

PAPUA NEW GUINEA HIGHLANDS AND MT WILHELM 1978 PART 1



The predawn forest became alive with the melodic calls of unseen thrushes, and the piercing calls of distant parrots. The skies revealed the warmth of the morning dawn revealing thunderheads over the distant mountains that seemed to reach the melting stars as the night sky disappeared. I was 30 meters above the ground in a tree blind climbed before dawn. Swirling mists enshrouded the steep jungle canopy amidst a great diversity of forest trees. I was waiting for male lesser birds of paradise *Paradisaea minor* to come in to a tree lek next to the blind, where males compete for prominent perches and defend them from rivals. From these perch's males display by clapping their wings and shaking their head.

At sunrise, two male Lesser Birds-of-Paradise arrived, scuffled for the highest perch and called with a series of loud far-carrying cries that increase in intensity. They then displayed and bobbed their yellow-and-iridescent-green heads for attention, spreading their feathers wide and hopped about madly, singing a one-note tune. The birds then lowered their heads, continuing to display their billowing golden white plumage rising above their rust-red wings. A less dazzling female flew in and moved around between the males critically choosing one, mated, then flew off. I was privileged to have used a researcher study blind and see one of the most unique group of birds in the world endemic to Papua New Guinea and its nearby islands.



Lesser bird of paradise lek near Mt Kaindi near Wau Ecology Institute

Birds of paradise are in the crow family, with intelligent crow behavior, and with amazingly complex sexual mate behavior. Most are distinguished by striking colors and bright plumage of yellow, blue, scarlet, and green. These colors distinguish them as some of the world's most dramatic and attractive birds. Males often sport vibrant feathered ruffs or amazingly elongated feathers, which are known as wires or streamers. Some species have enormous head plumes or other distinctive ornaments, such as breast shields or head fans. The Twelve-Wired Bird-of-Paradise male, for example, uses elongated central shafts of plumage to “tickle” the female; the Superb male transforms into a ghoulish turquoise smiley face by dramatically



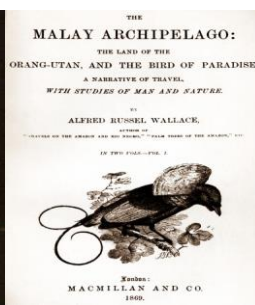
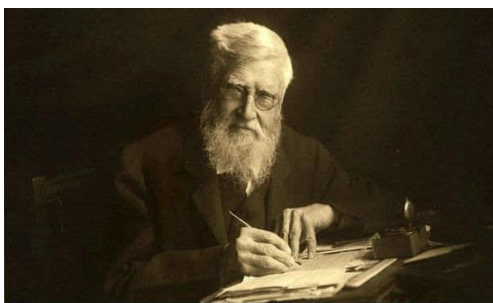
Mt Kaindi near Wau Ecology Institute, Papua New Guinea



Mt Kaindi Castanopsis Lithocarpus Auracaria forest near Wau Ecology Institute

repositioning his plumage; the Western Parotia male engages in a whirling dance during which its side feathers flare out like a tutu. The diversity of the forms is extraordinary: the variety of shape, size, feathers, colors, the long tail feathers, and the wires coming out of their heads. I could see God as designer of these complex birds with a sense of humor.

Alfred Russel Wallace in his book published 1860 *The Malay Archipelago*, chronicles his trip to the Aru Islands just south of West Papua Indonesia as the first Westerner to see these “most beautiful and most wonderful” birds.” Wallace wrote “are characterized by extraordinary developments of plumage...unequaled in any other family of birds. In several species large tufts of delicate bright-colored feathers spring from each side of the body beneath the wings, forming trains, or fans, or shields; and the middle feathers of the tail are often elongated into wires, twisted into fantastic shapes, or adorned with the most brilliant metallic tints.”



I was in a remote forest at 1811 meters (6,000 feet) in elevation on Mt Kaindi in the western mountain range of Papua New Guinea, near Wau Ecology Institute. The forested slopes of Mt. Kaindi were vibrant with not only sounds, but also bursts of

brilliant colors reflected by the flower sprays of rhododendrons, wild poinsettias, and orchids. I left for a five week vacation from my job with the Seattle King County Health Department, and joined seven others who had gathered here for four weeks with Sobek Expeditions exploring and discovering New Guinea's diversity of people, raft the wild Bulolo-Watut River, explore its steep mountains laced with shimmering waterfalls, alpine tundra, and magnificent spectrum of life zones, visit silt laden river deltas and swampland, and visit lowland rainforests and coral reef islands. Our first week would be spent running a white-water mountain river near Wau that boiled through dense jungle canyons, then hiking around a remote volcanic island populated by Melanesians, visiting villages in the Chimbu highlands where we would climb Mt. Wilhelm, and spend



a final week diving in unspoiled tropical reefs alive with coral cliffs and tropical fish in both Madang and an island off Port Moresby.

New Guinea, the second largest island in the world, lies less than 400 miles south of the equator, and directly north of Australia, and is the world's largest and highest tropical island with enormous biological diversity. The eastern half belongs to an independent state, Papuan New Guinea, while its western half comes under the control of Indonesia known once as Irian Jaya and today as Papua. In addition, an amalgam of over 600 offshore islands, adjacent to its coast lies an unstable geological zone known as the ring of fire, a vast circum-Pacific arc of seismic and volcanic activity. With the exception of the Himalayas, the highest peaks in the Orient are found in New Guinea, one of only three tropical areas with glaciers in the world, as well as a land of great variety of vegetation types. The ranges vary from gently rounded hillsides and heavily forested summits to bare and jagged, granite peaks.



Papua New Guinea is one of the most culturally diverse countries in the world. It is the geography and ruggedness of these mountains that divides and isolates diverse populations into roughly 1,000 tribes that speak nearly 852 distinct languages. Mt

Wilhelm is the highest peak of the Bismarck Range at 4,509 meters (14,793 feet), higher than Mt Rainier at home in Washington State, and In the Papua province of Indonesia on the island of New Guinea, rugged mountains compose the Sudirman Range. The tallest peak in this Carstensenz range, Puncak Jaya rises 4,884 meters (16,020 feet) above sea level. An adjacent peak on the rocky ridge, Ngga Pulu, reaches almost as high at 4,862 meters (15,950 feet). The island comprises more than 85 percent of the land area of tropical Polynesia, Micronesia, and Melanesia.



Papua New Guinea is home to most of the world's birds-of-paradise, the world's largest butterfly or bird wings, marsupials that include the cuscus and tree-climbing kangaroos, giant spiny ant-eater, giant cassowaries related to the emu, green tree python, long-necked turtles, many specialized groups of insects, and an extraordinary diversity of other animals and plants. New Guinea is home to roughly 1/3 of tropical trees species, given

that 6000 tropical tree species are from PNG, out of 37,000 in all rainforests of the world. New Guinea boasts the world's largest and smallest parrots, the largest doves, the longest lizard, some of the smallest frogs, some of the longest stick insects, the widest-headed (stalk-eyed) flies, the richest mangrove and sea grass floras, and many other forms and habitats unique and fascinating if not extreme. And its surrounding reefs are among the most diverse on the planet. The country is one of the world's least explored, culturally and geographically and it is known to have numerous groups of uncontacted peoples, and researchers believe there are many undiscovered species of plants and animals in the interior.

It has many groups of plants and animals with relationships extending in all directions, to the Indonesian, Philippine, Malaysian areas on to E Asia, S Asia or tropical Africa on one hand; to Micronesia or Polynesia to north and east; and to Australia to the south. New Guinea is the only area where oaks occur together with southern beeches, or with Araucaria and other "trans-Antarctic" elements in several! groups of plants. The biogeography of New Guinea is an intriguing problem, and one difficult of resolution. Not only did the biota come from different directions, such as from SE Asia, the Philippine and Indonesian islands and from Australia, but even from S America thousands of miles away, suggesting a Gondwanaland before the continents separated.

Papua New Guinea ranks among the megadiverse areas of the world and the island is a last frontier for biodiversity conservation. This land of diversity hosts 6-8% of the global species, hosts one-sixth of known languages, and rivals Borneo, the Amazon and the Congo in terms of biodiversity wealth. PNG comprises the eastern half of the largest tropical island on earth, along with hundreds of smaller outlying islands, and its land mass only occupying less than 0.5% of the world's total. Its diverse interior



Hylid tree frog Litorina, Birdwing butterfly, praying mantid



Magnificent bird of paradise (kamul lodge), blue bird of paradise, Superb fruit dove (mist netted Wau Eco)



Satin bowerbird, helmeted cassowary, black capped lory, cuscus possum, echidna (A Slavenko photo), Goodfellows tree kangaroo

consists of spectacular highland valleys, grasslands, vast expanses of rainforest, ancient swamps and mangroves. Primary rainforest covers around 75% of the country, its interior consists of undulating mountain ranges and grassy lowlands that rise to Mt. Wilhelm, the highest summit at 3,600m. Crisscrossing the country's surface, acting as a lifeline in terms of sustenance and access are a collection of thousands of waterways, the largest of which are Sepik, Purari, Markham, Strickland, Kikori and Fly Rivers. With an indigenous population of primarily Melanesian ancestry that emphasis kinship and extended family bonds, the land is central to sustaining the livelihoods of the people. With a population of over 7 million, it is largely a rural based population with over 85% living scattered village communities across the country.

Much of PNG's interior remains remote, and the country's topography means that there are scattered communities that live in complete isolation. Recognized as one of the mega-diverse countries of the world, PNG hosts 4.5% of the world's known land mammals, and at least 15,000 species of vascular plants, but both the vascular plants and the pteridophyte flora are poorly known. It sustains up to 6% of the world's flora and is considered one of the most species-rich areas in the world with high levels of



Unexplored limestone Karsts and Mountains west of the Central Highlands

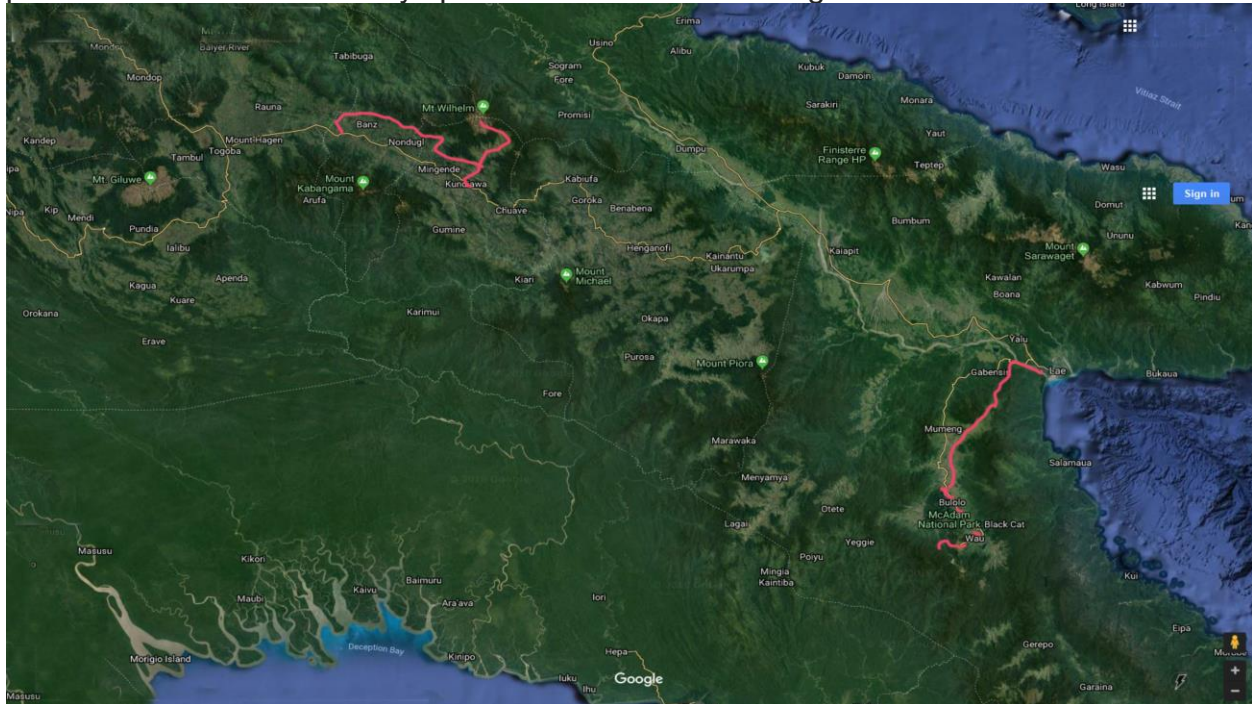
species endemism of 60%. Estimates of vascular plant biodiversity for Papuan currently range from 16,204 to 20,000-25,000 species calculated on the basis of orchid and fern flora of the region. It has been estimated that PNG hosts about 15% of the world's fern species with around 3,000 species, including hosting around 2,800 species of orchids accounting for about 11% of the world's total orchid species. Several groups of plants attain levels of species richness usually seen only on continental spatial scales. PNG hosts one of the extensive and species-rich mangrove forests that is home to up to 43 species.

Papua New Guinea's warm-blooded fauna included (2015 status) 813 species of birds and 298 species of mammals. 76 bird species are endemic to PNG as are calculated 50 species of mammals. Birds are the best-known animal group in PNG, while mammals are far less known due to their nocturnal lifestyle. The islands cold-blooded vertebrates include a current status (2015) of freshwater fish 314; 352 species of amphibians; 335 species of reptiles (46 % of these species are endemic to PNG). Its invertebrate fauna is exceedingly rich and only superficially enumerated. The butterflies and larger beetle taxa are well known, but majority of PNG's invertebrate fauna groups are poorly studied.

Papua New Guinea is rich in habitat that includes freshwater wetlands, with more than 5,000 lowland and highland lakes, herbaceous swamps, savannah swamps, woodland swamps, and swamp forests. Its coastal and marine ecosystems rival the terrestrial environments in diversity and richness. These ecosystems include; extensive coastal and estuarine mangroves; fringing, barrier, and patch reefs; small and large island systems; atolls; seamounts; and deep water upwellings. Papua New Guinea is home to one of the world's frontiers of truly unspoilt tropical wilderness. This last frontier is among the leading 17 mega-diverse countries of the world. Occupying only less than 0.5% of the Earth's landmass but home to 6-8% of the world's biodiversity.

Much of the European exploration of the Pacific was inspired by the obsession to find the fastest routes to the spice-rich islands of the Moluccas (modern-day Maluku in Indonesia), and to discover that somewhere in the South Pacific lay a vast undiscovered southern continent, possibly also rich in gold, spices, and

other trade goods. Alfred Russel Wallace was the first European scientist that explored the Islands of coastal New Guinea including Aru and Waigeo. He later wrote in his book *The Malay Archipelago* of his 8-year exploration of Malaysia and Indonesia from 1854-1862. He described "the coastal village houses stand in the water; they have boat-shaped roofs, and often have human skulls hanging under the eaves, trophies of battles with their attackers, the Arfaks. The council house has "revolting" carvings of naked figures. The inhabitants often very handsome, as they are tall with aquiline noses and heads of carefully combed "frizzly" hair. He collected and shot the red bird of paradise and collected many species to send back to England.



Map of Central Highlands. Route down the Bulolo Watut River on right flowing from Mt Kaindi to the Markham River to Lae on the Bismark Sea. Top Center the Central highlands with route climbed for Mt Wilhelm, and villages hiked in the Wahgi Valley before there were roads built in the area, 1978.

Luis D'Albertis became in 1875 the first European to explore and penetrate the interior of New Guinea by managing to navigate a steam launch up the Fly River. The Fly originates in the central mountain spine of the interior and ends south in the Arafura Sea on the boundary of West Papua Indonesia and Papua New Guinea. He revealed through his diary the immense wealth of flora and fauna that included the tree kangaroo, cuscus, birds of paradise, and an incredible variety of insects and plants. He also described the culture of the forest people, from the swamplands of the Fly River to the mountains of its source. The Fly River is 1,050 kilometers (650 mi) long, and the second longest river in Papua New Guinea, after the Sepik. By volume of discharge, the Fly is the largest river in Oceania, and rises in the Victor Emanuel Range arm of the



Port Moresby, capital and very dangerous city, Bush flight into Kegslugl, Central Highlands

Star Mountains, and crosses the south-western lowlands before flowing into the Gulf of Papua in a large delta.

We had just finished our first 10 days in country exploring Mt Kaindi and navigated the first commercial trip down the Bulolo-Watut River to the larger Markham River and the coastal city of Lae. We packed up the rafts that I would bring back to California and caught a flight from Lae on the coast to Kundiawa in the interior Chimbu highlands of New Guinea. Breathtaking views as we passed over the immense Bismarck mountain range. The Central Cordillera of New Guinea forms the spine of the island, and from east to west are the Central and Eastern Highlands including the Owen Stanley Range in the southeast, whose highest peak is Mount Victoria at 4,038 meters (13,248 feet), the Bismarck Range, whose highest peak is Mount Wilhelm at 4,509 meters (14,793 feet), an extinct volcano with a crater lake; the Star Mountains on the Papua New Guinea–Indonesia border; and the Maoke or Snow Range in Indonesia, where two remnant glaciers still exist on the highest peaks Puncak Jaya (Mt. Carstensz) at 4,884 m (16,023 feet). We would be exploring the Bismarck Range including Mt Wilhelm, and the remote Wahgi Valley to the northwest by foot.

Arriving at Kegslugl at 2000 meters (6626 feet) by difficult four-wheel drive road 50 miles north of Kundiawa with many exposed cliffs and washed out sections, we began our walk up the most dramatic extinct volcano and highest peak in Papua, New Guinea, Mt. Wilhelm, 4,509 meters (14,793 feet) in elevation. Our Kegslugl route would involve climbing 4 hours up and through a mountain rain forest and then along an alpine grassland glacial valley to the twin volcanic lakes of Piunde and Aunde where we will set up camp. We arrived at the trailhead at 2000 meters (6,600 feet) where the air felt cooler and refreshing for our trek into the montane forest. We passed several hunters, highland mountain people on the trail who seemed stockier than their lowland neighbors, having large chests, strong shoulders and legs, and huge, wide feet that



Road above Kegslugl at 2000 meters (6626 feet) to Mt Wilhelm trail head, 1978

give them a decisive advantage in navigating any slippery clay trail versus my hiking boots. They were carrying bows and their selection of arrows, including one arrow with a blunt tip used to hit the lesser bird of paradise in the mountains, another with sharp



Simon and I at beginning of trailhead, rt near Mt Wilhelm Base Camp
 barbs used for wild pigs. They had a small shelter in the higher altitude forest where they would stay several nights.

Simon, who headed our group of strong porters, led our party up the steep trail through forests of beech, tan oaks, chestnut, and the large Araucaria pines, relatives of the monkey puzzle tree in Chile South America. We ascended through a beautiful humid rainforest richer than the Olympics that I am familiar with at home, with a large diversity of epiphytes that included hanging moss, orchids and epiphytic rhododendrons. The montane forest, like that of the higher elevations of Malaysia and Sumatra have many



Top Epiphytic *Rhododendron saxifroides*, orchid, *Rhododendron* sp; Middle Left Ground *Rhododendron* sp, left and far right, middles epidendric rhododendrons; Bottom, *Dendrobium* sp, *Dendrobium* sp pink, *Corybas adunca* orchid, *Dendrobium* sp.

rhododendron species both on the ground and in the canopy. I stopped to film yellow and pink flowered ground shrubs of rhododendron, and in the top of a podocarp tree, a type of conifer seen in Mt Kinabalu Borneo, a beautiful epiphytic variety with long white and pink trumpet flowers. And there were many epiphytic *Dendrobium* species of orchids colored, orange, and pink.



New Guinea white Oak, Orchid, Dacrydium sp. In the conifer Podocarp family



Dacrydium sp. in Conifer Podocarp family, Dacrydium sp, Dacrydium sp, Epidendric Rhododendron



Auracaria in Monkey puzzle tree family or hoop pine, and vaccinium, blue berry



Lithocarpus (tan oak) tree with nuts, Orchid, Potentilla rose family. Similar species Rocky Mountains USA

The montane rain forests in New Guinea ranges from 1,000 to 3,000m (3130 -9940 feet) can be divided into three broad vegetation zones on the mountains delineated by elevation. The lower montane forests extend from 1,000 to 1,500 meters elevation with broadleaf evergreen trees New Guinea oak *Castanopsis acuminatissima*, Tan oak seen in S. California *Lithocarpus* spp., elaeocarps (the islands of [Borneo](#) and [New Guinea](#) have the greatest concentration of species. These trees are well-known for their

attractive, pearl-like fruit which often colorful used for Hindu/Buddhist prayer beads and rosary beads) and laurels. Coniferous Araucarias, monkey puzzle related trees can form large stands like that above Wau. The upper montane forests from 1,500 to 2,500 meters elevation, are dominated by moss-covered *Nothofagus*, the southern beech also found in Chile's southern tip.



Left: *Eleacarpus* family, fruit used as beads by Buddhist and in Catholic rosary
The high mountain forest extends from 2,500 to 3,000 meters elevation with the conifers *Podocarpus*, redwood like needles *Dacrycarpus*, *Dacrydium* with cedar-like scales also seen in Mt Kinabalu

Borneo, *Papuacedrus*, *Araucaria* in the monkey puzzle tree family, and cypress family that includes incense cedar in the Pacific Northwest of North America *Libocedrus* spp. and broadleaf trees of the myrtle family *Myrtaceae* form a thin canopy, with a prominent understory.

The montane forests are home to a rich wildlife, a great deal of which is unique to these mountains including many plants, reptiles and over 100 birds and animals. Of the 90 mammals found on the island, 44 are endemic, a very high proportion. The birds and animals include many Australasian species such as tree-kangaroos, bowerbirds, Australasian robins, honeyeaters, and birds-of-paradise. Four of the endemic mammals are critically endangered: the Bulmer's fruit bat, with only tiny communities remaining in the Papua New Guinea end of the island, and three rodents; a large *Leptomys*, the eastern shrew mouse, and the lesser small-toothed rat. There are 55 bird species endemic to the mountains from a total of 348 birds found here. There are a number of



MacGregors honeyeater, Brown sicklebill, Ribbon-tailed Astrapia Bird of paradise, Brehms Tiger parrot



Birds Purple-bearded bee eater, Ribbon-tailed Astrapia bird of paradise



Lesser bird of paradise, Crested berrypicker, Papuan flycatcher endemic butterflies in Wahgi Valley.

Above 3,000 meters elevation, the high mountain forest yields to sub-alpine including alpine meadows of tall grasses, dwarf conifer forests, tree-fern (*Cyathea*), bogs, and shrubby heaths of *Rhododendron*, *Vaccinium* (blueberry), *Coprosma* related to coffee, and *Rapanea* in the primrose family which are quite different from the lowland tropical rainforest. After hours of ascending through beech and tree ferns, we reached the cloud forest. At 3320 meters (11,000 feet) the forest was stunted filled with grass meadows, a bonsai garden complete with tree ferns, cedars, and beech and tree ferns. Ahead lay two lakes at the foot of Mt. Wilhelm that were surrounded by sheer granite cliffs braided by a profusion of waterfalls, a perfect spot for our base camp. Unique to this alpine zone are the lesser bird of paradise, Brehms tiger parrot, mountain robin, and the regent whistler. We set up camp at the beautiful volcanic Lake Piunde at 3560 meters.

There are only nine mammals that live on the higher slopes: four rodents, two bats, and three marsupials that include cuscus possum, antechinus or black tailed dasyure, a small carnivorous marsupial, and Doria's tree-kangaroo *Dendrolagus dorianus*, all heavily hunted. Doria's tree kangaroo, the heaviest tree-dwelling marsupial is one of the largest tree-kangaroo species, weighing 6.5–14.5 kg (16.5-32 pounds) with a long 44–66 cm tail (just over 2 feet). It has long dense brown fur with black ears and a pale brown or cream non-prehensile tail. It has large and powerful claws and a stocky build that gives it a bear-like appearance. They are found here and in montane forests of southeastern New Guinea at elevations between 600–3650m (2000-12,000 feet).

The other species of tree kangaroo found here is Goodfellow's tree kangaroo that I had seen in Wau Ecology Institute in Morobe province to the east. It is marked with chestnut to red-brown, short, woolly fur, usually a gray-brown face, yellow-colored cheeks and feet; a pale belly, a long, golden brown tail, and two golden stripes on its backside. It weighs



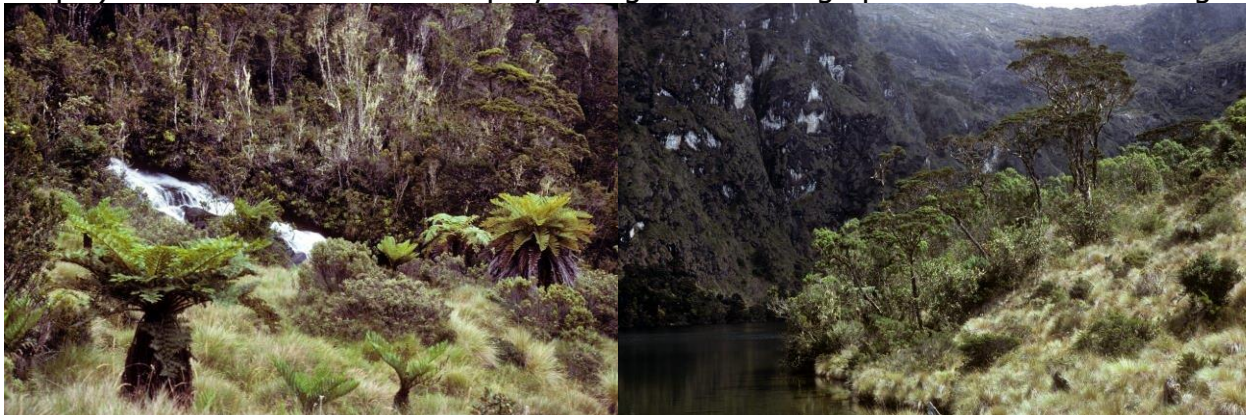
Black climbing rat, Tiger quoll, only carnivorous marsupial in PNG, Possum



Dorias tree kangaroo, dwarf wallaby, Goulds tree kangaroo

approximately 7 kg (about 15 lb) and is more widespread in the mid-montane areas of the Central Cordillera throughout New Guinea, from 680 to 2,865 meters (2259 feet-9491 feet) above sea level. It has been documented to feed mainly on the leaves of the Silkwood tree *Flindersia pimenteliana*, and fruits, flowers and grasses. Its large stomach functions as a fermentation vat, similar to the stomachs of cows and other ruminant herbivores, where bacteria break down fibrous leaves and grasses. A largely nocturnal species, Goodfellow's tree kangaroo emerges at night to feed. Tree kangaroos are easily spotted in the forest canopy in its nest of scattered twigs. Adapted for climbing, it has large front paws and sharpened claws, using the tail both as a prop, and as a rudder when it leaps from tree to tree foraging. The hind feet have soles that are cushioned with large deposits of fat, enabling it to drop 50-60 feet to the ground unharmed.

After reaching camp I spent the rest of the day of rest and exploring, then turned in early for an early summit approach to see the mountains before the mists moved in. That night we had a small campfire, and Simon and I shared stories. I enjoyed the chance to get to know Simon, a Christian brother who had some education. Simon shared his village ancestral stories in that highland culture (especially for the Mendi People) believe the earth is held up by a single root. Living up in the heavens is the god



Tree ferns and alpine grasses at 3600 meters (12,000 feet) just above Lake Piunde and our camp



Lake Lake Piunde Dwarf rhododendron, Dimorphanthera species blueberry, Rhododendron sp
 figure (not an ancestral spirit) whose name is Parapapim. Now and then Parapapim is believed to be looking for sepi kaipi (dried Kaukau/sweet potato). The people believe that earth quakes occur when this god figure knocks the earth or the root. So when the earth shakes in the afternoon or evening the people have learnt that this is Parapapim bringing them food, meaning there would be a surplus of food. If the earth shook in the morning then the people had the idea that there would be a shortage of food.

Early the next morning my guide Simon and I struck off for the summit at 5 AM finding the trail with torches in the dark. I felt the altitude with my heavy rucksack filled with camera gear, and we reached the summit of Mt. Wilhelm during a blazing red sunrise. Soon wisps of clouds and mists began caressing the granite gendarmes of the summit, creating mysterious patterns that shifted from ridge to ridge. Below us lay the entire Bismark Range, a part of the long spine of mountains from east to its western edge. The air was completely still and quiet except for an occasional gust of wind. The Beauty of the granitic summit and mountains and lakes below were inspiring. Above 4000 meters (13,252 feet) the alpine is dominated by grasslands, and consists of compact rosette and cushion





Summit at sunrise of Mt Wilhelm, 4,509 meters (14,793 feet), an extinct volcano with a crater lake

herbs, such as buttercup *Ranunculus*, shrubby cinquefoil *Potentilla*, Gentians *Gentiana*, and fireweed *Epilobium*, seen in the Cascade mountains in my home Washington State, and the grasses *Poa* and *Deschampsia*, bryophytes, and lichens.

We descended the summit and once at base camp, picked up our porters with our gear and continued back down the steep trail to Kegslugl. From the small village we were driven by a four-wheel drive pickup to a ridge north west of Mt Wilhelm and spend the next week exploring the villages and mountains of the highlands that overlooked the Wahgi Valley. The Wahgi Valley in the Western Highlands was remoted in 1978 with almost no roads, but today is heavily cultivated with traditional tribal village communities that farm in the grassy mountain valleys and side slopes. Although the Eastern Highlands Province is the most heavily populated area of PNG, the Simbu Province (or Chimbu) today (2018) is the center of the small coffee-growing town of Kundiawa on the Wahgi River near Mount Wilhelm



We followed a wide walking trail that connected to unnamed village where we stayed the night. Negotiations were made for the only room available, a pig shelter that really stunk. The village women changed the bamboo mats, and to them this was an honored place to stay. They cherished their pigs. It was a long sleepless night as the pigs rooted underneath us all night.

After the second day we arrived at the village of Ragul, a small hamlet perched on a knife-like ridge at 2400 meters (8,000 feet) with a wonderful view of the mountains.

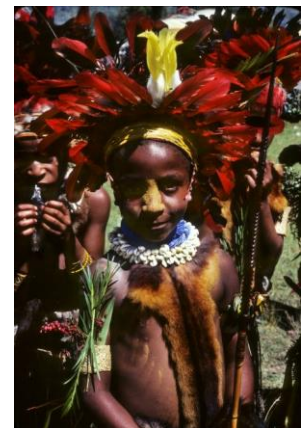


Entering the village we were again welcomed with overwhelming hospitality from excited children and parents who rarely saw westerners. They escorted us through the hamlet that reached almost a half-mile in length, flanked on both sides with steep gardens. Passing several women carrying heavy loads of Taro in string bags that hung from their

heads, we exchanged greetings in Tok pisin of "Habe noon!" or happy afternoon. Our tour ended at a large bat cave that led into several large limestone chambers. A refreshing cool breeze was felt once inside, but the silence and mystic of this cave was soon broken by the screams of excited children as they tried to compete for the longest yell and echo.

We spent several days at Ragul, and became more aware that the highlander must work harder than the people of the coast, depending entirely upon their own ingenuity. Besides having to raise extensive gardens and hunt for food, the highlander must also cut wood for heat and cooking, often carrying large loads several thousand feet from below to their huts. But it's the women who undertake most of the hard labor, tending gardens, rearing children, and weaving. At Ragul as in most of Papua New Guinea, the men live in oval communal houses apart from the women in order to maintain their purity and strength, while the women, children, and the highly prized pigs live together in dwellings of their own. Although the women grow the food, the husbands cook for themselves.

The traditional ways are changing rapidly in the highlands as we trekked to the next community Mindima Village. Cash crops coffee and rice had been introduced for commercial production that competes with growing sufficient food to feed their villages. After meeting the village headman, Jim Slade, a veteran guide of The Omo River raft trips asked one of the elders how life contrasted today with that of the past. Wamugl as he was named, a wiry muscled man with red teeth from chewing betel nut, answered that they were quite happy to be done with the tribal fighting. In Tok pisin he answered our interpreter "In the past, he recalled, "one village would raid another, pigs were stolen, and women carried off." This was the "payback" or revenge raid that would fuel a continual feud. "These things," Wamugl continued, "are now forgotten. A man who breaks the law must go to prison if caught by the patrol. Paybacks for wrongs done to other villages are now made with gifts of money and pigs instead of bloodshed and fear. But we still teach the traditional ways of ceremony." This is not just our way in Mindima, but all over the valley.



That afternoon we were fortunate in witnessing a ceremonial brides price where pigs and money are given by a groom's family to the relatives of the bride. In contrast to Manam Island and the lowlands of New Guinea, the highlanders express themselves most creatively in body decoration, dancing, and ritual theatre. Mindima was no exception as the men and women were colorful in their bird of paradise headdresses, and necklaces of kina shells and iridescent June beetles. Many wore capes of possum skins and pierced through their nose long thin tusk-shaped shells that were obtained from the coast. An assortment of skits were included in the day-long ceremony that would reenact tense moments in married life, often bringing humorous responses from the women when any husband beating was included in the acting. We laughed as they laughed and were included in the village presentation.

We left Mindima, then descended the steep trail to the lowland valley, and walked out to the nearest dirt road to pick up transportation back to Kundiawa. We flew a small twin engine Air Niugini flight to Madang, where we will explore Manam Island off the coast, and spend time diving the incredible and diverse coral reefs and wall.

NATURAL HISTORY OF MIDMONTANE MOUNTAINS OF NEW GUINEA



hylid Long-nosed frog *Litoria* sp., Hylid white lipped frog, hylid tree frog *Litoria*



Ant plants Myrmecophytic in which the plant inhabited by *Anonychomyrma* ants, Orthopteran



Noisy Pitta, Blue Bird of Paradise Male, Blue bird of paradise displaying on lek Tari-Pori district



King of Saxony Bird of Paradise KamyI lodge, Vogelkop bowerbird, Raggiana Paradise Varirata N Park



Superb Fruit Dove (mist netted wau ecology Institute, Ribbon-tailed Astrapia Bird of paradise



Goodfellow's tree kangaroo (WCS photo), Cuscus possum



Green tree python immature with dark coloration. Adult gain the green coloration. Feeds on small birds, bats that roost, generally an opportunistic hunter.



Mountains near Kamul lodge, Western Highlands



Carstensz Glacier and Puncak Jaya, Highest peak in New Guinea and West Papua 4884 m (16,180 feet)



Mountains of Tufi New Guinea



Mountains west papua west of Wamena Puncak Trikora



Mountains west papua west of Wamena Puncak Trikora