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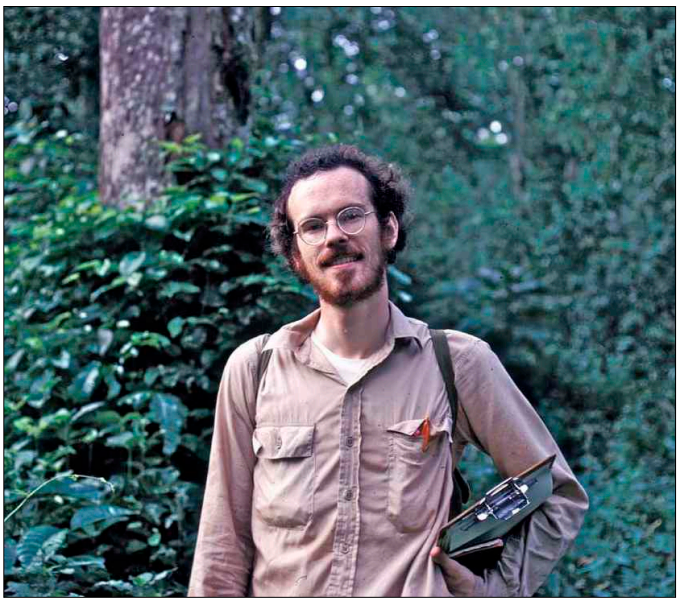
Memories Of The 1971 Field Course in Animal Behavior

Arnold Art

Art Arnold: Memories of the 1971 Field Course in Animal Behavior

A Personal and Professional Rite of Passage



Art, Kibale Forest

It's difficult to overemphasize the influence that the Field Course had on my thinking and career. Since 1971 I have often stated, or thought to myself, that the Field Course was the best single structured educational experience of my life. Before the trip, Peter Marler and Steve Green led an extended seminar in which we read papers and discussed various theoretical and practical issues. We spent nearly four intense months in Africa, at two research areas, conducting research nearly every day. After we returned to New York, we learned first hand the adage that the analysis of field data takes longer than the time needed to acquire it, and we presented our results in seminars that in my memory spanned months after our return to New York**.** As a student with no publications, I had never previously gone through the entire process of planning, executing, analyzing, and publishing the data. Owen's and my paper on Uganda kob, which appeared in 1975, was my first publication. I was very proud.

Floody OR, Arnold AP 1975. Uganda kob (*Adenota kob thomasi*): Territoriality and the spatial distributions of sexual and agonistic behaviors at a territorial ground. *Zeitschrift fur Tierpsychologie* 37:192-212.

Beyond the length and importance of the experience, however, the Field Course left its positive mark on me in so many ways. The course gave me a good first taste of expeditionary behavioral ecology field research, including the thrill of discovery, the physical and intellectual challenges, the hardships and dangers of living under primitive conditions, and even the political issues that come with studying animals in someone else's country. Although I did not pursue a career in field biology, I have interacted with colleagues who do, and defended the importance of the investment in field biology and ecology at a university dominated by medical biology. Although I have spent a life doing lab research, I think that we do the lab experiments under conditions that severely limit what the animals can tell us. There is a huge untapped reservoir of real biology that is

going unstudied because it is so difficult to do. Peter, Tom, and Steve gave me that life-long insight.

The Field Course was more than a course, it was a rite of passage, and major life event. It took me to a third world society for the first time, and the experience forced me to measure my own behavior in a totally different perspective. What should be my relationship to poor people? In what manner can I respect their humanity, equal to mine, when life has dealt us such different circumstances? How can I make contact with people with whom it is difficult to communicate?

Looking back 40 years, I see the Field Course as one example of the incredibly unique educational experience we were offered at Rockefeller. At what other institution, and in what other era, would five inexperienced students receive the financial and intellectual support to go on such a rich journey? Where else would they have been mentored closely by pioneers of animal behavior, sociobiology, and behavioral ecology?

Game viewing, Queen Elizabeth Park

Peter was, of course, our guru. We worked to understand and appreciate his ideas and theories. We emulated his attitudes. We internalized his demand for excellence. We

teach our own students what we learned in the Field Course and at Rockefeller, and are enormously thankful and proud of the tradition of achievement that we inherited.

Arriving in Entebbe

One of my strong memories was the landing in Uganda on April 25, 1971 (we left NY on April 23, somehow a date that I have remembered ever since). The approach to Entebbe was daunting. We flew through severe lightning storms, and landed at night. As we stepped off the plane, we were met with a wall of humidity, and heard the sizzle of the insects in the bug lamps on the airfield. We had obviously arrived in a very foreign place. Then, moments later, my wife and baby were whisked off in a minibus for their hotel (the Apollo) into the dark night. I was in distress because I did not anticipate the quick separation, and my emotions were heightened by the strangeness of the dark land to which we had come. Even as I write this I feel the emotion again. I was wide awake for the whole first night in the student rooms at the Makerere University, and was quite relieved to be re-united with Caroline and Jennifer the next day.

Driving with Owen to QE

Owen and I drew the assignment to drive one of the newer Land Rovers to QE from Kampala, not the ancient one that we eventually used to drive to the kob lek every day. The drive turned out to be a several day experience. We left Kampala, but within an hour or two the car started to jerk down the road. We stopped at a village, where the local mechanic (his tools were a screwdriver and hammer) diagnosed the problem by feeling the temperature of various parts under the bonnet. The ignition coil felt warm, so he installed another one that he had (no parts store for miles, so who knows where he got it). The connecting wires of the "new" one did not connect properly, so I remember that he whittled wooden triangular pegs to wedge the wires into the holes where they were to make electrical contact. That got us going again, enough to return to Kampala to find a city mechanic. In Kampala, a British guy at the car place told us that they work on Uganda time, so I think even with our impatience the mechanics got around to fixing it a couple of days later. We set out again, and got much farther, but the clutch cable snapped

One of the trusty Land Rovers

somewhere in the middle of Uganda, leaving us unable to shift easily. We crammed it into a reasonable gear, maybe second, and drove slowly to a town where another mechanic fixed the cable. Owen will remember the negotiation for the price of the repair, which we laughed about for months afterward. The mechanic pointed out that his expertise had been a real life saver for us, which was true. Owen pointed out that our lives were not worth terribly much. Somehow we agreed on a price and completed the trip to QE. Given the dysfunctional phone system in Uganda at the time, we had been unable to communicate with the rest of the group who had arrived in QE well before us. We finally pulled in, several days late, all of us greatly relieved that we made it.

Studying Kob with Owen

Prior to our arrival in QE, we were worried that we would not be able to recognize the kob individually, so we made bows and arrows with the intention of marking the animals with paint-tipped arrows. We practiced briefly at Kanyawara. To our great relief, and no doubt to the kobs' as well, the arrows were not necessary, since the kob had various marks and broken horns that we could use to ID them. We decided to put in stakes at the kob lek to mark positions on a grid, so that we might map the behavior and territories of

Kob males sparring at the staked lek site, Queen Elizabeth Park

the kob. We had to use a limited range of colors (mostly black and white) to mark the stakes, since Owen is colorblind. Several of us went out with Africans to cut the stakes from a stand of thin trees, using pangas. Our skill with the pangas was dismal, and we

had difficulty chopping down the trees. I remember the students having extensive Africans made short work of the tree cutting, and we returned to camp with our stakes. Out on the top of the ancient Land Rover day after day, we felt the rhythm of the lek, the comings and goings of females and males, and the trade off between the high-risk high-reward of the central territories, versus the low-risk low-reward of the peripheral males. Our paper was really only a snapshot of the lek, but we had enough data to say something.

In the six-week period, we went out two nights with the night vision scope to measure behavior. The kob were as active at night as in the day, and we were impressed that our daytime observations were no doubt a severely limited subsample of what the kob actually do. Atop the Land Rover in the wee hours of one night, the kob suddenly burst into a chorus of alarm calls, which we inferred meant that a lion or leopard was near. I swung the night scope back and forth to find the danger. The night scope showed only a small window of space, so we had no idea where the lion could be. Owen and I dove for cover into the Land Rover, battened down the hatch, and waited until we screwed up our courage to emerge again into the black night. We were alive but had a gap in our data.

Mzee Tom, the Task Master

We all have our stories about Tom, the unique monkey man of the Kibale forest, a true pioneer of primatology. I am indebted to Tom for many things that I probably can't remember, but one incident stands out. He looked over my field notes after the first few days of the course, and let me know what a piece of crap they were. They were haphazard, vague, and hopelessly inadequate. His criticism made me shape up, at least in my own mind, and in the 40 years since, I have forced myself (and encouraged my students) to be extremely thorough when writing down what I did in the lab, how the results came out, what they might mean, and plans for the next step.

Mzee, Kibale Forest

At the time of the field course, Tom was in his 30s. At NUTAE**,** one of the African workers called him "Mzee", a term reserved normally for a gray-beard. We thought that hilarious, and called him "Mzee Tom" after that.

Owen Floody: Course Comments

I always have felt extremely lucky to have been at exactly the right place at the right time, that is to have been an early graduate student at Rockefeller at the time that this unusual trip was being planned. The entire package of experiences related to the course (including coursework in Minnesota the previous summer, coursework at Rockefeller, the field course itself, and the experience of preparing for publication some of the results of our field work) have affected me in many ways, both professionally and personally.

Owen and Art with bows and arrows for marking kob in Queen Elizabeth Park

To deal first with the easy and concrete, I suspect that the training I received on the course, and the publications that resulted from it, had very significant benefits for me as I navigated the job market during the period leading up to graduation. I know that the folks here at Bucknell were looking for someone who could bridge the gap (or possible gap) between the physiological end of psychology and their highly regarded animal behavior program. My experiences in the lab course provided some suggestion of my ability to do that, and almost certainly played an important role in their decisions regarding my candidacy.

Even though these decisions were made once a long time ago, they certainly have impacted me. But purely by helping me to secure this job? It seems very clear to me that the influence extends far beyond that. For instance, the field course occurred at about the time that I was casting about for possible thesis topics. Eventually, I settled on a set of studies that looked at the effects of sex hormones on the aggressive and courtship behaviors of hamsters. In the course of those studies, the lessons learned from the field course were extremely important. Even though I was not studying behavior in the field, I think that I did bring to these studies an appreciation of and concern for patterns of natural behavior that enriched the studies and that might have been lacking without the exposure to behavior that the field course provided. Further, I think that this influence has continued throughout my career. One possibly amusing illustration is provided by some work that I am doing now with a graduate student interested in the neurochemical control of behavior. Sometime back in the early '70s, probably after the field course and

Kob sparring, Queen Elizabeth Park

while still exploring possible thesis topics, I made an appointment to get Peter's reactions to some studies that I was thinking of conducting, looking at hamster aggressive behavior. One of Peter's recommendations was that I consider focusing on relatively simple forms of behavior that could serve as indirect measures of aggression. The specific example that came up was that of flank-marking in hamsters.

Now, that is not a recommendation that I pursued right away. The part of my thesis that looked at aggression instead focused on the postures leading to and embedded in actual fights. But I never forgot the advice. Recently, we became interested in the conflict that male hamsters might experience as they begin to interact with females, animals that may be lots of fun when in estrus but are distinctly risky prospects at other times. In this context, it seemed appropriate to look for situations that are simpler than a full-blown social interaction, perhaps situations that might present subjects with very specific stimuli and look for effects on very specific forms of behavior that are strongly tied to

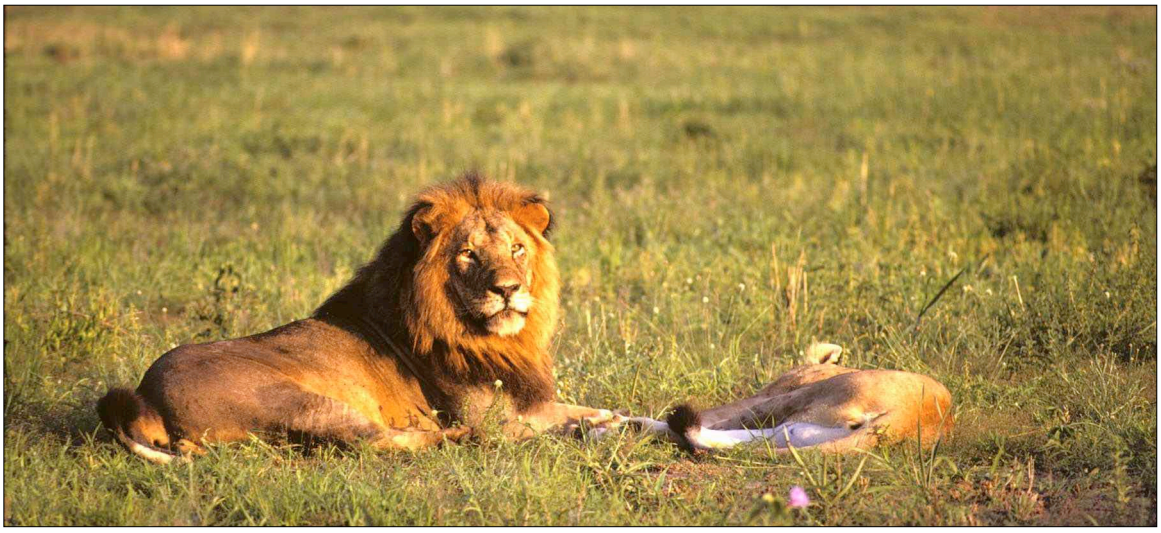
specific motivational states. As part of this project, we are finally getting around to using flank-marking in the way that Peter suggested roughly 40 years ago.

As I suggested, I look back almost as fondly on the phase of data analysis and writing that followed the lab course as I do upon the field work itself. As I recall, this phase extended over at least a full year and, like the other aspects of the course, involved some serious work. Still, it was a privilege to have as a guide and critic the editor of the journal in which the products of this writing eventually appeared. This access permitted us (or at least me) to remain a little longer in blissful ignorance of the more conventional process of reviewing and revising articles, into which personal, sometimes downright nasty, comments by reviewers can intrude, and seemingly do intrude to a greater extent than I would like. It's also the case that the articles for which I was able to claim some credit reflected very well on the course. Certainly, these are among the articles on my resume of which I've always been most proud. I'm not sure that I would admit to my remaining output having headed monotonically downhill from there, but I'm not sure that I would completely dismiss that possibility either. I would think that to get this sort of output from studies of about 5 weeks by students who were learning to do field work and

Mangabey, Kibale Forest

didn't always arrive in Uganda intending to do the work that eventually occupied them must make all of the organizers of the field course extremely proud.

Last but not least, the field course was a wonderful experience for me personally. The work was absorbing if difficult and sometimes a bit stressful. I think that all of this became apparent to me when I began to see monkeys passing through the forest overhead in my dreams. The setting was amazing. Regardless of how well or poorly the observations of a particular day were destined to go, you were assured of the opportunity to spend the day wandering through an absolute wonderland. This aspect of the course seems to have imprinted me, as the landscapes and animals of eastern and southern Africa continue to attract me to a greater extent than any of the competition.

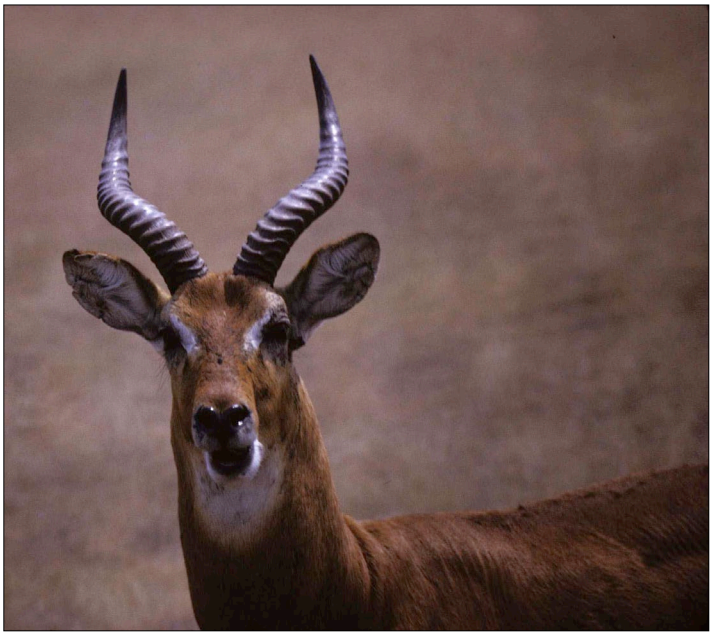


Lion pair, Queen Elizabeth Park

The course had many great moments, only a few of which can be mentioned. Some revolve around our menus, especially the great variety of creatures that found their way into the matoke-based stews that Karen and her crew devised to sustain us at Kibale. Marginally related was "the night of the ants," the time that the main dining/working building in our camp at Kibale was invaded by a column of hungry army ants. This triggered some of the faster movements seen during the course, but also must have left this structure much more pristine than ever before or after. Some personally memorable moments revolve around various social interactions, including both the success and gaffes that I made in trying to employ the Swahili that we had studied during the year leading up to the course. I also discovered in the course of these interactions a personal ability to bargain like an expert, but only when I had no interest in the object at hand or when I was bargaining with someone else's money.

The latter lesson emerged from a breakdown of our ancient but beloved Land Rover, which forced Art and me to at least go through the motions of bargaining with the mechanic, comparing the value of our lives to the possible costs of repair. The fact that the cost was going to be passed on the auto rental agency gave us so much comfort and freedom. While on the subject of transport, the field course had comic moments, some due to the fact the Land Rover's cabin rested at an angle relative to the chassis, causing some pedestrians to dive for safety as we headed in their direction. And it even had a chase scene, as Art's and my vehicle was pursued at breakneck speeds by a seriously displeased Tom. I guess that we may just have had the radio playing so loudly that we couldn't hear him honking behind us.

So, bear in mind that the author of these comments has a memory that his wife, the memory expert, views as nearly justifying a diagnosis of amnesia. If even I have so many and such fond memories of the field course, it must really have been something!



Uganda kob, Queen Elizabeth Park

Beverly Greenspan: Some Recollections of the Field Course

I recall this course as an extraordinary set of experiences that has affected my views of almost everything I have done since. I had had romantic ideas about the richness and complexity of the natural world and the fascinating behavior of other species, and discovered that these were even more rich, complex and fascinating than I had imagined, but also learned that disciplined attention and careful documentation were absolute requirements to learn anything worthwhile.

Beverly, Kibale Forest

It was a privilege to follow Tom Struhsaker and learn how to see the monkeys, birds and insects and understand what they were doing, while trying not to fall into elephant footprints filled with water, since I was usually rushing to keep up with the other members of the group who were faster than me and had longer legs! Art Arnold and I studied the army ants raiding and emigrating. We calculated that these were one of the major predators in terms of biomass taken in the forest, though the prey consisted predominantly of other insects, especially caterpillars, not vertebrates. I remember that one of the continual sounds of the forest, besides the bird and insect songs, was the patter of caterpillar feces on the leaves. One night army ants raided through our camp, and Peter Waser joined me in the tent I was using, because his assigned tent was less ant-proof. Our finding that the predatory behavior of these ants did not include dismembering primates was not violated that night. However, Art and I found that wearing rubber boots was not only helpful in mud but helped prevent ants from climbing up our legs when we were collecting prey samples or marking the ants. The ants could not climb up the rubber but otherwise could reach the tops of our legs with astonishing speed, and bite very painfully, unerringly selecting, Art found, areas of particular male vulnerability. (I learned some new swear words from him.)

Mist netting showed what birds were using that level of the forest. It was awe-inspiring to hold a living bird while weighing and measuring it. The birds were probably the most beautiful organisms we worked with, though the butterflies (often gathering where someone had urinated on the road) were beautiful and in great variety, too.

Four species of butterflies along the forest road, Kibale

Some of us had closer encounters with certain rain forest inhabitants than we were really comfortable with. In the forest I sometimes used a leaf as a handkerchief when I needed to blow my nose. Perhaps as a result, I realized one morning I had a tick in my nose. Steve Green advised me not to try to pick at it, as I could end up with a serious infection if it was partly pulled off. So I ignored it until 3 days later when I blew my nose again while examining ant prey pieces and the tick, now replete, popped out. I put it in a vial of alcohol and kept it for some time but I realized there was really no point in keeping it and discarded it eventually. Peter at one point had an insect crawling around inside his ear. This was so annoying to him that he asked me to try to remove it with the fine forceps we used to handle insect material, but I was afraid of injuring him as the forceps had sharp tips. So Peter poured *waragi*, the local liquor, in his ear, which seemed to do the trick. (Many years after, as a medical intern in the ER I did remove foreign bodies from the ear canals of a couple of patients: a wad of cotton from a swab, in one case, and a plastic plug from the top of a Bic pen, in another, but never any insects.)

Steve let it be known that he was interested in collecting snakes and local people brought them to our camp. All of them were venomous species. I was impressed that Steve seemed quite nonchalant about handling them. I used to look at sticks on the path when walking on the forest trails hoping one of them would turn out to be a snake and occasionally it did, but most of them disappointingly, were just sticks. When I did, rarely, see a snake in the forest, I never tried to handle it!

It was wonderful to be able to spend all our time learning and working with our projects. Our meals were prepared for us and we really had no other responsibilities to take up our time. This is a luxury I have never had at any other time in my life.

At the end of our 6 weeks at Kanyawara in the montane rain forest, I was sad as I felt there was so much more that I was just starting to learn and the sunsets over the Mountains of the Moon were so spectacular. Karen Minkowski gave me a basketwork tray that she had been using in our camp kitchen and I still have it. It sits on my kitchen counter to hold a hot object or a tomato that needs to ripen. And I think of the field course whenever I look at it.

Pius (center), chief cook at Kanyawara

The course was only half over after we left the rain forest, of course, and the second half in the savannah , at what was then called Queen Elizabeth National Park, was also exciting, though the food was not as good. We were taught not to get between hippos and the water, when walking on the paths in the evening, but the hippos mostly kept their distance. The wart hogs, however, let you come very close. Jose Torre-Bueno and I worked with the African Fishing Eagles, observing their territorial behavior and courtship. We learned about their calls (the species name is, appropriately, *vocifer*) and observed spectacular tumbling flights of pairs of birds. Years later, while teaching at Bowdoin College, I filled in for our ornithologist, who had taken a sabbatical in New

Zealand, as acting director of the Kent Island field station in the Bay of Fundy, for one summer. While there I briefly studied the Great Black-backed Gulls that were breeding there, and their vocalizations. The Field Course experience was very helpful to me then.

Of course, after the Field Course, I eventually got my Ph.D. studying a fiddler crab mating system, using the skills of observing and documenting behavior that I had learned in the Field Course. After this, I taught biology, including animal behavior, at Bowdoin College, for 7 years. So the skills, attitudes and interests that came out of the Field Course continued to be useful to me. After this, I had a change of career and went to medical school. I am now a neurologist and on the faculty of the University of Connecticut. But, although I am no longer in the field of animal behavior, I find that things I learned in the Field Course shaped the way I look at behavior and the function of the nervous system, and has contributed to my interest in treating people with brain diseases that alter their ability to function in their physical and social environment, and to the way that I observe them. Meticulous observation and documentation are just as important in medical practice as in animal behavior research.

I am very glad that I got to participate in the Field Course. It was a pivotal part of my education, and I am grateful to everyone who taught in it and who organized and obtained funding for it.

Jose Torre-Bueno: Some funny stories

You asked about the influence of the field trip on me. I did not pursue a career in field work but the trip to Africa greatly influenced my environmentalism. The following summer Susi and I went back to Africa as tourists with Ron and Pat Larkin. The wildlife in Africa made a lifelong impression on me.

Jose on campus before departure to JFK

Turning my thoughts to funny stories about Peter there are two that stand out; one I'm sure you know the other is something that I wanted Peter to not know at the time. I'm sure you remember the story about the lecture poster for a lecture Peter gave that had a picture of a chimpanzee and somebody showed it to a bar in Africa and told them the speaker was the chimp so they named the bar after Peter thinking he was a chimp!

The other story is something that I fortunately did not have to tell Peter. The year I entered Rockefeller I went to Guyana to get field experience by helping Carl Hopkins with his thesis research. When he finished at the end of the summer we went to the airport to fly back to New York. As we boarded the plane Carl went almost hysterical when he realized he had left the trunk with all his data at the hotel. He told me to try to hold the plane and jumped in a cab to rush back. I stood in the doorway but they took away the stairs and pushed me into the plane. I wound up in New York with all the scientific equipment, Carl's sister who had been visiting him and Susi. When we entered customs I discovered that the papers that showed the equipment had been brought out of the country were with Carl. Customs was about to confiscate all of it and I had this image of having to tell Peter I was back but had lost Carl, the data and all the equipment. At that moment Susi's father showed up with a letter and customs let us in with everything. It turns out that her father had noticed a stolen car abandoned and reported it and the owner was the head of customs in NY. He gave Susi's father a note telling his staff to facilitate her arrival. I returned all the equipment to Peter's lab and never did tell him how close it came to being confiscated.

Deep in discussion, Kibale Forest

Peter Waser: Seven short reminiscences

1) The unpublished field study

Peter, Kibale Forest

The Ugandan field course organized by Peter, Tom Struhsaker, Steve Green and Karen Minkowski set the course for my professional career. 2½ years into my stint as a graduate student, I was seriously floundering – Don Griffin had been enormously generous in letting me try to find a thesis topic far outside his main interests (I thought I could find "command fibers" controlling species-specific displays in fiddler crabs), but I didn't have the background or, frankly, the maturity to complete it. In 1970, after Peter mentioned the possibility of such a course being taught, I managed to escape to northern Minnesota for a preparatory summer ethology course taught by Lew Oring – itself a revelation, as Lew let me collect data on spotted sandpipers and I discovered that I had infinite patience for sitting in a blind watching animals do not very much. It was just a taste of what would be wonderful about the Rockefeller field course.

Fieldwork in Kibale, and later in Queen Elizabeth Park, was love at first sight, discovering the mother lode, a match made in heaven. It was hugely productive for me – the Kanyawara "mangabey experience" led directly to my thesis research (and years later, to the opportunity to guide a superb Ugandan PhD student, William Olupot), and though I haven't done research in Kibale myself for 3 decades, I'm still publishing mangabey papers. The 6 weeks in Mweya following bushbuck gave me my first publications and, even better, contacts that later allowed me (and eventually another excellent student of mine, Scott Creel) years of work on Serengeti mongooses. There's just no way to overstate my appreciation for those 3 months in 1971.

But the mangabey and bushbuck projects weren't the original plan. My memory is that each of the 5 students had to devise a project proposal, and I chose something to do with hyraxes. I was much taken at the time with John Crook's comparative papers on weaver

finch behavior, and on the 1966 Crook and Gartlan Nature paper suggesting relationships between aspects of primate social behavior and ecology. These papers suggested something novel (to me), namely a framework within which descriptive natural history could become something more like a predictive science. I eagerly devoured Cloudsley-Thompson's *Zoology of Tropical Africa* –the only book on the topic I was aware of – and somewhere in there I found a mention of an obscure group of mammals that no one knew much of anything about (which put them high on my list immediately, I had no thoughts of practicality) and that occurred in a broad range of habitats. I would study forest hyrax in Kibale, rock hyrax in QE, and then – best of all – I'd climb the Ruwenzori and look at tree hyrax living above tree line, in rock hyrax-like habitats. No, I didn't have much of any ideas about hypotheses, or for that matter about what behaviors I might have any chance of seeing. But I knew what appealed to me. Bless Peter (and Tom) for never telling me that there were no tree hyraxes in Kibale, or that the rock hyraxes in QE are found, if at all, in an inaccessible part of the park.


Mary Sue, Bigo hut, Ruwenzori

I never saw a hyrax on that trip. They did provide the practical reason for my contacting Hal Buechner at the Smithsonian and arranging to borrow a first-generation night vision scope, which stood me in good stead watching bushbuck (it also let us watch canoes crossing Lake George at night, who knows what they were smuggling). And Mary Sue and I did spend 5 days in the Ruwenzori after the course, probably the most demanding, exotic, and wonderful treks I have managed in my entire life. And one night, at 13,000' outside Bujuku hut, we heard those tree hyraxes screaming. That was *my* "capstone" experience…

2) KLM's sextant

The draw of Africa was, of course, not just as a source of a thesis topic that would rescue me from my floundering. The most immediate source of my personal fascination for the continent was certainly John Emlen, my maternal uncle. Never mind that I had only met him two or three times in my life, and that the time I remember most vividly was an interminable drive down to the San Diego Zoo when I was eight years old, which he prolonged by having my father stop the car to point out that some of those birds out on the mudflat had straight bills, and some curved down, and some even curved a little bit up. I wanted to go to the zoo, and could not imagine why anyone should be interested in

something like which way bird bills pointed. Eventually, family stories about Uncle Johnny and gorillas did leak into my consciousness – but that wasn't the only attraction of Africa. After I graduated from high school, I spent a year in Geneva learning French; part of the time I had a roommate from Nigeria, and I started going to weekly meetings at the "Centre Universitaire Africain". My naïve understanding of international politics was radically changed by listening to African students discuss the wave of change sweeping the continent. And on top of that, I read Saint-Exupery – the mystery, danger, romance of flying across the Sahara, for a 17-year-old, was best described as "très impressionant".

KLM flight over the Sahara sand dunes

And so was that flight from Amsterdam to Entebbe. The crystal-clear view of Italy's boot and the Mediterranean, the Libyan coast and the vastness of the Sahara, the huge rock formations and the sweeping, subtle patterns in sand were everything I'd imagined. And the high point – or one of them – was that somewhere over southern Libya, we were invited up to the cockpit, where the navigator showed us the sextant set into the roof of the jet. Yes, there was a radio beacon at the Sudanese border, but there was no certainty that it would always be functional, and it's always nice to be able to check your latitude. My memory from later that day is of gradually darkening skies, eventually totally dark below us except for vast grassfires, an unimaginably remote and different world. As we traversed Uganda, the grassfires were more and more eclipsed by lightning, not close, but everywhere around the horizon. And when we landed at Entebbe, there was that physical wall of humidity, that immersion in the organic scent of the tropics and – my clearest memory – the continuous staccato buzz of the electric insect lights, immolating an infinitesimal fraction of the immense cloud of lake flies.

In the cockpit, KLM flight to Entebbe

3) Steve and the Entebbe Botanical Garden…

We students had spent a lot of time preparing for Africa, we thought, reading Basil Davidson's history of the continent and Nyerere's "On Socialism", hearing a friend of Steve's discuss East African labor movements, and (my memory is that Karen arranged this) hiring a young Tanzanian, George Mwangosi, as a kiSwahili tutor. I still have my textbook, published for the New York area ("Unatoka wapi?" "Ninatoka New Jersey"). Little did we know how little the language was actually used in Uganda. It's become even rarer there now, in 2006, when I was most recently there, you had your choice of English or Luganda in Kampala ATM machines, and in Fort Portal (where there's a new wooden statue of Sir Gerald Portal) one hears only English and Rutoro. But one of my first enlightening experiences was Steve's driving the rented VW van to see the Entebbe Botanical Garden on our first day in Uganda, and getting lost. Steve stopped and one of us (perhaps Art?) did his best to ask something like "Tafhadhali, Botanical Gardens wapi?" – the response being, "How can I help you, sir?". Steve eventually talked a young woman into guiding us to the Botanical Garden, in exchange for a ride, and we may have gotten there, because there were trees, and in the trees Steve spotted a troop of colobus. This was so exciting to all of us that Steve neglected to completely stop the van and so drove, slowly, off the road and into the ditch, where the van, gracefully, tipped onto its side. No one was hurt and, as is usually the case in East Africa, ten helpful people immediately materialized and picked the van back onto the road, but the young woman declined Steve's offer for a continued ride.

The Botanical Garden still exists, and is still inhabited by colobus, and the adjacent Entebbe zoo (right) has been beautifully renovated by the Goodall Foundation and others and sports both free-ranging vervets and a troop of De Brazza monkeys that evidently left their cages during the Amin era and now happily range freely along the lake. In 2004, stuck in Entebbe by a 12-hour flight delay and wanting finally to actually see the Botanical Garden, I was wandering paths in the area when I was approached by a Ugandan who offered to give me a tour. He turned out to be a grass-cutter employed by the Garden, he'd worked there for most of his life, and it became clear that this was a source of great pride. He's taught himself the Latin names of all the trees, he told me their medicinal uses and how they were

Vervet monkey, Entebbe Botanical Garden

pollinated, he commented on what a tragedy it was that the current director was not maintaining the seed library that used to be there -- and after a wonderful three-hour tour, when I offered him a beer, he demurred, saying that no, this was not something that needed payment. What an ambassador!

One more Entebbe-related story. I remember Bell beer from 1971, but Nile beer may have been its local competitor even then. In 2004, there was a billboard outside the airport terminal reproducing a woodcut of Grant and Speke, with the company slogan, "See why they searched for the source of the Nile!".

4) The Kanyawara waragi cure

I grew up with family camping trips in the American southwest and did a fair amount of backpacking as an undergraduate, so I thought I was pretty darned ready for life in the bush. In fact my first impressions of the accommodations that Tom had built for us in Kibale were that they were positively palatial – canvas tents you could stand up in, an elegant thatch-roofed mess hall and meeting room, with the forest right out the door. And there was "help"; I can't remember how many people were hired to help run the

Kanywara camp

camp but one I do remember was named Tibirikiye. I remember him well because one morning I managed to lose my wedding ring in the grass. I have big knuckles and I had

never imagined it was even possible to get the ring off over them, but that wonderfully soft Kibale rainwater interacted with soap so nicely that it just slipped off without my noticing. I realized midday that I'd lost it and convinced myself that there was no way in hell I would ever find it again – but when I returned home, Tibirikiye had found it in the grass and handed it to me. How many months wages would that have been worth?
In any case, I loved our Kanyawara camp but discovered that there were some chinks in my bush "bravado". One evening I woke up with the feeling that some small insect had crawled into my ear. It was that time of night when it's easy to convince yourself that, I don't know, it was actually a tick, and it probably carried some unknown virus, or – it was *loud* – it was walking on my eardrum and was about to pierce it, and I would never hear again – etc., So I dragged myself awake and, I can't remember how, found the liquor stash, poured out a bit of Uganda *waragi*, and then poured it in my ear. The insect sounds disappeared, and even better, I felt blissfully drowsy and went immediately back to sleep. It was truly a miracle cure, and still the only use of the aural route of drug administration that I'm aware of.

5) Interactions with authority figures

Steve was the old, experienced TA, and politically committed to egalitarianism, but we competitive underlings chafed nevertheless – and it didn't help that when Steve offered an opinion, which he did often, he was nearly always right. So two events stand out in my memory. The first was walking with him and Owen into the forest in Kanyawara, hearing some chirps, and having Steve instantly declare, "redtails". After a few instants' search which made it clear that there were in fact no monkeys in the vicinity, he at once recovered, declaring that he'd of course meant "redtailed greenbuls". I do not know whether such a bird in fact exists, but not only was this an impressive "save" but years later, Chuck Brown and I recorded redtail, blue monkey and avian chirps in Kibale and Chuck did psychophysical tests with captive monkeys and students to show that blue monkeys perceived bird chirps as more distinct from monkey chirps than the monkey calls from each other, while undergrads did the reverse.

Redtail monkey, Kibale Forest

The second Steve interaction I particularly remember was at Mweya, when he spelled me for a couple of hours in following bushbuck. I had already developed a catalog of spot patterns to recognize individuals and had made a good start at mapping each

animal's home range, and I showed Steve which individuals were due for the next focal sample. A few hours later, Steve drove up and informed me that he'd found the animal, but its pattern didn't look the way I'd drawn it. Not only that, but it wasn't in the home range I said it would be in either.

Bushbuck, Queen Elizabeth Park

Then there was Tom. Tom had created a certain level of unhappiness by communicating to us, months before the course, that there would be no wives or camp followers. He was, of course, quite right, but that was not my opinion at the time, so I may have been prickly about other things. One that I remember was a statement, probably over a beer, at Mweya. Provoked by having to arrange to repair a flat tire for one of the course Land Rovers (could it have been my fault?) – he said that we students were being coddled too much and were not doing any of the work. I felt (rather vehemently) that spending however many hours it was around the clock following bushbuck was plenty of work. It was not until I actually had to arrange logistics for myself a year later during my thesis research that I was forced to admit the validity of Tom's statement.

The other prickly reaction of mine that I remember was to Tom's requirement that we go through our field notes systematically at the end of each day and extensively index and catalog them for later retrieval. I harbored "Nazi" thoughts each time I dragged myself back to camp after 10 hours of following mangabeys and had to blearily figure out what I'd written before crawling to bed. But this was the single best piece of advice I ever received about fieldwork. Not only did it make numerous analyses possible for a thesis – but it's meant that even decades later, I could give the index to undergrads wanting some experience with data analysis and ask them to see whether some pattern mentioned in the literature was present in that dataset. Maybe I'll even do that myself in retirement, it's called data mining these days.

6) Campground pests

At Mweya, we were thoroughly indoctrinated that "hippos are the most dangerous animal in Africa", a matter of no small importance because Mary Sue and I camped in a 3' high canvas Boy Scout tent that she had purchased in Nairobi. The hippos came out and grazed around us every night, and we could hear them munching and, we thought, occasionally stepping daintily over the tent's guy ropes. And buffalo -- every morning,

we had to carefully gauge the distance between our walk to the campground choo and the buffalos that would be peacefully feeding nearby. It was reassuring when Peter, Judith and family set their tent up down the way and helped divide the buffalos' attention… But there were other sources of excitement too. I particularly remember working up my data in the NUTAE library (I think we gave talks to each other at the end of the 6 weeks?) when the door swung open, a baboon burst into the library, ran around the room and then out again, with NUTAE staff in hot pursuit.

Peter checking out elephant footprints, Queen Elizabeth Park

For Mary Sue especially, it was the Mweya elephant that provided excitement. There was a daily fish market below the staff housing on the Kazinga Channel, and she and Carolyn Arnold often walked down in the morning to buy dinner – Tilapia fillets. They cost, as I recall, a half shilling or about 8 cents – but they also required a sharp lookout for the young male elephant that sometimes appeared and gleefully chased everyone into the nearest building. When we were in our tent, of course, there was no building nearby, and one of the elephants began to visit us after a week or so and help himself to our groceries. Mary Sue remembers him tossing down a whole pineapple, a bag of pili-pili peppers, and another of flour, and then going through (and rejecting) our sack of dirty laundry. My memory is of hearing a noise outside the tent in the middle of the night, carefully unzipping the door and seeing no elephant, but then realizing that those telephone poles immediately to the side of the tent hadn't been there before, and that we were virtually under the elephant. I zipped up the door.

Mary Sue and Peter, picnicking in Queen Elizabeth Park

Mary Sue was party to more whimsical set of encounters,

with hippos, because she wanted something useful to occupy her time at Mweya. She teamed up with Clive Marsh, who I believe was a beginning grad student at the time, and who was doing regular bird surveys in the Kazinga channel with a motorized dugout canoe. He needed someone to pilot the boat while he counted, and Mary Sue was just the person. She remembers its similarity to the Jungle Boat Ride at Disneyland, being right down at water level with the hippos, though happily no crocodiles at the time (they've since colonized the lake, having somehow gotten up the Semliki River from Lake Albert). Towards the end of our time at Mweya, she, Clive and I managed to take a few hours, borrow an umbrella from the Lodge, and take it and a picnic out to one of the little islands out in the Lake – perhaps the only picnickers ever to use that site, though we liked to imagine that perhaps Speke had done so before us.

7) Memorable people

Clive later studied red colobus along the Tana River in Kenya and helped establish the Tana River Primate Reserve, later doing prominent conservation work in Malaysia and, sadly, dying there of meningitis. There were other extraordinary people we met at Mweya, too. Michael and Patricia Fogden, then trying to understand how warblers stored enough fat to get across the Sahara – they subsequently moved to Costa Rica, where they've become well-known photographers and conservationists at La Selva. Keith and Sue Eltringham – Keith directed NUTAE and (like Tom) managed to stay on through much of the Amin debacle, fearlessly reporting the killing of elephants by the military, mentoring Ugandan students even after one of them was murdered by Amin's soldiers, demonstrating such obvious commitment and love for the Park and its people that he was eulogized by Ugandans in the Kampala newspapers when he died a few years ago in Cambridge. And Jon and Hazel Rood, just beginning the banded mongoose study that discovered that cooperative breeding wasn't confined to birds. I remember Jon coming to me in Kibale in 1973 and asking, "Have you ever seen primates do anything like this?" -- referring to babysitting by males when the group was off foraging. The wonderful photo of mammalian cleanerfish below was not taken during the field course, but was taken in Mweya and sent to me two years ago by William Olupot.

Banded mongoose scavenging a warthog, Queen Elizabeth Park

At Kanyawara, I got to know John Oates, who's spent his career trying valiantly to preserve forests and primates in Nigeria and Sierra Leone. Other contacts were more local – in 2006, Mary Sue and I asked a white-haired man on the street in Fort Portal how to find a place for lunch, and he looked at me and said, "were you here during the Amin times? I had a photo shop then and I remember an mzungu who looked like you coming in with monkey pictures to develop…"

John Oates

Steve Green: How the SPUTnik experience affected me

My ***S***tudents ***P***eter ***U***ganda ***T***om memories are a jumbled series of fragments and vignettes, a few of which might be of interest to others.


Steve, Queen Elizabeth Park

Pre-departure at Rockefeller
I was apprehensive that it was going to be difficult to be both a peer/colleague as well as an instructor; I was torn between my social sensibilities and the responsibilities of the position. Fortunately my fellow graduate students (I was still in the throes of completing the last bits of my dissertation) accepted that role with good humor and graces although there were some occasional rumblings, especially regarding Peter's decision that we needed a logistics coordinator and that Karen (who was working for Peter) was the right choice given her previous experience in Uganda and as an administrator at the Institute for Research in Animal Behavior (IRAB) at the Bronx Zoo. (This was the unit of NYZS that later developed into WCS, to which Karen returned to work DECADES later).

Amsterdam layover
The Indonesian rijstaffel meal was the first time I'd experienced a banquet of that kind and I've loved food of that ilk ever since. The other novel experience was Peter dragging me, not that I was unwilling, first to an erotic art museum and then to what we know today as a "sex toy" store. We spent an inordinate amount of time inspecting an enormous variety of condoms to give Tom, Peter finally selecting a rooster's head complete with cock's comb and beak at the tip as most appropriate. I have no idea why; perhaps Peter was beginning to think about fowl behavior, a topic he eventually pursued.

KLM flight
Whatever one reads about the Sahara doesn't prepare you for its expansiveness. The view from the cockpit (impossible for passengers today) was stunning.

Entebbe/Kampala
Although we were not in the Rift Valley nor in a significant earthquake area, somehow a chasm suddenly appeared under one side of the minivan I was driving in the botanical gardens, and the van with students aboard toppled into it. Had we not just spotted

colobus monkeys overhead, so my attention was momentarily diverted from looking at the road, I would have seen this mini-valley mysteriously opening up and avoided it.

Kibale Forest/Kanyawara

The beauty of the forest captivated me and rain-forests have been among my passions ever since. Tom and Peter were critical in raising our awareness of the diversity and abundance of both the fauna and the flora. Night walks led by Tom exposed us to a world we had never seen, not the least of which were the bushbabies, bats, and nocturnally active insects. Mist netting revealed birds we otherwise would have over looked and Peter's incredible skill and patience in extracting entangled animals was a lesson never forgotten. Peter also revealed to those of us who weren't committed birdwatchers how using your ears was as essential as using binoculars. Both Peter and Tom were not only hyperactive as scientists in the forest – finding interesting questions to ask of every observation -- but both also revealed a profound appreciation of the beauty and sensitized us to the aesthetics of what popular literature viewed as dangerous and forbidding jungles. Their sense of wonder and excitement (Tom's expressed with more constraint than Peter's) was contagious. Looking DOWN at the ants, especially the army ants, and the landed butterflies helped reveal to those of us who generally only looked UP at monkeys or birds or AHEAD for creeping birds and terrestrial mammals that every stratum had its beauty and interest.

Owen and Steve, Kibale Forest

Steve and juvenile boomslang

My major stupidity of the trip, and one of the most stupid of my entire life and there are many in competition, occurred at camp. Someone, and my memory has faded if it was one of the students or one of the workers, brought a small snake to me for identification. I didn't recognize it at all. After perusing the field guides, and being absolutely certain it was not one of the venomous snakes that abound, I relaxed my grip that had been just behind its head and let it move about freely in my hands with only mild restraint.

I then began to look at all the other possibilities in the book to identify it, but I was stumped. Finally, I found an illustration that matched. It was a juvenile and its color pattern did not at all resemble that of the adult; I had failed to identify a boomslang, one of the deadliest of all snakes.

The experiences in the Kibale Forest led directly to my conservation interests that later bore fruit in the establishment of one rain-forest sanctuary in southern India and two in Sierra Leone.

Queen Elizabeth Park

Here was the Africa we had all seen in photos and movies -- savannah grassland with scattered clumps of shrubbery and trees. As always, one of my firmest memories is of food and here I had my first taste of bushmeat, but even more lasting is the indelible

Savanna, Queen Elizabeth Park

image of the meat before it was cooked with an unbelievably large complement of worms (not post-mortem fly maggots) it harbored. I don't remember if any of the students also partook of one of those meals, but I do remember that I did not and would not share my pre-cooking view with those at the meal. It was hard to be a scientist at Q.E. because the overall experience and views were so overwhelming, it was tempting just to sit back and experience them. Probably I was born about 150 years too late and would have led a very fulfilling life as an old-time naturalist/explorer. But NO WAY would Peter, and especially Tom, permit us ONLY to enjoy it – we needed to be

counting, scoring, identifying, and classifying whatever we encountered. To this day, I can't encounter a group of animals at any time in any place without involuntarily doing a quick census. But even Tom had his moments – we were sitting on a rock one day watching vultures circling overhead and in the distance, and Tom and I were both trying to come up with testable hypotheses about the function, including not just the obvious ones about finding food and spotting other vultures (a variant of what later became known as the "information center" hypothesis) but also more remote ones including detecting air currents and updrafts. Finally Tom came up with the hypothesis that trumped all others: "Vultures like to soar."

Teaching

The way Peter and Tom set out the broad outlines of the course as being project-oriented influenced the remainder of my career teaching. It was clear that students learn by DOING much better than by exposure to anything an instructor can tell them. The instructor's role should be one of asking questions and probing the students to ask testable questions about what they see (or read or hear in a talk, etc.) and then to guide the students towards methods that could help gather quantitative evidence that addresses the issue. It's been the mode I've adopted for graduate seminars, undergraduate animal behavior classes, undergraduate and graduate biostatistics courses, as well as field courses. It's not always widely appreciated, especially by today's students who want to be spoon fed, but the students always find it challenging. And it keeps me interested as an instructor because no two classes of the same course are ever identical, a benefit from Peter and Tom for which I am ever grateful. Aside from the fact that it was always-cheerful and supportive Karen who fulfilled the role (for which I am also forever indebted to Peter and Tom), the Uganda field course ingrained in me the view that engaging a logistics assistant for expeditionary field courses is advantageous, perhaps even necessary, so that the instructors can concentrate on the essential pedagogical aspects of the course.

The 5 best students in any course I've ever taught

It's difficult to limit my writing here as the recollections are many and vivid.

Art – always eager, infused with wonder and asking questions. Who was more surprised when he found himself far too close to a leopard's daytime refuge? -- both went running, fortunately in opposite directions.

Beverly – unbelievably game in an environment and endeavor that was not her major interest. How did that tick ever get THERE on/in Beverly before she discovered it?

Jose – somewhat concerned about being prepared for the trip, i.e., what might or might not be available in Uganda as he wanted to be sure to be able to keep in touch with Susi. So he asked if he should bring (American) postage stamps.
Beverly and Jose together - Tom and I were on a bluff overlooking the area where Beverly and Jose were using a tape to measure distances, each picking up the trailing end of the 100 m tape and walking ahead to lay out the next stretch. On the boulders below us and directly above them were perched two lionesses patiently tracking them as they walked just beneath. Should we call out a warning? If we startle the students and they run, the lions might give chase. If we don't, we might be failing to avoid an impending disaster. We do nothing, and the students finally are out of sight of us and the cats.

Pete - very at ease with quantitative work and the abstract concepts behind what he's investigating (leading to the gas model of mangabey movements), but also could be a bit obsessive about his work. So in Q.E., Pete treated us each morning to interesting and meticulously detailed reports about what each and every bushbuck did the night before.

Owen – best expressed the continual WOW factor at everything we encountered. And, together with Art, developed a published study of kob (that some contend was of a grid). It was hard to actually see Owen much of the time because his camera was usually shielding his face. At the time, his photography seemed a bit excessive, but I and perhaps others now wish we had taken far more photos than we did.

Tom Struhsaker: Selected Recollections

Tom in his natural habitat, the Kibale Forest

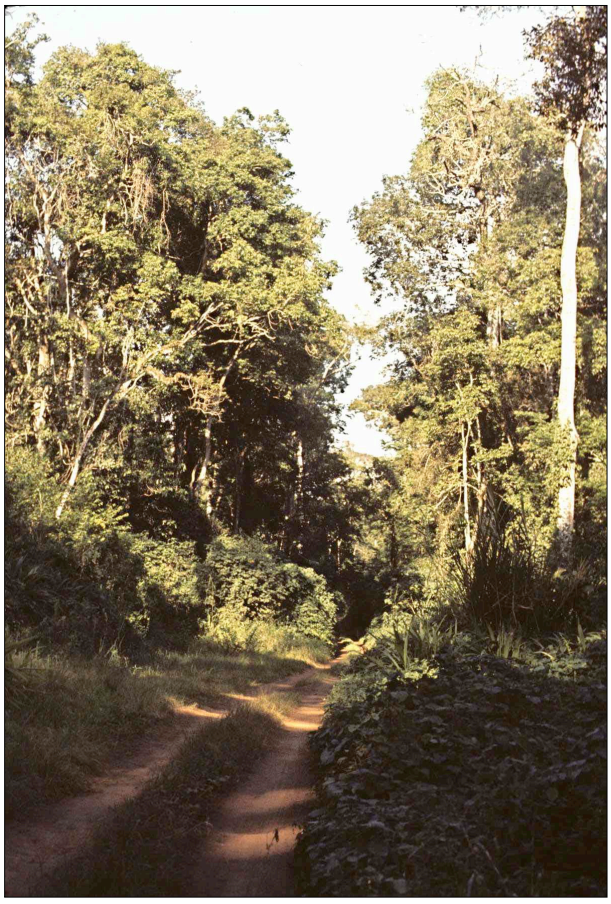
I taught two field courses for The Rockefeller University. The first one was held in Trinidad and Barro Colorado Island, Panama, while the second one was given in Uganda.

The students on both courses were generally highly motivated, innovative, and fun to be with. We all learned a tremendous amount about the tropics, animal behavior, ecology, and one another.

The field courses began with a general introduction to the ecology of the area followed by the students picking a project for more detailed research. Sometimes they worked in pairs on these projects. Each course lasted about 13 weeks.

If pushed to choose, I would rank the course in Uganda as my favorite because it was given in what I consider to be two of the most fabulous places in the world: Kibale forest (now a national park) and the Queen Elizabeth National Park (QE). On this trip we had an outstanding team with 5 great students and an enthusiastic and efficient support staff of Steve Green, Karen Minkowski, and Peter Marler, the guy whose idea it was and who raised the money that made it happen.

From a personal perspective, there were a number of rewarding activities I recall from the Uganda trip. First of all, this trip gave me the opportunity to explore with the team a number of biological systems and questions that I had either not previously



Kibale Forest

thought about or simply did not have time to pursue. My favorite projects in Kibale were the netting and banding of birds and the detailed study of army ants carried out by Art Arnold and Beverly Greenspan. I recall that Steve Green was particularly involved with the army ant study. This remains a brilliant piece of research that should be published, even now!

The study of mangabeys by Peter Waser and Owen Floody was outstanding too, but most important because it led to Peter doing his Ph.D. on these interesting critters. Many years later Peter supported and supervised more research on the Kibale mangabeys by William Olupot. These were important contributions to the long-term study and conservation of Kibale.

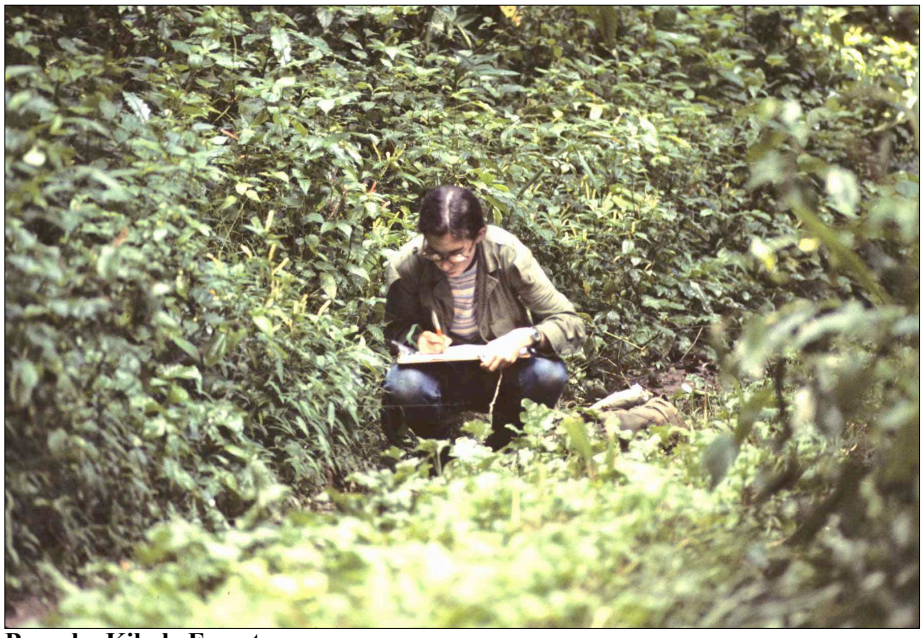
In QE we had tremendous fun studying the bushbuck, kob, and fish eagles. What a great way to learn about the behavior and ecology of these beautiful and fascinating animals.

Euphorbia candelabra **trees, Queen Elizabeth National Park**

I seem to recall we were in QE when Peter M. received the news that he had been elected to the National Academy of Science. I also believe I am correct that he responded with words to the effect of "I wonder what took them so long?"

There were 3 hilarious incidents in QE that I could not possibly forget. I hope the students involved in these events will be able to appreciate the humor after nearly 40 years and will not think poorly of me for recalling them here.

The first concerns Beverly. She and Joe/Jose Torre-Bueno were doing a study of the fish eagles on the Mweya Peninsula. In those days the peninsula was largely covered with grass, a few scattered thickets, and candelabra (*Euphorbia*) trees. Visibility was generally excellent (no longer the case). One day Steve and I were helping Joe and Beverly map the location of eagle nests. This was before GPS and so we relied on a compass and a rope of known length. Beverly was holding the lead end of the rope, which was 25m long, while Joe held the tail end of the rope. She would walk, while Joe remained stationary. When the rope was taut, Beverly would stop and mark the point, and Joe would then advance to that point and the procedure repeated to determine the distances between eagle nests. In one of our measuring sessions, Joe dropped the tail end of the rope to discuss some technical issue with Steve and me after Beverly had walked only about 10m. About 5 minutes later we looked up from our notes to see that Beverly was still holding onto the lead end of the rope, walking off far into the distance about 100 to 150 m away from us. She was in another world, daydreaming, oblivious to her surroundings, maybe back in NYC or somewhere, but certainly not in QE. Thank goddess no lions, buffalo or hippo were about.



Beverly, Kibale Forest

The other 2 stories concern Joe during the eagle study. Once again Steve and I were out with Joe and Beverly on the peninsula watching the eagles. Joe excused himself to deal with toilet matters and walked off over a ridge and out of sight. He was not gone for long. It seems he made the mistake of trying to defecate in a warthog hole that was occupied. He soon came running back into view, holding up his pants with one hand,

and loudly proclaiming that he was not going to shit in the warthog's hole. I often wonder if he suffered from post-traumatic stress syndrome.

The final story was related to me by the late Jon Rood, who, at the time, was studying the banded mongoose in QE. One evening I went into the lodge to enjoy a cold beer and sat down to chat with Jon. He began by asking me "what is wrong with that student of yours?" Puzzled, I asked for elaboration. Jon explained that earlier in the day he was seated in his Land Rover and watching a band of mongoose when Joe drove up in one of our Land Rovers. Joe got out of the Land Rover with a basket full of dried fish, approached to within about 15 m of a pride of resting lions, then dumped the fish out in front of them, turned around, walked back to the Land Rover, and drove off. Joe's assignment was to try to bait the fish eagles so that we might try to catch and band them. Apparently, he never saw the lions and, fortunately, they were either full or preferred fish to Joe. Maybe Joe's mind was also back in NYC.

Well, we all survived the trip and came out better because of it. What a tremendous idea and experience; one that can never be forgotten. Thanks, Peter. It would not have happened without you.

Caroline Arnold: Letters from my diary

Carolyn and Jennifer, Queen Elizabeth Park

What impact did the field course have on my life? As a wife, I was not involved with the course itself, but without it I would never have had the opportunity to go to Africa. At the time, I had not yet begun to write books for children, but my experiences seeing wildlife, meeting people who lived and worked in Africa, and just being there has been important for many of the books I've written since then. In a larger sense, the trip also greatly impacted my world view. Before then, I had never traveled outside the United States and had no idea what it was like to live in a third world country or in a place so rich with wildlife. From the time I was a child, I had always dreamed of travel and adventure. The trip to Africa certainly fulfilled that dream. When I do school presentations and kids ask me what was the most exciting place I've ever been, the answer is always the same– Africa.

My memories of the three months in Africa are vivid, reinforced by the hundreds of photos we took (some appear in my books) and by letters and diary entries. My parents eagerly awaited my weekly letters, vicariously traveling Africa with me. My father typed all the letters, making them legible, and put them into a book. I have put a few excerpts below. I used my diary mostly to record animal sightings, brief reports of the events of the day, and our dinner menus. One entry says we ate stewed waterbuck, from meat given to us by a park ranger! The diary also documents the arrival of the Marler family at QE, a greatly anticipated event.

I remember that Peter Marler had accompanied us on the trip from New York to Uganda, herding us through the airport like a troupe of wayward Cub Scouts. He had made this trip before, and I was grateful for his expertise both in the larger organization and in the details. In the Amsterdam airport, he introduced us to smoked eel sandwiches. In Kampala he took us to an Indian restaurant to try the delicious East African style samosas. He also pointed out the "bat tree" along the main road, where hundreds of fruit bats hung like small black umbrellas during the day. After helping the students set up at

Kanyawara, Peter went back to New York, returning a month later with Judith and the kids. They camped out not far from us at QE and I remember being glad to have them nearby.

Only now do I realize the scope of the Field Course and how Peter's vision for it made it happen. Now, on the fortieth anniversary of the Africa trip, I would like to thank Peter for creating the Field Course and for allowing me and Jennifer to tag along, providing us with the opportunity to have our own African experience and to share a bit of Art's. Together with Art's experiences during the course, and our travel together afterward in southern Uganda, this period still ranks as the most outstanding in our lives.

From Caroline's diary (in italics) and letters to her parents in California:

June 23, 1971
Arrived at Queen Elizabeth Park.

Sunset over Lake Edward, Queen Elizabeth Park

June 27, 1971
Mweya is an open, almost stark bluff above a large lake and channel which are filled with fish and hippos. At night the hippos come out of the water and up here to feed on the bushes, so one cannot step out of doors after dark. There are also elephants, bush

pigs, and marabou storks, which wander in and out the camp area day and night. The windows of our room face the "Canteen"–the local native hotspot–and at night we hear loud music from that side, while from the other side we hear snorts of the hippos and elephants. I was under the impression that someone came in the night to empty our garbage can until I realized that the elephants and marabou storks were removing it all.

I am quickly reviving all my Girl Scout talents. We aren't actually "camping" in that we have a room with three cots in it, but I am cooking all our food over a wood fire (which is tricky since we have a bare minimum of equipment.) The biggest problem besides obtaining food is water since it all must be boiled. At Mweya the only foods available are eggs, milk, and bread from the local Indian shop, tomatoes, bananas and matoke from the very small market, and you can buy fish from the Canteen.

July 4, 1971
Food supply here is very erratic. For the last three days there haven't been any eggs and one day we had trouble getting fish. Tilapia–a tender, sweet fish–is the mainstay of our diet. It costs about 10 cents for two large fish. Pineapples, 10 cents each and bananas, 2 cents for four, are the main fruits. Vegetables vary but tomatoes and onions are always available.


Jennifer inspects talapia

Dad, it's a good thing I used to watch you fillet fish when I was little, because that's what I have to do every day. I've become quite an expert! We throw the remains to the marabou storks who hang around expectantly while we work. The dominant stork in the group is apparent by the puffed pouch under its throat.

There are little lizards all over and the other day a four-foot snake crawled into my shower as I left. I didn't wait to see if it was poisonous. Apparently there are some really deadly snakes in the park and I don't care to run into any of them!

July 5, 1971
Invasion of "dudus"–a small lake fly–in swarms of millions which clung to walls, food, people, and made the air thick.

Caroline and Jennifer at Mweya, Queen Elizabeth Park

July 7, 1971
Mary Sue found a baby bat.
Marlers arrived.

July 8, 1971
Showed Judith Marler local shopping spots–duka, market, and canteen–and got chased by a mad elephant twice and accosted by an incoherent drunk in canteen.
Had tea at Lodge.
Art out all night.

July 9, 1971
For excitement lately we have had an earthquake (a small one), an invasion of millions of lake flies (which just as suddenly vanished two days after they arrived), and I was charged by a mad elephant. We were walking to the market and making a wide path

around an elephant when suddenly he trumpeted, started flapping his ears, and rushed toward us. Luckily it was only a bluff.

Last night Art and his study partner [Owen Floody] stayed out all night watching kob with an image intensifier. It is a telescope like thing developed by the army which magnifies any available light so you can see things at night. What Art wanted to find out was whether the animals mate at night like they do in the day and he discovered they did.

July 10, 1971
Trip to Katwe to get our lump of beef at 4/50 shillings per kilo.

July 16, 1971
Awakened in night by violent thunderstorm. Next morning discovered Waser's tent had blown down and everything got drenched so they spent the night in the VW. Marler's tent also blew down but they were gone.

July 17, 1971
The other day we had a hard rain, which apparently signals the male termites to come out of the ground. So, in the middle of the night we were awakened by a din, caused by the Africans going out to collect the termites around the lights. In the morning, we saw bowls of them and discarded wings all over the ground. They fry the termites and it is a great delicacy!

July 19, 1971
In evening, Art and Beverly's seminar on ants.

July 21, 1971
Vast colonies of army ants have made trails across the ground. They are the same ones Art studied in the Kibale forest. They go out in a column five to twenty ants wide and throw up dirt on either side forming a trench. On either side "guard"ants stand with their pincers raised, seemingly against potential predators. [One day, Jennifer dropped her teddy bear onto an ant column, and the ants hung on so tight, that I had to cut out patches of the bear's "fur" to remove them.]

July 24, 1971
In morning, took car trip with Marlers and Mary Sue around Royal Circuit hoping to see lions, but saw only lots of waterbuck and kob, a group of elephants with two babies and hippos at hippo pool.

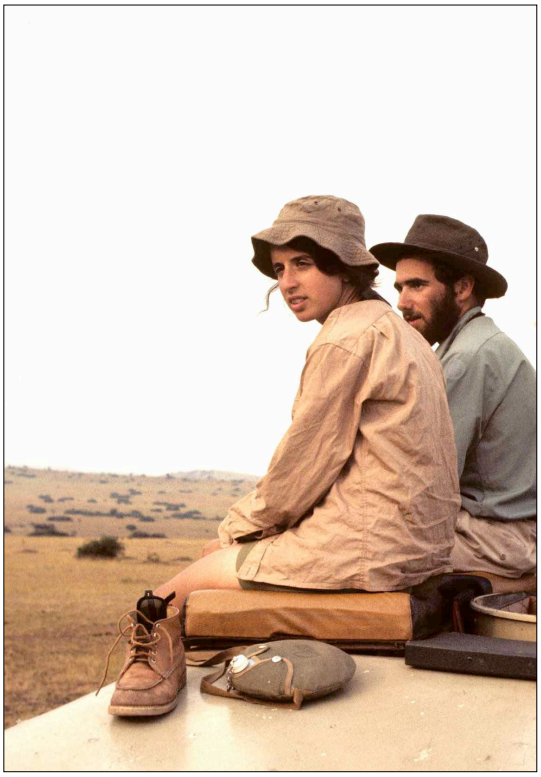
July 25, 1971
Spent most of afternoon at swimming pool and treated ourselves to ice cream.

July 30, 1971
Last week Mary Sue and I found a nine-foot long baby python. It had been speared through the head and left dead on the side of the road. I didn't really want to touch it, but Mary Sue wanted to bring it back and skin it, so she did. The skin is really beautiful and will be a great souvenir to hang on her wall. We created quite a sensation by bringing it in and there was a whole crowd of people watching the skinning procedure. Afterwards it was rubbed down with salt, scraped, and dried.

We are at the end of our stay here. This week Jennifer and I and Mary Sue went on two major sightseeing expeditions. Our first was hiring a Land Rover to take us to the craters, which turned out to be absolutely beautiful in the late afternoon sun. On the way we had two special treats. First, a group of elephants, which included a tiny baby nursing from its mother. The second was a pride of lions on a buffalo they had recently killed. This was the first time I'd seen lions doing anything but sleep (like house cats, they are basically rather lazy.) On Wednesday morning we took a boat trip up the channel. We saw all sorts of birds, lots of hippos, giant monitor lizards, plus elephant, buffalo, and bushbuck. It was a beautiful day and what made the trip most enjoyable was that Jennifer behaved well for the entire three hour ride.

July 30, 1971
Punch party at 6:00 in hostel with field course and NUTAE people.

Karen Minkowski: Memories from an aging mind


Karen and Jose, Queen Elizabeth Park

During our layover in Amsterdam – cleverly orchestrated by Steve such that PanAm payed for an overnight and wonderful rijstaffel feast - I followed Steve and Peter Marler to the red-light district, where Peter was determined, indeed on a mission, to discover the perfect gift for Tom. After intense scrutiny and careful handling of each and every object (or so I imagine), and chuckles and speculations about their use, the two conspirators selected a French tickler. I have no memory of Tom's reaction upon receiving it.

After arranging for vehicle rentals in Kampala, we headed west towards Ft. Portal, Tom and the forest that was about to be invaded by our group of eight. I was driving, with Peter Marler in the car. While passing through a small village I hit a young girl who suddenly appeared in my peripheral vision on the left side and dashed into the road before I could stop. Though apparently not badly injured - I recall I had been driving slowly – a local man insisted that we drive to the nearest police headquarters to report the accident. I remember little of the interview except my nervousness at being questioned by an officious police officer and how grateful I was for Peter's presence. We knew very little about Amin, but his presence was in the air in a vaguely menacing way.


Blue Salamis butterfly, Kibale Forest

Kanyawara was my first rain forest experience. It took a while to feel comfortable in the enclosed humid environment, and not to compare it with the sense of the infinitely expanding savanna, where Steve and I had spent four months in 1967, our first Africa experience. But I eventually fell in love with Kibale and its different definition of infinity: an endless source of life forms closing in around you and simultaneously demanding your attention and awe. I remember wonderful walks in the forest, learning that the butterflies were attracted to the students' urine on the road (where ***I*** never peed, of course!), the frequency of sighting seven (?) species of monkeys,

and supervising Pius and his assistant in the makeshift kitchen. Supervising may be too strong a word. The two of them knew very well how to cook local foods. My determination to overcome my squeamishness about killing a chicken quickly withered when - with a hen in my hand - Pius handed me the knife. I yielded to him the task of severing the head – as I turned my own.

Kibale Forest

In QE Park Steve and I set up a tent near the water. We could hear the dance music at night flowing from the canteen and I loved its repetitive rhythm and melody. It stayed with me for years, but now I can't quite hear it in my head. One evening we had just retired when we began to feel the tent gently swaying from side to side, and realized that an elephant was tugging on the guy wires. I don't recall that we'd left any fruit inside, but the elephant was curious… Just as we began to consider escaping through the exit flaps on the opposite side of the tent, we became aware of a second elephant blocking that side, too. My strongest memory is of those sphincter muscles in rapid spasm… finally the elephants realized that the tent held nothing of interest and ambled away.

While at QE I undertook a study of bachelor buffalo bulls that gathered at the Hippo Pool to hang out during the day. I loved observing their social interactions – mostly greetings, as I recall, like a bunch of old men meeting in a city park each morning and grunting their hellos, how are ya's, but without too much of substance to talk about anymore. Once I watched them repel an advancing lion. Tom drove up one day and asked me how many of these guys I was watching, and I quickly, guiltily, started counting them and after a lengthy delay, looked up and told him. I was totally embarrassed, ashamed not to have absorbed the lesson that counting your animals is what you do when you first encounter them. I'm sure Tom was muttering to himself "Very bad", as he often did when one of us screwed up or otherwise displeased him!

Early one morning I arrived to find vultures feasting on one of my buffaloes. Sometime later, I think following a heavy rain, my group vanished. It was a relief to find out that not all the field course studies were published, as I never published mine!

Buffalo bull exhibits flehmen, Hippo Pool, Queen Elizabeth Park

At Kanyawara we ate the rich gamey meat of an elephant that had been shot by the Forest or Game Dept. One day the rangers at Mweya killed a lion that had mauled one of the workers. The meat was white, dry.

One of the stupidest things I ever did in my life occurred during the field course. For some reason I had left camp to do some task in town and needed to catch a ride back to the course site. I was impatient to return and a man and his son in a VW beetle offered to drive me for a reasonable sum, so I decided to go with them rather than wait for the bus. After I got into the car the man warned me against accepting rides with unknown people and that dangerous things were happening under the new regime! Did I never tell anyone about that?

The field course was a part of years of Peter Marler's impact on my life. The work I've pursued has always focused on conservation or natural resource management, and it all began with a gift from Peter, though he didn't even know me at the time. In 1967 he offered Steve and two other graduate students a summer in Uganda, a trip that totally reoriented the direction of my life. For eleven years I was fortunate to live amidst the dynamic community that Peter created. I am deeply grateful for those years of lively discussions, arguments, occasional battles, drunken parties with IRAB punch and opportunities for travel and to assist in research, and above all lifelong friendships that grew out of being a part of the Peter Marler lab.

Mary Sue Waser: Some reminiscences from a non-participant

A pronouncement by Tom that "no wives and camp followers are allowed" with the 1971 field course got Caroline and me scheming. Certainly we couldn't appear in Kibale Forest, Tom's territory, but the second half of the course was in a national park….And three months did seem like a long time to be left behind in Manhattan.

Peter and Mary Sue, Queen Elizabeth Park

Our presence was tolerated, even invited, on the flight to Africa, as we increased the group size enough to reduce the airfare for all. In the darkness of Entebbe airport Caroline, one-year-old Jennifer, and I left the group for our own wonderful low budget tour by East African Airways, rental car, bush taxi, country bus to take us to cities and parks within Kenya and Tanzania before turning up at Queen Elizabeth Park in a rental VW bug. Jennifer was a real asset, a conversation opener. A cheerful, outgoing child, she was also a curiosity to many Africans who had never seen a white baby. We later learned that compared with their babies, she seemed quite large for her developmental level. The Africans were also curious about us—women convinced that Caroline and I were sisters, men wondering why our husbands would allow us travel alone—or perhaps that was just a line.

Every afternoon Caroline took a picture of Art out of her wallet to remind Jennifer of her father, whom she would gleefully identify. Toward the end of travels, Jennifer grabbed a dollar bill and equally gleefully pointed to George Washington as "Daddy." Six weeks was time enough to be apart!

I had been uncertain how we wives would be received in Queen Elizabeth Park by the course organizers. One evening it was with some trepidation that I welcomed Tom to our camp (seats: elephant leg bones, table: a *debe* on its side). When he mentioned that our meal schedule (highly flexible) was more compatible with field work than the course's arrangement at the research station, I figured we'd passed the test.

At Queen Elizabeth Park, the Arnolds stayed at the slightly more upscale student camp, and Peter and I camped about a mile away. Most of the time, ours was the only tent in the campground. When the Marler family arrived we were excited to have neighbors. I

especially remember the day we got word that a cow was being slaughtered at the park village. Judith, with children in tow, Caroline, with Jennifer on her back and I set off to find meat for the evening meal. As I recall, the scene was pretty bloody--with hunks of meat in one place, a cow's head in another, and the skin neatly folded in another. I watched closely to see whether little Marianne was horrified as I think I would have been at that age. She seemed to take it all in with great interest. That night as we were all eating around a campfire, she announced proudly, Daddy, this is *real* meat!"

Also, from this time: the Marler rip-stop nylon tent answered a question I'd had since purchasing our Kenya Boy Scout backpacking tent with a heavy rubberized bottom. The amazing QE termites quickly ate the bottom out of the Marler tent. (They also made meal planning difficult by eating identifying labels off canned goods.)

Judith, Marianne, Chris and Cathy, Queen Elizabeth Park

As Peter's technician while Peter W. still worked with Don Griffin, I was and am forever grateful for Peter's flexibility in giving me time off for this wonderful adventure, for giving me "leave of absence" while Peter W. did his thesis research back in Kibale as Peter's student, for suggesting a sound propagation project for me, and for rehiring me after we returned. In Peter's lab I was spoiled forever by his generosity in having us all---technicians, bird keepers, students, and post docs--feel we were part of the same intellectual team. Even then I knew this to be unusual in a lab, but over the years have discovered just how extraordinary Peter's laboratory was.

A BIG THANKS…

… to all who contributed to this memoir, and to Owen, the Arnolds, the Wasers and Chris Marler for photos (I added a few of my own). The title, "The Ultimate Field Course", comes from Owen's bound collection of his photos from that time; he generously allowed me to use it here.

Caroline provided excellent advice and support on how to assemble all the photos and memoirs.

KM
March 2011

Peter, Kibale Forest