## INSTITUTE OF CURRENT WORLD AFFAIRS

GSH-17: Tambopata Natural Wildlife Reserve

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Mr. Peter B. Martin Executive Director Institute of Current World Affairs Wheelock House 4 West Wheelock Street Hanover, New Hampshire 03755

Dear Peter:

The Peruvian Department of National Parks invited me to join a team of biologists on an inspection of the Tambopata Natural Wildlife Reserve south of Puerto Maldonado in Madre de Diós Province. An exceptionally rich bird fauna (some 530 species known from the area) prompted government officials to consider enlarging the reserve and incorporating it into the national system of parks and biological reserves. Our task was to assess the species richness of some other major groups of organisms. At the request of the Peruvian government, David Pearson, an ornithologist at Penn State, organized a team composed of Louise Emmons (Smithsonian Institution mammalogist), John Heppner (Smithsonian entomologist), Roy McDiarmid (U.S. Fish and Wildlife Service herpetologist) and yours truly responsible for trees. The possibility of seeing a "jungle tourist" operation in a region of tropical America unfamiliar to me was so enticing that my wife, Lynne, convinced me to take her along.

The Tambopata Reserve of 5,500 hectares (13,585 acres) was created by the Peruvian government in 1977 to protect the forest and wildlife adjoining the Explorer's Inn, a "jungle tourist attraction" owned and operated by Peruvian Safaris. Although founded by a small group of Peruvian businessmen to offer big-game hunting safaris, Peruvian Safaris has undergone a remarkable transformation to a leading pro-conservation group in Peru. Peruvian Safaris' principal owner. Max Gunther --a second generation Peruvian--is responsible for developing the Explorer's Inn and changing company policy to actively practice wildlife preservation. Just as some dedicated hunters in the U.S. and Europe have become ardent protectors of wildlife, Max Gunther has led Peruvian Safaris to the forefront of private conservation efforts in Peru. Development of the Explorer's Inn facility also attracted colonists and hunters who were destroying the same resources attractive to tourists, hence Max convinced the Peruvian government to create the Tambopata Natural Wildlife Reserve and assign responsibility for its protection to Peruvian Safaris. The private company only owns about 100 hectares, including the Explorer's Inn, while using and administering the 5,500 hectare reserve on government land.

Scientific or natural history tourism has developed into a viable business in some tropical regions. Tourist visits to east African game reserves or the Galapagos Islands provide significant income to the host countries. Natural history tourism is commonly used by conservationists as an economic argument to convince lesser-developed countries to invest scarce funds in national parks and biological reserves (see GSH-4 for an example).

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The Explorer's Inn is located near the confluence of the Rio la Torre with the Rio Tambopata, about 40 km south of Puerto Maldonado, or a three hour boat ride (Figure 1). The facility consists of six cabins, each with a capacity of 10 persons divided among four rooms, and a central round house with a spacious dining area and an upstairs coctail lounge. All the facilities are attractively built of local wood and split palm trunks and thatched with palm leaves (Figure 2). A generator provides electricity during the evening.



Figure 1a. Peruvian Safaris' airy bus service from the Fuerto Maldonado airport to the Rio Tambopata. Passengers (starting from the rear of the bus and left to right) are Ana Maria Trelancia; Silvia Sanchez; Pedro Aguilar; Roy McDiarmid; Mirta de Gunther; John Heppner and two local employees; Dave Pearson and Gary Hartshorn. 1b. Loading for the 3½ hour boat ride to the Explorer's Inn. Photos by L. Hartshorn.



Figure 2. Split-palm walkway to the central house; quest cabins on the left.

Tourists generally visit the Explorer's Inn on a two day package trip from Cuzco arranged by Peruvian Safaris. Tourists usually arrive in mid-afternoon and participate in two organized forays into or near the "jungle": for the first evening tourists are taken on a short boat ride on the Rio Tambopata where the guides eye-shine (using flashlights, you are able to see the red glow of animals' eyes in the darkness) several caimans (small crocodilians) along the river edges; they usually catch a small one to show the tourists. The first and only full day at the Explorer's Inn is mostly devoted to a long (6 km one way) walk to Cocacocha, a large ox-bow lake formed by a course change of the meandering Tambopata river. Small aluminum cances are used to take tourists on the lake in search of caiman, large birds, giant river otters and other wildlife. The long walk in the tropical lowlands effectively tires most tourists, but some recuperate in time for a prolonged happy hour before their 0530 departure the next morning.

During our three weeks at the Explorer's Inn we witnessed brief visits of several groups, mostly Europeans, some as large as 30-40 members. The most memorable group was Italian, with several women going into the forest with backless shirts and stack shoes (Figure 3). A few of the ladies absolutely refused to leave the safety of the cabin balcony. I don't know if their fear of the forest came before or after Roy happened to pass in front of their cabin carrying a 24 meter bushmaster snake. Roy had purposely put the poisonous snake into a gunny sack so as not to alarm the tourists, but one inquisitive lady asked what was in the sack. Roy, of course, did not hesitate to tell her. Word of the large poisonous snake spread rapidly, stimulating the more intrepid to climb the stairs to the coctail lounge that we had converted to a temporary laboratory.



Figure 3. Italian tourists departing for the 12 km round trip to Cocacocha. Because correct identification is based on museum comparisons it was necessary to collect and preserve representative specimens of invertebrates (moths, butterflies, beetles, etc.) and small vertebrates such as frogs and snakes. Thanks to the outstanding work of ornithologists like Ted Parker and John O'Neill, the birds of the Tambopata Reserve are well-known. Except for bats, the mammals are also fairly well-known. I suspect that some of the tourists saw more examples of the animal life in our "laboratory" than on the trails owing to the fact that groups create more than enough noise to scare the wildlife away. It is also exceedingly difficult to get a good look at the fantastically colorful butterflies as they flutter by.

I found the forests of the Tambopata Reserve somewhat different from those I know in other parts of Amazonia. At 12° 49' South Latitude, the area is classified ecologically as subtropical moist forest. Except for active stream channels and old river meanders, the physiography of the Tambopata region is quite uniform. Elevations are about 260 meters with small streams three to five meters below the adjacent landscape, whereas old meanders may be 10 meters below the former river levee. The higher, and consequently better-drained natural levees support a narrow, impressive forest with some trees exceeding one meter in trunk diameter and 40 meters in height. One of the most common trees in the Tambopata Reserve is the Brazil nut, *Bertholletia excelsa* (Lecythidaceae), one of the few sources of cash income in the region.

I was initially disappointed with the Tambopata forests because of the preponderance of low forest on the flatlands between streams, with scattered trees and an abundance of bamboo armed with vicious hooks. Occurrence of species-rich forest on the levees as well as on some low, remnant hills farther upstream made my stay much more botanically interesting. During my three weeks in the Tambopata Reserve, I saw more than 200 species of trees. With the superb assistance of a local tree climber (Figure 4), we collected flowers and fruit specimens of 41 trees, a few of which appear to be undescribed species.



In order to better compare the Tambopata forests to others in Amazonia, I did a complete inventory of all trees 10 cm or more in diameter on a one hectare plot (2.47 acres). I established the plot in a representative area intermediate between the poor bamboo forest and the impressive levee forest. With the occasional help of Lynne, Dave and Roy, two of the resident naturalists and one of the local guides, we were able to inventory about 20% of the plot in one day. After completing the plot layout (100 x 100 m) I estimated the plot would contain around 100 tree species. I even stuck my neck out to say that less than 100 species/ha is poor, 100-125/ha is acceptable, 125-150 is good, and over 150 tree species/ha could be considered excellent in an Amazonian forest. So there

Figure 4. Eduardo Armas climbing an Aspidosperma vargasii tree to collect flower specimens. was grand expectation at dinner each evening to hear the latest cumulative tally. Normally, as more of an area is inventoried, the number of new species encountered decreases. I was surprised to find that each additional 20% in plot area added 25-30 new species. The one hectare total was 153 species, of which seven were lianas (large woody vines). To my knowledge, this is second in Tropical America only to the Ducke Forest near Manaus, Brazil, studied by Ghillean Prance of the New York Botanical Garden.

Not only is the Tambopata Reserve rich in bird and tree species, but mammals and insects are also well represented. John Heppner ran three light traps to catch night-flying insects, but due to the tremendous response of the insects to his black lights, he continued after the second night with only one light trap on the Cocacocha trail. Processing of the nightly haul kept Lynne and other "volunteers" occupied up to 12 hours/day filling more than 70 insect boxes with pinned insects. Lynne estimates that over 20,000 insects were pinned in the cocktail lounge of the Explorer's Inn--that ought to make Ripley's Believe it or Not. The number of insects collected helps formulate ideas of relative variety and abundance of species, but on a one-time or occasional collection basis should not affect the insect populations.

A major attraction is the giant river otter, nearly three times as large as the common river otter, but they frustrated most of our numerous attempts to see them. Lynne saw one on the Tambopata as our boat made its way upriver to the Explorer's Inn, but no one else had the opportunity to see it. One of the resident naturalists did have an impressive mammal sighting: a jaguar stepped onto the trail carrying a juvenile peccary in its mouth, then walked along the main trail for several meters before disappearing into the forest. Louise found evidence that the rare, forest-dwelling bush dogs are present in the Tambopata Reserve.

I was very impressed by the diverse and abundant birds of the Tambopata River. There are few places in the tropics where you can relax on the front porch and watch the aerial acrobatics of swallow-tailed kites or see beautiful, multi-colored macaws. Among the 533 bird species recorded for the Tambopata Reserve are six species of macaws, ten parrots and eight toucans. No other site in the world is known to have as many bird species as occur in the Tambopata Reserve.

Because of the absence of rain during our late dry-season stay, frogs were not abundant, but the major reptile attraction of the Tambopata Reserve is the black caiman, an endangered crocodilian that grows to three meters long and is heavily hunted for its black hide. On an exploratory excursion to a blackwater tributary creek to the Rio la Torre we found a large black caiman dead on a sand bar. We could see no evidence that it had been killed by poachers. Although the body was already bloated and reeking of rotting flesh, Roy decided to take the head for a skull specimen, so we pulled alongside to let Roy do the machete work. We managed to get the head into a plastic bag I had brought along for plants, but I was glad I wasn't riding in the back of the boat for our return to the Explorer's Inn.

Lynne and I helped Roy conduct a night census of caimans (all black) in the Tres Chimbadas oxbow lake (this large lake is on an Indian reservation across the Tambopata River from the Inn). As our canoe quietly glided along the edge of the lake, we "eye shined" 58 caimans. We followed one large caiman for about 20 meters before he turned and dove under the canoe (that was fortunately two small canoes lashed together with saplings to give them more stability). GSH-17:6

Peruvian Safaris is doing a fine job in attracting and handling tourists to the Explorer's Inn. Two bi- or multi-lingual biologists (generally U.S. graduate students) are given free room and board, local travel, plus the Miami-Lima round trip airfare in return for serving as naturalist guides for tourists during the July-December tourist season. The resident naturalists present during our stay did an excellent job catering to the disparate groups of tourists. Knowledgeable and friendly naturalists are a key factor in selling tourists an enjoyable visit to the "jungle". During their free time, most naturalists occupy themselves with individual research projects.

Our biological reconnaissance team is in complete agreement that the Tambopata Natural Wildlife Reserve is a legitimate and viable conservation unit. We strongly recommend that the reserve be significantly expanded to ensure adequate protected areas for endangered species such as jaguar, giant otter, and black caiman. I urged that expansion be to the south in order to include a different ecological life zone (subtropical wet) that begins some 10-12 km south of the Explorer's Inn.

Although we would have preferred inclusion of the west bank of the Rio Tambopata, including the Tres Chimbadas lake, in the reserve, we decided it could be politically sensitive to recommend a change in status from an Indian reservation to a wildlife reserve. Unfortunately, the departmental government recently decided to relocate 700 families from the site of a new airport for Puerto Maldonado to the west bank of the Rio Tambopata, opposite the Tambopata Reserve. I and other ecologists familiar with the Tambopata Reserve responded to Max's urgent request for letters supporting Peruvian Safaris' efforts to have the 700 families not placed across the river from the Tambopata Reserve. On a recent trip to Peru, I was heartened to learn that Max (Figure 5) appears to be winning the battle to protect the integrity of the Tambopata Natural Wildlife Reserve.

Sincerely,

Gary S. Hartshorn Forest and Man Fellow



Figure 5. Max Gunther catching a siesta on the boat ride to the Explorer's Inn.