate-bird, oyster catcher, upland plover, and various terns on the coast of Tamaulipas, México. *The Wilson Bulletin* 63: 338.
- Sharp, A. J., E. Hernández X., H. Crum, and W. B. Fox
 1950 Nota florística de una asociación importante del suroeste de Tamaulipas, México. *Sociedad Botánica de México* 11: 1–4.
- Simonian, Lane
 1995 *Defending the land of the jaguar: A history of conservation in Mexico*. Austin: University of Texas Press.
- Sutton, G. M.
 1972 *At a bend in a Mexican river*. New York: Paul S. Eriksson.
- Webster, Frederick, and Marie S. Webster
 2001 *The road to El Cielo: Mexico's forest in the clouds*. Austin: University of Texas Press.
- Western, D., and R. M. Wright, eds.
 1994 *Natural connections: Perspectives in community-based conservation*. Washington, DC: Island Press.