

Chapter 7

How and When I Ventured into the Study of Butterflies and Adventures Along the Way

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At some point in my adult life, I began to reflect on how I came to allocate so much time to observing butterflies and on many adventures I had along the way. Like many children growing up outside of poverty and with opportunity to experience nature, I found fascination in all things, especially living things. By the age of 12, my bedroom was a small museum covering geology, archaeology, and natural history. Twelve years later, butterflies had become a major focal point as I contemplated graduate school. After another 12 years, I had already associated with a number of contributors to this volume, either as student, advisor, or colleague. We were all being paid to teach, conduct research, and interpret nature's patterns from a strong lepidopteron perspective. We all seem to have reached this point with very diverse personal histories and personalities. Thus, I am as curious about my colleagues' experiences as revealed in this volume as I am about recalling and assessing my own personal turning points that brought me to be counted in this strange assemblage.

Because of some odd twists of family history, I grew up being exposed to biogeographically diverse and interesting environments. My paternal grandfather died in the flu pandemic in 1918, and papa (Lawrence Sr.) and his baby brother were raised in a Masonic children's home in Florida for their formative years. My grandmother fished them out after 10 years and soon dropped them in San Antonio on her way to California to live near her friends. Thus, papa was left to take care of his younger sibling while unsuccessfully trying to finish high school. After working in Dallas for a few years, papa was allowed to enter Austin College in Sherman, TX, on probation. His goal to be a Presbyterian minister helped this Presbyterian college decide in his favor.

Meanwhile, my mother's family was "Old Texas" all the way. Mama's mitochondrial lineage arriving with the second Austin Colony in 1827, into the Mexican state of "Coahuila y Tejas" and many other of her ancestral branches moved in during days of the Republic or just after the Civil War. Her father, Ira Burns, had,

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with his dad, surveyed the family ranch just south of the Nueces River: 2000 acres that was acquired in 1906, during the last episode of homesteading in the lower 48 states. As a teenager, Ira stayed on the ranch to fulfill homestead provisions so that his sibling could go to school. Thus, his formal education ended in the eighth grade. My mama, Mildred, was proud of being valedictorian of her senior class in Catarina. However, there were only three graduating students and the other two were cowboys. My granddaddy sent her to Austin College so she would not marry one of these local boys. There she met my dad. Papa was about as alien to South Texas as one could be. Much later, we learned he was the grandson of a Union Officer (from Gilbertsville, New York) who had escaped from the Confederate prison in Andersonville. Papa had no extended family to visit on holiday, so my mother's clan adopted him.

The important thing for me as a young naturalist was that wherever mama and papa lived, we would travel to her family's anchor point at Catarina near the Mexican border for thanksgiving, Christmas, and summer breaks. I was continually exposed to changing biotas as we lived in various ecoregions (Fig. 7.1), and from

Fig. 7.1 The combined larval colors and odors of black swallowtail, *Papilio polyxenes*, combined to make my encounter with this species in 1953, near Jones Creek, Texas, my first distinct memory of a butterfly



there would travel to Catarina, by then a near ghost town. It is situated in a vast semiarid Savannah grassland known as the “brush country.” In my youth, the region was largely as the Spanish had described it in 1684, when they passed through searching for the French colony led by the explorer LaSalle. Instead of isolated trees scattered through grassland, this Savannah was composed of shrub clumps in the grassy matrix. Each clump can be composed of a variety of woody shrubs, vines, and cacti, and as many as 12 woody plant genera might co-occur in such clumps, many being adult or larva host plants for butterflies such as cloudless sulfur, snout butterfly, hackberry butterfly, and lyside (*Kricogonia*). Almost everything has thorns and my favorite was a plant called “all thorn” (*Koeberlinia*) which has nothing but green stems and thorns. Horned lizards were common. I also grew up thinking this was the homeland of collared peccary until I saw them in Costa Rican rain forests later!

Papa not only served as a regular minister, he was also a Navy Chaplain and a Chaplain for the Texas Department of Corrections in between serving small town congregations. He truly believed and lived what he was preaching and that did not set well with some of his “free-world” flocks when it came to “all men equal in the eyes of God.” Opposition to non-Caucasian races being included in these churches was accompanied by a sincere belief by some that “Negroes and Mexicans have a separate Heaven”! Looking back, I can see why we moved frequently from town to town in West Texas, to North Central, and finally around the central Gulf Coast south of Houston. I attended ten different schools before college, including one on Midway Island during the Korean War. Everywhere we lived, whether the manse of a local church, an island navy base, or Texas prison farm, I found myself on the edge of great expanses of pastures, oceans, woodlands, and agricultural fields. Periodically, I would be transported with the family back to the South Texas mesquite rangeland where granddaddy Burns had become a major honey producer with 1100 hives scattered across several vast ranches including the former family ranch lost in the depression. In my teenage years (late 1950-early 1960s), I spent summers helping with the bee business. Everywhere nature was interesting and available. Best of all, I had parents who found nature interesting and who considered study of God’s creation a noble way to spend time. I was not compelled to have a summer job.

It seems that while all children are explorers on a newly colonized planet, the lucky few like most authors of these chapters were able to explore nature under the tolerant and protective eye of sympathetic adults. For me, such favorable social and natural environments reinforced a broad interest in natural history. Oddly, emergence of my interest in butterflies had to do with saying goodbye to an island paradise in 1952. While I do recall fish, birds, horned lizard, rattlesnakes, honeybees, *Polistes*, deer, sea urchins, snails, and jackrabbits prior to that date, I do not recall any awareness of butterflies. In October 1951, my mother took us three kids to join papa who was already deployed at the naval base on Midway Islands. Thus, at age 9, I had the run of a mid-Pacific coral atoll for most of each day. Such atolls sit on the peaks of seamounts, and this one was on the remains of one of the earliest volcanoes in the Hawaiian archipelago. Midway was teeming with seabirds like

Laysan and Black Albatross, tropic bird, fairy tern, brown boobie, shearwater, and frigate birds that rely on such scattered patches of coral sand to exploit remote parts of the Pacific Ocean. The coral reef drew my interest but I could only imagine what was out there from what washed in on the beach over night. Midway school ran only 4 h a day for a given grade level. In our magical 13 months on Midway, I developed an intense interest in marine invertebrates, especially Mollusca of genera *Cypraea* and *Conus*, both with fabulous diversity on the atoll. I was struck by the elaborate patterns of cone shells and by the fact that periostricum covered the pattern of live ones I saw and by the warning that some species were deadly if handled.

After our return to the mainland in 1952, papa became pastor of an historic church at Peach Point in Jones Creek, Texas. It had been built on part of a plantation owed by —“Father of Texas”—Stephen Austin’s sister. The minister’s residence next to the church sat adjacent to a large prairie bounded by hardwood forests along the Brazos, San Bernard, and Colorado Rivers. Ironically, some of the best remaining old-growth hardwood forests remaining in North America are here at the western edge, a 3-h drive from the arid brush lands along the Mexican border (Fig. 7.1). There we were situated in the top winter birding area of North America. I recall seeing snow geese and long-billed curlew out behind the house. Inspired by a book my parents gave me, by John James Audubon, I subscribed to the Northwestern School of Taxidermy’s course by mail and sat about making study skins of the birds I shot with my .410 shotgun. For a time, I retained an interest in marine life and greatly anticipated our family’s initial trips to the beaches between Freeport and Galveston. I was quite keen to continue the study of marine mollusks. Unfortunately, I was greatly discouraged by the chocolate brown surf colored by discharge of nearby sediment-laden rivers and by oil slicks, tar balls, and trash that fouled the beaches. This coast was a far cry from a pristine atoll with white coral sand, turquoise water, and colorful organisms. Sadly, the beaches of tiny remote Midway are now fouled with tons of plastic garbage.

One day while exploring the pasture near our house at Peach Point, I found a gaudy caterpillar with an unforgettable odor and eating wild umbellifer. I brought plant and larva to my mother. She suggested that I put the plant in a pop bottle between my bedroom window and its screen so I could watch what happened. After a few weeks I was watching a black swallowtail, *Papilio polyxenes* emerge (Fig. 7.2). I became transfixed by conversion of plant to butterfly via caterpillar and obsessed with attempting to capture tiger swallowtails on the woodland edges. I retain vivid memory of several people stopping their car on the lane near our house, in about 1954, all running into the pasture with butterfly nets in pursuit of large butterflies I could only watch in frustration.

I have always wondered who those collectors were. Texas was not home to many lepidopterists in those days. The two that come to mind as collecting in early 1950s were H. A. Freeman, skipper specialist, and Roy O. Kendall, who described host plants and life histories for many butterflies in southern Texas and northern Mexico. No doubt a specimen label in some museum collection with a 1954 date and Jones Creek, Brazoria County, TX, location, would reveal the name of one of the persons trespassing in the pasture near our house. A good guess for an



Fig. 7.2 *Left panels* show the “brush country” of South Texas east of Catarina. *Right panels* show the old-growth river bottom hardwood forests south of Houston where my family lived during the 1950s. In a 3-h drive to visit grandparents, I was exposed to dramatically different ecoregions

out-of-state visitor might be Harry K. Clench on an expedition from the Carnegie Museum in Pittsburg. After reading some of his papers as an undergraduate at UT Austin, I wrote Harry asking to go with him on a tropical expedition and after the Mexico trip I describe below, I sent him specimens I could not identify. One was a species new to science.

On visits to South Texas family, I had noticed pupae suspended by silk girdles on the stucco walls of my grandparents’ church in Catarina. These turned into *Battus philenor*, pipe vine swallowtail, that seemed quite fantastic (Fig. 7.3). This was during the famous 1950s drought. Later, I understood that pipe vine swallowtails are able to persist in dry times because host plants have storage roots and can continue staying green. In retrospect too, I know that the pale yellow lyside and snout butterflies hanging around the Burns’ home during winter were adults in diapause. Both species respond to post-drought rains by undergoing mass migrations. I vividly recall these spectacular events as the drought ended in the mid-1950s. Cars and trucks would overheat from all the butterfly bodies covering radiator grills (Fig. 7.4)!

In 1956, papa became chaplain in the Texas prison system, and we moved to the 18,000-acre maximum security Ramsey prison farm along the Brazos river bottom, south of Houston. We rode the school bus to Angleton, 18 miles from the headquarters (HQ). At the time, extensive old-growth hardwood bottomlands were being cleared by hand to keep prisoners occupied. Large fields were cultivated

Fig. 7.3 *Battus philenor* was the first life history I worked out as a kid, starting with pupae on walls of my grandmother's church in Catarina. I spent hours following females searching for host *Aristolochia longiflora*, the leaves of which were grass-like and hard to pick out



by thousands of inmates with guards patrolling on horseback. By that time I had constructed an effective butterfly net, and had the run of pastures, fields, Oyster Creek, and the edges of ponds for fishing and bug collecting. The cultivated alfalfa fields were boiling with alfalfa butterflies, but I also took notice of gulf fritillary and skippers with long tails. It took a while to learn that packs of bloodhounds bearing down on a person would treat one like a stump as long as one's odor was not the training odor. On visits south to Catarina, I was now trying to find *Battus* host plants in by following females. I recall my first views of great purple hairstreak visiting extra-floral nectaries of black-eyed peas in granddaddy's garden and magically coming out of nowhere to drink water droplets when the Catarina yard was watered during dry hot summers.

Before we left Ramsey for Sugarland's Central I Prison farm in 1957, I donated a cigar box of crudely pinned butterflies to my middle school science class in Angleton. Central Prison is now gone and Sugarland's Imperial Sugar refinery closed. The town welcomed Fidel Castro on a visit in 1959, before his intentions were clear. The area was long ago overrun by Houston's southwesterly expansion. But in the late 1950s, it was quite rural. Unlike the isolation of Ramsey, dirt roads across Central Prison farms property were accessible to those wishing to traverse the area from HW 59. I was now in high school and participating in major



Fig. 7.4 Snout butterfly, *Libytheana bachmanni* undergoes massive population outbreaks and migration when rains break extended drought in South Texas. Butterflies clog car radiators and dead bodies litter roads. This phenomenon was one of the things about butterflies that I found most interesting as a youth

team sports, and a few of my football teammates might have been mistaken for rednecks. Certainly my strange habit of running around collecting natural objects was a source of amusement and teasing at school. One day a pickup load of guys, apparently, up to no good, intercepted me walking alone with a butterfly net. When they demanded to know what in the heck I was doing, my response of “catching fish bait” was an honorable enough explanation to send them on the way without needless altercation.

To this point, my butterfly interests were totally without the support of outside information. Aside from my Audubon book and Heyerdahl’s *Kon-Tiki* (a book grandparents had given me with all the bad words carefully marked out in blue pen), our house was devoid of books on natural history or science. A watershed for me came when papa enrolled in a Psychological Counseling Masters Degree program at the University of Houston (U of H). The first thing I remember from that was him pulling me aside after his course on human sexuality and telling me to forget everything he had taught about the evils of masturbation. Better yet, he used his library access at U of H to check out books that allowed me to identify specimens in my Hawaiian shell collection and, most importantly, Holland’s *The Butterfly Book*. The latter allowed me to take my butterfly interest to another level. I was fascinated by the general idea of specific host plants as a key to finding and rearing butterflies since I was beginning to figure it out for myself. Soon I was seeking more current books on my own. I was excited to find Klots *Butterflies of Eastern North America* in a bookstore and bought a copy.

After that our homeland in South Texas became even more interesting since many butterflies listed by Klots in the North American fauna “occasionally strayed

Fig. 7.5 My first encounter with a zebra longwing, *Heliconius charithonia*, in San Antonio, Texas, 60 years ago may have influenced my research career



northward” from the neotropics. Thus, I began to urge that family trips include places further south (Brownsville, Pharr, McAllen, etc.) where such rarities had been collected. I clearly recall the shock of seeing my first *Heliconius* (Fig. 7.5). It was a zebra longwing in the Sunken Garden of San Antonio’s Brackenridge Park. Papa saw me easing over to collect it off a *Lantana* flower and quickly told me that collecting this insect in a public place was not appropriate. I can only wonder if this denial fueled my later foray into *Heliconius* biology.

Our family continued to be on the move within the same area south of Houston. Papa left prison work in summer 1960, and returned to “free world” ministry near West Columbia where we lived my last year of high school. I enrolled as biology major at UT Austin in fall 1961, having left specific interests in organismal groups behind, at least temporarily. I continued to be interested in butterflies, but there was little time to pursue such study with no car and no obvious associated career path. Besides, intercollegiate athletics and heavy course loads left little spare time. My interest in butterflies and host plants did lead me to sign up for classes in entomology and botany. In 1963, Papa bought a 17-acre tract of land from Phillips Petroleum that at the time was part of unbroken forest along the San Bernard River. That summer I helped him build a cabin on the site and encountered my first *Lethe portlandica*, a large satyr butterfly known as pearly eye existing there on the south-western extreme of its range. A bamboo (*Arundinaria*)-feeding butterfly like *Lethe* flying in a palm understory only a few hours level drive from the semiarid cactus and mesquite rangelands around Catarina fueled my interest in biogeography.

Also in 1963, I stumbled across Ivan Sanderson's *The Continent We Live On*. His chapter on the Mexican Sierras seemed to explain where tropical butterflies straying into South Texas might likely originate. Tropical semievergreen and evergreen forests lay only a few hours south of Brownsville, TX, on the eastern slopes of the Sierra Madre Oriental, just south of Victoria Tamaulipas. Having no car, I talked my roommate Hardy Morgan (now a retired physician living on his Ranch near Hico, TX) into driving mycology Grad student Fred Kiefer and me south in June 1964. My intent was to see the northern extent of the tropics. We got as far as El Salto Falls in San Luis Potosi where we saw *Morpho*, *Hamadryas*, *Biblis*, *Heliconius*, *Eueides*, *Dryadula*, *Anartia*, *Anaea*, and *Eunica*, etc. It was a full cast of neotropical seasonal forest species that continue from there to Panama and beyond. Ironically it was soon after, collecting for entomology class over Christmas break of 1964, that I recorded the first US record for *Dione moneta* (Fig. 7.6). My younger brother and helper, Tom, netted it near the house in Catarina. I, later, learned that this heliconiine was typically found in mid-elevation neotropical wet forests. My first publication described the conditions associated with its appearance in Texas.

Thus, intrigued by the abrupt end to most neotropical butterflies just south of Texas, I was excited to see a graduate seminar listed in the Geography Department organized by a Professor Donald Brand entitled *The Temperate-Tropical Transition in NE Mexico and Southern Texas*. I jumped in immediately and found myself in company with several zoology graduate students, including the late herpetologist, evolutionary biologist Craig Nelson. Craig had been my T.A. in Ecology a semester before and was important now in helping me chart my next path. I had chosen to write my term paper on the biogeography of butterflies across the region, but I had little to go on except a synthesis by William Hovanitz that placed the steepest part of tropical butterfly diversity decline at 20° N latitude in Veracruz.

The first of two critical things Craig Nelson did for me was to point out Paul Martin's 1958, University of Michigan dissertation monograph on *The Biogeography*

Fig. 7.6 *Dione moneta* ovipositing on *Passiflora adenopoda* in Hesperia, Ecuador, in 2008. *D. moneta* uses the same host in the mountain of Tamaulipas, Mexico. Finding this butterfly in South Texas during Christmas 1964 further stimulated my interest in the distribution of tropical butterfly faunas



of *Reptiles and Amphibians in the Gomez Farias Region, Tamaulipas, Mexico*. Martin's mapping of vegetation zones and listing of floral elements in this isolated patch of semievergreen tropical forest provided the key to predicting the butterfly fauna, yet to be properly explored in the 1960s, and that became my paper topic. Later, this effort formed the basis for my undergraduate NSF research proposal that funded my solo expedition to the region in summer of 1965. The second thing Craig did for me was to inform me about the Organization for Tropical Studies Fundamentals of tropical biology course in Costa Rica and I began to plan for that for the following year. Organization for Tropical Studies (OTS) courses were just getting under way in the mid-1960s, and would come to be seen as the basic training ground for tropical biology and portal for many students wanting to work in the Neotropics. I was very fortunate to learn about this opportunity when I did.

Meanwhile, in the 1964–1965 academic year, I was in the Botany Department's honors program. That involved sitting with each faculty member for a week or two doing selected readings. On my own I had already found Lincoln and Jane Brower's 1964 *Birds, Butterflies and Plants: A Study in Ecological Chemistry* and C.T. Brues's 1928, *American Naturalist* paper *Coordinate Evolution of Butterflies and Plants*. Butterflies were beginning to seem more viable for a research focus. When it came time to study with phytochemist Ralph Alston, he immediately directed me to a new paper in the journal *Evolution* by Paul Ehrlich and Peter Raven on butterfly plant coevolution. I was already drifting this way but this paper helped seal the deal. Moreover, I noted that the Browsers had written their synthesis paper while at Oxford with E. B. Ford, so when Fulbright Fellowships were announced the next year I applied. Likewise the Stanford group seemed like a good place to pursue butterfly research in an ecological and evolutionary framework.

Preparing for the Mexico trip in spring 1965, I spent many hours in the UT Herbarium learning to recognize plants that characterize the vegetation zones described by Martin. Through UT botanist Marshall Johnston, I met Fred and Marie Webster, Austin-based birders who knew the Gomez Farias area and knew Frank Harrison, the man who had hosted Paul Martin at his cloud forest finca "Rancho El Cielo." I borrowed wooden expedition boxes from the UT Geography Department supply room, and left via Catarina and Laredo in my hand-me-down 1961 Ford station wagon loaded with supplies for collecting butterflies, plants, lizards, snakes, amphibians, and myxomycetes for various UT collections and professors.

Arriving in Gomez Farias, I left my car behind the thatched house of Senior Vargas, Alcalde of the municipio, loaded my supply boxes on a burro led by a slight fellow named Nicholas Morales who had agreed to guide me to Frank's clearing 8 miles and 2500 ft above Gomez Farias. The walk-up on June 24 took 5 difficult hours. It was hot, and humid, plus I had been very sick and bedridden the week before. I lived with Frank and took many 1–2-day hikes into different habitat types accessible on his side of the mountain. Parts of the cloud forest grew over a vast number of limestone spires, sticking up like the statues of Easter Island. Orchids, bromeliads, and ferns covered these formations. I once became totally lost by going off-trail in that area. Luckily, Frank's dog had gone with me and showed me the way home. On one walk to ridges above and west of Rancho Cielo, I was caught

by darkness and heavy rain and luckily found an old shed at what Frank said was a former barium mine. My host expressed his extreme angst over my not returning when expected and mentioned having to haul students out of a sinkhole.

At the time, I did not know that Harrison had more to worry about than the hernia he won for his heroics saving students. On one hike, I took a wrong turn and stumbled into the clearing of squatters. They were clearly sullen and hostile so I backed out quickly. Later, I learned they had an ongoing feud with Harrison and recognized his dog. Their dogs attacked Frank's dog and me, yet these men took no helpful action. I have never before or since stared into such cold dead eyes. I carried Frank's .22 pistol in my knapsack at his urging but these fellows did not know that. After that I had the habit of stepping off trail and standing still when hearing people coming ahead. Big cats do the same I later learned. Just 6 months later these men would hack Frank Harrison to death one Sunday morning, and send their wives over an hour later to steal his belongings.

On the 1965 field trip, I hoped to sample butterflies in all the diverse vegetation zones described by Paul Martin. So, when a group of high school boys climbed the mountain to visit Frank from the village of Adolfo Lopez Mateos, home of the Chamal colony, a farming and ranching community on the southern end of Martin's vegetation map of the area, Frank said that it would be worth my while to follow them home. The Taylor boys' grandfathers were prerevolution Anglo-American settlers who went to Mexico on land grants on an agreement that they would teach Mexican campesinos new farming methods and help them become independent. When the revolution started, the men buried belongings, sent women and children to Texas, and hid out in the mountains. This way as peace came, they could quickly reoccupy houses and farms. I learned that Frank Harrison was a Canadian who in the 1930s had been a schoolteacher in the Chamal colony. He and other men from the colony had explored the mountains to the north of their village, and had come across a cloud forest containing temperate-zone trees like beech and maple from the north and *Podocarpus* from the south. It seemed an ideal climate for a Canadian and for his gardens of vegetables, flowers, and fruit trees. When the girl Frank had hoped to marry chose another man in the village, Frank headed for where I found him 30 years later.

To get to the town of Adolfo Lopes Mateos (formally Chamal), I had to walk down to Gomez Farias, drive east in a road = landing strip through cotton fields being aerielly sprayed with DDT. I then proceeded south to Ciudad Mante. I bought supplies there and drove west on the road towards Ocampo. Unfortunately, the bridge over Rio Comadante had been washed out and traffic was crossing a pontoon bridge that terminated on the other side at a steep muddy bank. I saw that it was either maintain good momentum and make it up the bank with my two-wheel drive ford or go too slow, not reach the top, and slide sideways into a raging muddy river. That was a close call with disaster! Once past that hurdle I took my time and collected butterflies along the road. Surrounded by pastures and patches of dry tropical deciduous and thorn forest, the butterflies I collected there were much as one would find as occasional rarities in South Texas. I rolled in to the village of Lopes Mateos, and met the Taylor boys at the town plaza where local kids hung

out, drank refrescos, and played music on a jukebox. That was my first time to hear the Beatles sing “Yesterday.” That music, relief of surviving the river crossing, and viewing the south end of the mysterious Sierra Madre Oriental backbone as a mist blue-green backdrop, created a pleasant moment always remembered.

Over the next 2 weeks, I was kindly hosted by various families of the Taylor clan. Seymour Taylor provided the best opportunity. His father had been an original settler in the valley and settled a ranch that sat in the afternoon shadow of an extinct volcano called “Chamalito.” He put me in the now empty house of his father, and I experienced my first kerosene refrigerator. From that base, I set fruit traps for nymphaline butterflies like *Anaea*, and spent a hot day thrashing through thorny plants to reach the sharp peak of Chamalito. My local guides were the same boys I met at Frank’s rancho. In the 1990s, I saw these boys in Austin at a Chamal colony reunion. These then middle-aged men remembered that day and were surprised to meet up again with the “butterfly guy.” Chamalito’s peak was a magnet for male butterflies from the surrounding landscape using it as a place to attempt rendezvous with virgin females (Fig. 7.7). A spectacular red and black male of *Siderone nemesis* was captured there chasing about with a swarm of males of diverse species including large *Atlides* hairstreaks. From the Taylor ranch HQ, I also followed a trail 6 miles to reach the southern edge of the tropical evergreen forest (called Paradise Valley) that Martin’s maps indicated to be a well-isolated patch separated by a belt of dry forest. This southern edge of evergreen forest was determined by how the Sierra Madre intercepted moist coastal winds. Once the backbone of ridges swept lower and westward, rainfall on the slopes and lowlands to the south was not adequate to support moist forest. Butterflies certainly informed me that I had entered evergreen conditions. Blue morpho, the tiger-patterned *Heliconius ismenius*, the spectacular *Prepona laertes* (Fig. 7.8), and many other indicators of the Neotropical realm were what I had come to see!

While based on the Taylor ranch, I drove around the lowlands collecting the edges of the evergreen forest wherever I could access it by road. I noted things like blue *Morpho* showed up whenever I entered that formation. I drove back to collect more intensively around Gomaz Farias. On July 21, I encountered a robust, sweaty, and red-faced man on his hands and knees just off the trail below the town. I had encountered Professor Bill Brown. Bill was a famous myrmecologist from Cornell University busy collecting ants. I stayed the night with Bill and his group of Cornell students, among them an undergraduate named Bob Silberglied interested in butterflies. The Cornell group provided great entertainment in Gomez Farias. Each night a crowd of men, women, and children gathered around their black light for attracting insects and laughed with delight when a gringo reacted to being bitten or stung. Without doubt, Bob would be writing a chapter for this volume had he been fortunate to live a full life. Sadly, he perished in Air Florida’s crash into the Potomac in January 1982.

I returned to Rancho Cielo from Chamal on July 26. This time I beat Morales and his burro to Frank’s by a full 2 miles. By then I was in great shape from running about after butterflies in these rugged mountains. The goal was to sample in the dry side of the range and the settlement of La Joya de Salas was the start point. I knew some of the caving club guys from my classes at UT, and they had tried to set a world depth record in repelling down the estimated 5000+ ft depth of the sinkhole



Fig. 7.7 The peak of Chamalito was boiling with hill-topping male butterflies of numerous species. One of the Taylor boys used my camera to document my presence there in July 1965



Fig. 7.8 Just as I was about to swing a 12 ft net at this male *Prepona laertes*, he exploded off his perch to chase another butterfly. His iridescent *blue* flashed in the bright sun over the canopy in the valley below Gomez Farias. I was watching with binoculars when at about 400 m out he turned and headed back. On a guess, I held my net at his original perch and was able to catch him. This species is a striking indication of evergreen neotropical forest where the host tree *Inga* is present

that dominated the center of the La Joya basin. They had packed 13 burro loads of rope up from Juamave in the desert to the northwest (NW) and below, and spent 10 grueling days in the hole before giving up 1900 ft down. I was taking sufficient risks on the surface to venture into a place with no butterflies and leaving the first rope without a guard! So I already knew about this area, but getting there from Frank's rancho was a very long walk.

Luckily, the same day Dr. Barbara Warburton from Southmost College, Brownsville, visited us and planned a drive over range to La Joya de Salas where she had contacts who might assist me in exploring the high chaparral vegetation in that sector. Warburton along with trustees of the college was then building a field station

on Frank's land and some of them had built personal cabins there. So on the 29th, I travelled with Warburton and was introduced to the six siblings of the Osario family. Their parents were not present.

I stayed in the boys' hut and food was served in the third thatched building. It took me a few hours to realize that pigs eliminated the need for outhouses (privies) and sewer system. The oldest boy, Juan Osario, guided me to low Chaparral at 7000 ft and 8 miles NW of the village. For several days, we camped in the most desolate spot I have ever experienced. At night, I could hear the church bells in the town of Juamave in the desert below. We ate a rabbit I killed with a slingshot, and some sorghum tortillas. Butterflies were abundant but the most striking was the cycad-feeding *Eumaeus deborah*. Juan and I were starving when we staggered back into La Joya de Salas. The scrambled eggs and black beans his sisters fixed for us remain my most memorable meal in seven decades!

In early August, I made a quick run to the border for shoes. (UT grants accountants would not recognize this as a travel expense!) I did not want to waste time so I turned around and went directly back, arriving at Gomez Farias at dusk. I was an hour up the logging road with heavy pack and weak-yellow headlamp. It was misting and my view of the trail was fuzzy. I did not bother to avoid a stick in the trail, and instantly felt something hit my boot. I stepped on and turned the light behind to see a gorgeous snake. Since I was also collecting herps, my first tendency was to grab it. However, the triangular head of *Bothrops atrox* (Fer-de-lance) came into focus and the folly of messing with deadly pit viper in that situation made me hesitate and leave it alone. In that moment, I learned that I needed glasses! Later I learned about this snake in Costa Rica. I realized that had the strike been an inch higher, my boy scout "cut & suck" snakebite kit actually would have reduced my chances of survival to nil as it was 9 p.m. with no hope of help until morning. This serpent injects venom as nasty as its colors are beautiful: anticoagulants, hemolytic, and protein-digesting enzymes as well as neurotoxins. Luckily, I lived on to find other ways to almost perish while working on butterflies!

Combining my Mexico experiences and the emerging literature on butterfly plants interaction, mimicry, and ecological genetics, a life of researching butterflies seemed appealing, feasible, and rewarding. But any plan to continue studying in the eastern sierras of Mexico was dashed with the murder of Frank Harrison. But I had fallen in love with tropical forests and sought them out further south. Sadly, drug cartels now make the Gomez Farias region even more dangerous for field research than it was 50 years ago.

After graduating from UT Austin in 1966, I took another brief plant and butterfly expedition to the summit of Cerro Potosi, Nuevo Leon, Mexico, using written instructions from botanist John Beaman who had done the floristics of the mountain. I was then off to the OTS fundamentals of tropical biology course in Costa Rica where I discovered the Osa Peninsula and encountered an Assistant Professor from University of Kansas, Dan Janzen. Dan's main influence on many of us was to inspire confidence in approaching biology from a strong base of natural history. The OTS experience helped me better interpret the things I had seen in Mexico as a naive observer and reinforced my butterfly bias. When our course travelled to Panama and most of the class explored trails on the Barro Colorado Island, I chose to park

myself in the BCI library to page through for the first time some of the rare and only books then available on neotropical butterflies. Great field biologists such as Phil DeVries would later fill the void of butterfly field guides for the region.

Returning to Texas in late August, I had only a few days to pack for my Fulbright year with Professor E. B. Ford at Oxford. In Great Britain, Ford was best known for his two fine books on moths and butterflies, but abroad he was known for pioneering population genetic studies on butterflies and moths that combined demography and genetics. His book *Ecological Genetics* had attracted my attention; I moved into an office just vacated by his DPhil student, John Turner. John kindly toured me through his work on races of *Heliconius* at the British Museum of Natural History in London. I helped Ford with fieldwork on *Maniola jurtina* and encountered a cast of characters ranging from Bernard Kettlewell and Philip Sheppard to Miriam Rothschild. Briefly engaged with eyespot variation in *Maniola*, I sent a reprint request to Boris Schwanwitsch in the U.S.S.R. for reprints of his papers on the nymphaline ground plan. His widow replied and sent her husband's book and reprints with a bleak and melancholy photo of his tombstone in Leningrad, the latter engraved with his idealized butterfly wing (Fig. 7.9). Ford's later graduate student, Paul



Fig. 7.9 Nymphaline ground plan on the tombstone of Boris Schwanwitsch in Leningrad. Sent to me with a set of reprints by his widow

Brakefield, soon occupied the office I vacated next to Professor Ford and, finally, a proper study of eyespots ensued.

One memorable experience was driving E. B. Ford and Theodosius Dobzhansky (Fig. 7.10) to Ford's famous study site at Cothill, Berkshire, where he and R. A. Fisher had conducted his classic studies on demography and genetics of the day flying tiger moth, *Panaxia dominula*. Ford had nominated Dobzhansky as foreign member of the Royal Society and his induction was reason for the visit. Dobzhansky was a Russian ex-patriot famous for work on chromosome variation in natural populations of fruit flies and the integration of genetics into the modern synthesis of evolution. Ford was very proud to show "Dear Doby" around, although he received constant teasing from his friend as we drove. "Henry" Ford as friends called him did not regard women, other than Miriam Rothschild, to be the equal to men intellectually or otherwise. Dobzhansky teased him that they were equal since one X chromosome was silent (the Barr body). I was not sure why Ford introduced Professor Dobzhansky as "the world's greatest horseman" to the bar tender at the pub where we stopped for lunch, but clearly it was part of their good-natured but edgy bantering. *Panaxia* images in Fig. 7.10 were the

Fig. 7.10 E. B. Ford and T. H. Dobzhansky collecting *Panaxia dominula* at Cothill, Berkshire, in 1967. Such day-flying moths must be accorded status as honorary butterflies!



ones I collected or reared from larvae found on that trip. I am pleased to have an excuse to publish my images of this unique encounter of two great evolutionary biologists in the field.

I went on a field trip to the Isles of Scilly with Kennedy McWhirter, a barrister and friend of Ford who dabbled with butterflies. Kennedy's twin brothers were the originators of the "Guinness Book of World Records" as well as being famous Scottish sprint champions. He seemed to be in their shadow and shared Ford's disdain for the Labor Party and humans bearing two X chromosomes. When a driver in our way was not performing well, it was probably "a filthy woman." As we drove southward, I heard many stories and strong opinions about global politics, WWII, and field work with "Henry." I recall Kennedy always smelling vaguely of alcohol and vomit. This was all very new for this rural Texas kid. Driving south we sampled meadow brown butterflies, *Maniola jurtina*, from Ford's various study populations in southern England. Kennedy would calculate chi-squares in his head as we sampled and would break off work to head for the nearest pub when significance was reached. I am not a great statistician but I was somehow suspicious of this approach!

Arriving in Penzance, we took the Scillonian to the Isles of Scilly. This ferry routinely specialized in transporting tourists across shallow seas and had no keel. All was sunny and fine until a brief squall hit the ship. Decks were quickly awash in vomit from hundreds sitting in park benches on deck. Below must have been hell. I survived a brief bout of nausea by moving to the stern and watching seagulls diving for the remains of many breakfast, now being poured overboard by the cleanup crew. The birds seemed to know what was coming as they had been following us ever since we sailed hours before!

The sun was shining as we pulled into the harbor on the main island of St. Mary's. Harbored in the bay was the shimmering white Royal Yacht: Someone said Queen Elizabeth was there for a celebration of sorts. The next morning I stood shirtless holding a net bag of live butterflies in the open window of my first floor hotel room on St. Mary's when the entire royal family drove by in the narrow cobblestone alley no more than 10 feet away! Prince Phillip was at the wheel of the long-bed land rover convertible. The Queen was to his left and royal kids were in back. Just past my window and up the hill was a 6 feet high rock wall on which children were sitting in wait for the entourage. The land rover was not going to make the turn on the angle Prince Philip was driving. He became flustered and stalled the vehicle. He then shifted into neutral and rolled back down the hill for another try. This time when they drove up the hill, I had my shirt on!

Much of my time in Oxford was spent in the Hope collections and library and its great holdings of specimens and literature specialized on butterfly mimicry assembled by E. B. Poulton and Hale Carpenter. Audrey Smith, Hope librarian, was pleased to have me visiting and gave me a few things to return to Professor Ford. She said that when George Varley was appointed Hope Professor to replace Hale Carpenter, Ford never returned to the collections. Audrey also gave me many reprints from the old days, a copy of the collected "Hope Reports" and the last distribution copy of a privately assembled volume "Mimicry" assembled by Poulton

for his friends: The classic three papers on mimicry by Bates (1862), Wallace (1865), and Trimen (1869)! Ironically former Oxford undergraduate, James Mallet, would later make good use of these resources in Texas when he was a PhD student in Austin.

One day Audrey Smith informed me that a finishing Oxford undergraduate was also talking about going to work with Paul Ehrlich at Stanford University. She had suggested he talk to me. A few days later someone with horned rimmed glasses and bushy red hair knocked on my door. It was Mike Singer, wanting to know if Stanford had a good academic reputation. He had applied there based solely on a publication on *Euphydryas editha* by Paul Ehrlich's graduate student, Pat Labine, but he had not heard of Stanford otherwise. With only slight trepidation, Mike was prepared to head "across the pond" and into the unknown to study *Euphydryas*. After almost half a century, Mike's focus on checkerspot butterflies has not diminished, although the red hair dropped off decades ago (Fig. 7.11)!

In August 1967, I married a girl from Midland, Texas, who had been in third grade with a cute (but not so brilliant) kid named George Bush. Christine Mast must have guessed what she was in for because after we met in 1964, I was off to Mexico or Costa Rica every summer. Our honeymoon trip consisted of a road trip through Mexico collecting butterflies when possible. I walked her up the mountain to Rancho Cielo only to find that the place was being guarded by a "pistolero" because Frank's killers were already released from the prison in nearby Xicotencatl. They were back on the mountain since no one else could care for their families! The caretaker, Lucas, was Frank's helper when I was there before. He kindly shared what little food he had. We had arrived without notice.

Our honeymoon trip continued to Mexico City and then up the West Coast where I was amazed to see large white morpho butterflies crossing the highway in low dry forest. On a narrow curvy mountain road, I drove over a triangular rock that rotated under the car, knocked the motor off its mount, and weakened the rear suspension on our station wagon. Driving north of Hermosillo on a lonely highway soon after

Fig. 7.11 Michael C. Singer conducting host preference trials with *Euphydryas editha* in a rooftop greenhouse at the University of Texas, Austin, over 40 years after initiating work on these butterflies



dusk, I felt the car shutter and swerve. As I slowed down, all hell broke loose as the rear right suspension dropped from the frame and plowed into the road. This forced the wheel back against its well and caused the car to careen all over the highway before plowing a furrow in the verge and coming to rest. I was thus stuck in a desolate spot with all my personal possessions and my new wife. Christine surely must have been wondering how she went wrong in choosing a mate! Through the night she slept while I stayed awake and alert. I turned away several offers of help after midnight from carloads of men by gruffly saying *Todo esta Bien*. I certainly did not want to reveal our vulnerability or the presence of a woman in the car.

When the sun came up, I developed a plan to cut barbed wire from the nearby fence, jack up the broken suspension and wire it into place. There were several problems with the plan. First, I needed to pull the rear half shaft forward and needed a jack that could fit under the suspension. I had just looked in my dictionary to find that small hydraulic jack was “gato hidralico” and was planning to flag down someone to ask for one when a crew working on power lines came upon our pathetic situation. The foreman took one look and was clearly entertained by the challenge. He said he had to drop off the crew and would return. Thirty minutes later he was back. He had all the perfect tools, a “come-along” to pull the rear half shaft and wheel into place and a gato hidralico to raise the suspension back into place. We wired and chained it there according to my plan, but with the jack removed the suspension’s leading edge hovered only 3 in. above the road’s surface. We could not drive fast and risk bouncing!

About 10 a.m. with sun beating down, Christine started driving at a cautious 20 mph to Nogales, Arizona, while I slept. We arrived in late afternoon, and luckily found a welding shop that fixed the suspension for \$15. According to the mechanic who first looked at the problem, this situation was not seen often because generally it was not survivable! The next day we were off to California and 2 days later we rolled by almond orchards that would become Silicon Valley and on into Palo Alto and Stanford. We were welcomed there by Mike and Pat Singer who were already settled in. Mike and I were office mates in Paul Ehrlich’s lab for the next 4 years. For me, the smell of *Eucalyptus* still recalls the dry early September on the Stanford campus when we arrived in 1967, and my wonderful sojourn in grad school studying butterflies. Paul Ehrlich was just 35 years old then and already off on his human population crusade! Paul has not diminished that effort, and the problem becomes worse by the hour.

Before my dissertation work got underway at Stanford, I did OTS post-course research in early 1968. I went first to Les Holdridge’s “Finca La Selva” just as he was selling the property to OTS. At that time, it was accessible only by boat from Puerto Jimenez and uncut forest covered much of the Costa Rica’s Atlantic lowlands. I learned that climbing spikes were not useful for studying canopy butterflies. I then went to the Wilson’s “Finca Las Cruces” near San Vito on the southern Pacific slopes of the Talamancas and found one of the richest butterfly faunas I have seen anywhere. Before OTS could acquire the Wilson property, many hectares of the forest I experienced in 1968 were to become cornfields. Sadly, a wonderful spot where I discovered males of two species of the pierid genus *Archonias* holding territories

was destroyed before my next visit as a course resource person in 1972. I was leading a group using my own map drawn in 1968. The students laughed when I got lost following my own map. We had entered a cornfield not there to be mapped on my prior visit. To my dismay, the area was greatly degraded. On that trip I met Tom Emmel, who preceded me in the Ehrlich lab at Stanford, and Woody Benson, whose fine ecological studies of *Marpesia* and *Heliconius* remain classics.

Christine and I drove from California to Texas in January, 1969, and I expanded collecting sites in Mexico south to Valles, San Luis Potosi. I returned to Costa Rica to participate in the summer 1969, OTS advanced population biology course and studied ithomiine butterfly communities as my course research project. After that my attention swung to dissertation work. I travelled around looking for checkerspot butterfly populations beyond Stanford's Jasper Ridge where Mike was focused on studying larval biology. Meanwhile Paul had raised Ford Foundation funds for tropical work and we started studies in William Beebe's New York Zoological Station at Simla, in the Arima valley, Trinidad. This is where biological studies of *Heliconius* had started in the 1950s, and where my life with *Heliconius* butterflies began as well, thanks largely to Paul's grant.

My full conversion to butterfly biology happened in just 12 years between 1954 and 1966, was reinforced by fieldwork in 1967–1969, and by exposure to Mike Singer and Paul Ehrlich at Stanford. That chapter ended almost 50 years ago! During and after graduate school and into my academic research career, many twists and turns and interesting people, adventures, and near-death experiences have come my way in the course of studying butterflies, in encouraging others in that direction and in feeding off the influence of like minds with different perspectives. We authors have all been fortunate to live during these times on planet Earth and not to have outgrown a shared professional fascination with butterflies and moths.

Lawrence E. Gilbert Jr. is a professor of integrative biology at the University of Texas (UT), Austin, where he has taught and researched since finishing PhD work with Paul Ehrlich in 1971. He was the chair of the Department of Zoology at UT from 1990 to 1999. He has directed UT's Brackenridge Field Laboratory in Austin since 1980, and established an invasive species research program there. In the mid-1980s, he developed the first biological station at Sirena in Corcovado National Park Costa Rica. Although modest, this facility has provided a base for many unique rain forest studies by an international cast of graduate students. Larry has had the pleasure of learning from the diverse talents and knowledge of 43 PhD students who flowed through his lab as advisees or co-advisees. Half of these studied butterflies in some fashion, but the remainder addressed behavioral, ecological, and evolutionary questions by studying wasp, ants, hemipterans, primates, plants, frogs, birds, corals, and parasitoid flies. He encourages graduate student advisees to work from a strong framework of natural history and to develop their own strong identities and leadership roles in biology and conservation. Larry has participated as a resource person for many organizations for tropical studies courses in Costa Rica between 1972 and 2008. In addition to continuing work on the biology of *Heliconius butterflies*, their resource plants, *Passiflora* and *Psiguria*, and interactions of parasitic phorid flies and invasive ants, Gilbert has recently initiated studies on social behavior of male white-tail deer.