Andean Flora of Ecuador

Naturetrek Tour Report 24 September - 9 October 2013

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Introduction

Ecuador harbors one of the richest floras of the world. Walking forested areas, along roads and paths, we try to convey the diversity of the flora of the Eastern Andes of Ecuador. Our exploration progresses through the main vegetation formations of a corridor traced between Quito and Vilcabamba, with side trips to the Cloud Forest on the eastern slopes. During the trip, we had brief evening gatherings to identify some of the readily described flowers up to level of genus. We photographed flowers belonging to 184 genera and 74 families. Among them, I identified 220 flowers to the species level. These 220 species included 34 plants endemic to Ecuador, 55 specialties unique to Ecuador and either Colombia or Peru, and 16 species only available in the territory covered by the three countries. In the end, our 14 day adventure generated a list of 105 range restricted flowering plants identified to species, which can be seen only in the Andes of either Ecuador or its neighbouring countries. Most of them occurr in habitats which also represent a reduced extension of native vegetation, for example: the Andean Paramos and the Dry Inter-Andean Valleys. Throughout the text, when discribing the distribution of the plants seen, I used acronynms for the Latin American countries that they inhabit based on the Tropicos database, i.e. COS for Costa Rica.

As a side activity, we recorded birds readily available either visiting the flowers we photographed or simply crossing our paths as we visited our botanizing destinations. In total, we spotted 86 species including specialties such as Jocotoc antpitta, Carunculated caracara, White-chinned thistletail, Chimborazo hillstar (Fly-by), Crested guan, Peregrine falcon, Black-chested mountain-tanager, and Andean Potoo.

Day 1 Wednesday 25th September

Quito to Patate Valley

As we left Hostería San José, we drove along the Pifo-Sangolquí road. We stopped to see Peregrine falcon, White-throated hawk and American kestrel, gliding above the stands of *Acacia macracantha* mixed with patches of *Mimosa*. The roads had been cut into the hill-sides which showed the marks of the volcanic activity in the Andes. Pumice and ashes, or rock formations appeared on the banks of the road along the drive to Sangolquí. All these geological features are related to the activity of the Antizana volcano happening on the Western slopes of the Eastern Andes. Volcanism has shaped also the distribution of plants along the Ecuadorian Andes. Flower diversity is different under the influence of the volcanoes of Northern Ecuador than in the soils originated in the ocean uplift present in Southern Ecuador.

As we travelled, one of the cultural highlights of the drive was the Gigantic hummingbird sculpture. Endara Crow's sculpture is always a remarkable sight as one drives along the Los Chillos Valley. Further on, during a

stop, we talked about some species we would see often along the trip. At a gas station, we saw *Yucca guatemalensis* and *Eucalyptus globulus*, two species frequent along dry and semi-dry areas in the Andes, particularly next to human inhabitation. *Euphorbia laurifolia*, another frequent species is used as a live fence between 2000 and 3000 meters for farms and rural housing. It reminded our group members of *E. mellifera* from the UK. Another species, Elderberry (*Sambucus nigra*) is also present everywhere we look. Elderberry was likely introduced from Europe during the Spanish colonization, because of its potential use as medicine and as a food source.

A few minutes later, we arrived at a river in the Machachi area to take a relaxed walk and to photograph a sample of Inter-Andean Valley and Quebrada vegetation: the moist habitat of the valleys set amidst the mountains. Native plants like *Bocconia integrifolia* (Papaveraceae), *Phaedranassa dubia* (Amaryllidaceae), *Bomarea multiflora* (Alstroemeriaceae) interact with Eucalyptus trees and pasture land wherever locals have allowed them to grow as live fences or on the banks of rivers and trails. We also found there several epiphytes on the trees: *Tillandsia incarnata* and *Tillandsia* cf *pastensis* (Bromeliaceae). Next to houses, we found the native *Brugmansia sanguinea* - regional endemic: COL-ECU-BOL (Solanaceae). The pink blossoms of *Vallea stipularis* (Elaeocarpaceae) were the last flowers we photographed before we exited this habitat and drove to Paramo. There, a stand of *Puya recurvata* (endemic) was waiting for us. As we were enjoying the flower we also had a chance to have a look at a Black-tailed trainbearer arriving for its share of nectar. This hummingbird species is one of the 113 hummers that inhabit Ecuador, and the one that bears the longest tail of them all.

During our visit to the Cotopaxi National Park, the Paramo offered a sample of the plant species of the highlands, above 3000 meters. Interesting records included our first encounters with *Polylepis incana*, *Chuquiraga jussieui, Baccharis genistelioides,* and *Gentiana.* After a short drive we arrived to the agricultural Patate Valley. Our dinner and overnight was in Leito, where we stayed for the next two nights.

Day 2 Thursday 26th September

Patate Valley to Rio Verde

The valley around our lodge and the gardens of the hotel offer opportunities for us to find more native species related to farmlands. As we left the property, we climbed up the slopes of the mountains on the southern limit of the Llanganates Park along the Leito - El Triunfo road and explored its remnants of vegetation. We started the drive with a tree of *Erythrina edulis* (Fabaceae-Faboidea) in flower, one of the useful species of the Andes. Other sightings included species such as *Lupinus pubescens* (Fabaceae)*, Brugmansia sanguinea*, *Cucurbita ficifolia*, and *Siphomandra betacea* (Tree tomato). As the morning progressed we photographed flowers along the climb and enjoyed the view of the valley with the mix of pasture land, ravines and steep climbs where farmers established their crops of Tree tomato and Babaco (*Carica* [V*asconcellea*] x *heilbornii* – Caricaceae).

Roadwork blocked our access to Baños so, as soon as we reached our target species for this drive, *Nassa auca* - endemic (Loasaceae), we turned around and returned to have lunch in Leito. On our way back, we photographed spikes of shoe-like yellow *Calceolaria perfoliata* (Calceolariaceae), present on the wet banks of the road and along side-streams.

During our afternoon session we explored the vertical-drop ravine of the Patate River next to Baños, looking for *Puya glomerifera* -endemic, which we saw along with the terrestrial orchid *Altensteinia* aff *virescens* Lindl (Orchidaceae). On our way down the road to Rio Verde, we spotted at the gas station two individuals of Western

syristes. Not bad for a technical stop. At our next site we were welcomed by an array of tropical fruit including Babaco -*Vasconcellea ×heilbornii* -endemic (Caricaceae). Here, in the gardens of the property we also recorded several species of Bromeliads including *Tillandsia lindenii*, *Aechmea chantinii,* and *Guzmania monostachia*, with striking bract patterns and colors, plus Orchids such as *Maxillaria brunnea*, *Maxillaria fletcheriana*, *Phragmipedium wallisii* -, *Oncidium* aff *retusum*, and flowers in the genera Odontoglossum. We closed the day with a cup of local coffee and a pastry, before returning to Leito.

Day 3 Friday 27th September

Puyo

We had an early start in Leito so we could see Tungurahua Volcano not covered with clouds and photograph it. On our way to our picnic breakfast we stopped for *Cleistocactus sepium* var. *sepium,* the subspecies of this trailing cactus of the Patate valley. *Ipomoea sp* gave us also a glow of purple-blue difficult to resist. Our exploring and searching for plants started at a rock face covered with orchids and bromeliads, at the base of which we had breakfast. Here the plants of *Epidendrum summerhayesii* did not have flowers. I had to search slowly with the binoculars in order to find one of the last spikes with flowers that we were able to see through the telescope. Other species recorded here were *Pelexia hirta* (Orchidaceae), *Tillandsia secunda* (Bromeliaceae), *Croton wagneri* -endemic (Euphorbiaceae), *Clinopodium tomentosum* -endemic (Lamiaceae), *Lycianthes lycioides* (Solanaceae), *Cardiospermum corindum* (Sapindaceae), *Equisetum giganteum* (Equisetaceae), *Lantana rugulosa* (Verbenaceae), *Kalanchoe daigremontiana* -introduced (Crassulaceae), *Pilea sp* (47 spp 12 endemic), and *Ricinus communis* -cultivated escape (Euphorbiaceae).

As we drove down to Puyo exploring the slopes of the Andes and descending to the Tropical Rainforest, we collected a new family: Cecropiaceae, a marker of lower altitude, and of a more tropical and moist climate. We stopped at the view point of the Pastaza River, where the large gorge of this lower Amazon river opens into the basin. Here some large native white-flowered *Browallia aff speciosa* (Solanaceae) were frequent along the cliff. *Dicksonia* and *Cyathea* tree ferns where also on sight as we descended.

Our destination in Puyo is CERFA (Centro de Rescate de la Flora Amazonica). This private reforestation project has an array of useful and ornamental native plant species of the Ecuadorian Amazon with naturally immigrating species arriving all the time. Orchid and bromeliad species grow freely around the trees underneath this 20 to 25 metre tall canopy. As we disembarked, we found *Carludovica palmata* (Cyclanthaceae): the raw material for Panama/Toquilla Hat. The property offered other useful plants in flower this time: Heliconias like *Heliconia orthotricha***,** *Heliconia hirsuta, Heliconia vaginalis*, and others. One exciting record as we entered the garden was a colony of social spiders. Along the trail we photographed Bromeliaceae: *Pitcairnia nigra*, *Aechmea* aff *fraseri*, *Aechmea tessmannii* and *Aechmea* cf *woronowii*, *Aechmea zebrina*; Orchidaceae: *Stelis* aff *adrianae*, *Cischweinfia parva* -, *Gongora scaphephorus***,** *Huntleya aff meleagris*, *Lycomormium* aff *fiskei*, *Maxillaria buchtienii*, *Oncidium baueri* (Sphacelatum group), *Prosthechea crassilabia*, *Stanhopea connata*, and *Anacheilium fragrans*. Other useful species recorded here included palms (Araceae) like *Iriartea deltoidea*, *Mauritia flexuosa, Astrocarium* sp and *Geonoma* sp, also some ornamental species like *Calathea roseopicta* and *Cyclanthus bipartitus* (Cyclanthaceae).

With more than two thirds of the property yet to explore, we had to leave to OMAERE Ethnobotanical Park for lunch to return later... We planned ahead to have lunch at a local restaurant. A very simple place, the restaurant serves the specialty of the house: "Volquetero" prepared with *Lupinus mutabilis* (Fabaceae-Faboideae). Also

known as Chocho, the local name for *L. mutabilis,* it is the single species within the lupins that can be eaten. It requires a similar treatment as acorns need in order to produce acorn flower: succesive leaching.

After lunch we walked to OMAERE Park. The organization originally acquired a 15 hectares property, set aside to protect the native plants used by Waorani, Kichwa and Shuar people from the Amazon. Locals today visit the reserve to receive medical advice from the resident herbalist and manager. Several medicinal plant species from the surroundings and from the neighboring provinces are available here to the knowledgeable people who still practice indigenous medicine. During our visit this time we were guided by our local expert, reserve manager and -in Ecuador well known- conservationist Christopher Canaday. He shared with us his knowledge on medicinal and useful plants present in the reserve. He showed us *Geonoma macrostachys* (Araceae), which is used as a material for roofing. Here we also recorded: *Biophytum aff heinrichsae* (Oxalidaceae), *Aechmea penduliflora*, *Erythrina amazonica* - (Fabaceae), *Warszewiczia coccinea* (Rubiaceae) and *Pitcairnia arcuata* (Bromeliaceae) -both later species distributed in CR-PAN-COL-ECU, and *Heliconia stricta* (Heliconiaceae), amongst others. We left Puyo in time for us to arrive to have dinner at the lodge and retire for the night.

Day 4 Saturday 28th September

Leito to Chimborazo

Today's route took us from the Patate Valley up to the base of Chimborazo Volcano and, along the Central Andes of Ecuador, into the Cuenca region: as we drive south, the influence of volcanic materials, ashes and pyroclasts, in the soil composition is progressively reduced. So far we had explored four provinces and five vegetation formations: Inter-Andean valley and Quebrada (ravine) vegetation, Inter-Andean desert and semi-desert, Grass Paramo, Cloud Forest and Tropical Rainforest, and crossed Pichincha, Cotopaxi, Tungurahua and Pastaza Provinces, four out of the 24 provinces of the country.

During the drive out of the valley, we also had a perspective of the local crops grown in the area and of the use of local plants. Farmers enclose their properties using a combination of *Agave americana* and *Furcrea andina* as live-fences, particularly along roadsides. These plants with spines serve as a deterrent for animals to cross into a crop and on steep slopes as a way to avoid erosion. Along the perimeter of other properties, farmers plant or allow the growth of *Opuntia cylindrica* (Cactaceae) even on the rammed earth walls, where also *Kalanchoe* and *Leonotis* thrive.

Along the Ambato – Guaranda road, we botanized one of the hillsides of the Ambato River valley on our way towards the slopes of the Chimborazo. We explored a sample of the dry forest vegetation as it turned into dry Paramo. The valley presented Bromeliads: *Tillandsia pastensis*, *Tillandsia incarnata*, and a sample of the very diverse complex varieties within *Echeveria quitensis.* We circled the north and western plateau of the volcano, as we looked for our dry Paramo specialties. A group of *Vicugna vicugna* was found at the base of Chimborazo. This species was introduced to the Chimborazo in 1998 as a present of good-will from the Peruvian Government to the people of Ecuador. Its impact has yet to be defined.

A few minutes ahead along the drive we found one of our target species today, the endemic *Nototriche hartwegii* (Malvaceae). As part of the diversity of flowers of the area we also found *Werneria nubigena* (Asteraceae), *Valeriana rigida*, *Calceolaria rosmarinifolia* (Calceolariaceae), *Loricaria thuyoides*, and the endemic *Astragalus geminiflorus* (Fabaceae). Other flowers not yet identified were *Hypochaeris* sp. and *Bidens* sp. (Asteraceae).

On our way to Cuenca, we made our lunch stop in Alausí. Here we enjoyed a warm meal as we visited this iconic small town located along the railroad connecting the highlands and the coast. Arriving a little after 7:30 PM, our hotel in Cuenca welcomed us for a relaxed dinner and a quiet night's sleep.

Day 5 Sunday 29th September

Cuenca to Loja

Some of us started the day with a short stroll through Cuenca to explore the quiet - early Sunday morning - downtown of Cuenca, one of our Ecuadorian World Heritage Sites. After breakfast, we drove up the mountains south of Cuenca starting our exploration on the farmlands. There we spotted *Gaiadendron punctatum* (Loranthaceae), a terrestrial mistletoe. At the same site we photographed *Tristerix longebracteatus* (Loranthaceae), *Bomarea multiflora* (Alstroemeriaceae), *Calceolaria rosmarinifolia* (Calceolariaceae), *Cortaderia nitida* (Poaceae), and *Monnina sp* (Polygalaceae).

A few kilometers ahead, we reached the Paramo. We looked around expecting flowers of three endemic species *Puya nutans* -dry inflorescence, *Puya pygmaea* -dry inflorescence (both Bromeliaceae) and *Gentianella hyssopofila* - endemic (Gentianaceae). However, we only found the later in flower. Additional species seen included *Diplostephium ericoides* (Asteraceae), *Bomarea chimboracensis* (Alstroemeriaceae), *Puya hamata*, *Valeriana microphylla* -, *Hieracium frigidum* (Asteraceae), *Pedicularis incurva* (Orobanchaceae), *Cyrtochilum aureum* (Orchidaceae), *Eryngium humile* (Apiaceae), *Weinmannia* sp. (Cunoniaceae), *Castilleja* sp. (Orobanchaceae), *Sisyrinchium* sp. (Iridaceae), *Epidendrum* sp. (Orchidaceae), and *Oritrophium* sp. (Asteraceae).

On our way to Loja we detoured for about 5 km to our lunch stop, located on the slopes of the Leon River valley. We enjoyed a traditional Ecuadorian lunch prepared with pork, fresh potatoes, hominy, roasted corn and tree tomato juice. We continued our drive. At the bottom of the valley, we stopped to explore the dry forest. Although the landscape has been disturbed and polluted, the experience was very interesting and the plants were there in flower. Our highlights were *Tillandsia tectorum* (Bromeliaceae), and *Espostoa frutescens*. Other species seen included *Cleistocactus leonensis* (Cactaceae), *Croton wagneri* (Euphorbiaceae), *Puya lanata* (Bromeliaceae), *Tillandsia recurvata*, *Acacia macracantha* (Mimosaceae), and *Cereus hexagonus* (Cactaceae). Late in the afternoon we arrived to our hotel in Loja.

Day 6 Monday 30th September

Loja to Cajanuma and Jocotoco Reserve

The Cajanuma access to the Podocarpus National Park was our first stop this morning. The Paramo vegetation growing as colonizers on the pass between Cuxibamba and Malacatos Valleys offered us Puyas, Orchids and others. Amongst the photographed species we saw two specialties: *Bejaria subsessilis* -endemic (Ericaceae), and *Puya parviflora* -endemic (Bromeliaceae).
We also recorded *Macrocarpaea arborescens* (Gentianaceae), *Oreocallis grandiflora* (Proteaceae), *Pitcairnia pungens* (Bromeliaceae), *Baccharis* (Asteraceae), *Pernettya prostrata* and *Cavendishia bracteata* (Ericaceae), and *Streptosolen jamesonii* (Solanaceae). Other flowers were identified within the genera *Paepalanthus* sp., *Schefflera* sp., *Clinopodium* sp, and *Brachyotum* sp.

Along our drive to Tapichalaca we also crossed the Valleys of Vilcabamba, Quinara and Yangana. The columns of eroded terrain and the dramatic cliffs on the banks of the road were admired enough to stop for photos of them. Upon our arrival to Tapichalaca Reserve we walked along the trail up the hill from the lodge photographing Cloud Forest species. Even the Jocotoco Antpitta showed up as we were about to finish our walk. Species seen included; *Fuchsia steyermarkii* (Onagraceae), *Centropogon steyermarkii* (Campanulaceae), *Guzmania gloriosa* (Bromeliaceae), *Bomarea distichifolia* and *Bomarea hirsuta* (Alstroemeriaceae), *Semiramisia speciosa* (Ericaceae), and *Pitcairnia trianae* (Bromeliaceae). Other flowers here included species in the genera Paradrymonia sp (Gesneriaceae), Dicksonia sp (Dicksoniaceae), Ceroxylon sp (Arecaceae), and Cyclanthus sp (Cyclanthaceae). Among the Orchidaceae we photographed were *Odontoglossum aff epidendroides* -regional endemic COL-ECU-PER, and Elleanthus sp. As the sun set, we drove past the Quinara Valley and into Vilcabamba.

Day 7 Tuesday 1st October

Cerro Toledo full day

A day with a clear blue sky and scattered clouds building up along the eastern slopes of the mountain was the context of todays outing. With clouds and drizzle coming and going we explored the mountain from the top down, in case we faced a sudden change in the weather. In the open, cold and windy Paramo grassland, we looked for prostrate alpines, Puyas and flowered bushes. As we walked uphill, we found a series of plants, sometimes along the road and sometimes after a short walk off the track. Endemic species we recorded here included *Halenia pulchella* and *Halenia longicaulis* (Gentianaceae), *Fuchsia summa* (Onagraceae), *Puya cuevae* (Bromeliaceae), and *Bomarea brachysepala* (Alstroemeriaceae). Other plants in flower recorded up here were *Calceolaria fusca,* and *Calceolaria nivalis* (Calceolariaceae)*, Valeriana plantaginea* (Valerianaceae)*, Bomarea nervosa* and *Bomarea dissitifolia* (Alstroemeriaceae). Amidst the specialties, we also recorded a frequent alpine plant *Nertera granadensis* (Rubiaceae).

Other flowers described to genera were *Brachyotum sp* (Melastomataceae), *Solanum* sp (Solanaceae), *Rubus* sp (Rosaceae), *Arcytophyllum* sp (Rubiaceae), *Diplostephium sp.* (Asteraceae), *Oreopanax* sp (Araliaceae) and *Miconia* sp -a prostrate form of this genus (Melastomataceae). One of the highlights due to its restricted range, appearance, and size - it is large for it to be a buttercup, was *Ranunculus gusmannii* -shared endemic: COL-ECU (Ranunculaceae). There were periods of nice weather intertwined with moments of strong wind and drizzle which turned into rain. We all coped with the rain and the cold and finally we had lunch as the weather eased and we enjoyed a long moment of blue sky.

As we returned to Vilcabamba up in the cold plateau we recorded *Gomphichis macbridei* (Orchidaceae), *Valeriana convallarioides* (Valerianaceae) and *Greigia mulfordii* (Bromeliaceae). Also we photographed species in the following genera Ribes (Grossulariaceae), Calceolaria (Calceolariaceae), Rubus (Rosaceae), Semiramisia (Ericaceae), Macrocarpaea (Gesneriaceae), Geranium (Geraniaceae), Oxalis (Oxalidaceae), Arcytophyllum (Rubiaceae), Maxillaria (Orchidaceae), and Paepalanthus (Elaeocarpaceae), amongst others. Around 6:30 we arrived at our hotel in Vilcabamba.

Day 8 Wednesday 2nd October

Cajanuma and El Naranjo Equatorial Dry Forest

We agreed to have an early start and breakfast in the field in order to be able to use our time efficiently during this long day of driving. We were able to explore Cajanuma again and at the same time drive to the Kapok trees forest around El Naranjo. When in Cajanuma, we drove to the parking area in order to have our breakfast. Then, we explored the surroundings where we found some Orchids: *Lepanthes imitator, Pleurothallis lilijae*, *Pleurothallis* aff *cardiostola*, *Pleurothallis aff antonensis,* and other plants like *Calceolaria*, *Clusia elliptica* (Clusiaceae), *Colignonia ovalifolia* - (Nyctaginaceae), and *Aphelandra* aff *phaina* (Acanthaceae). We also had a second chance to try photographing *Bejaria subsessilis* (Ericaceae) and *Bomarea distichifolia.* Species not yet identified were recorded in the genera Monochaetum sp (Melastomataceae), Alternanthera sp. (Amaranthaceae), Kohleria sp. (Gesneriaceae), Tradescantia sp (Commelinaceae), Palicourea sp. (Rubiaceae), Tillandsia sp. (Bromeliaceae), and Siphocampylus sp. (Campanulaceae).

Finally, as we exited the reserve, we were curious about a garden plant. It presented white flowers attached to a central petiole in a distichous array, forming an indetermined spike. The inflorescence developed between a group of elongated leaves. All its appearance was similar to Crocosmia (Iridaceae). After a literature revision and an on-line check, I presume it was *Watsonia borbonica* ssp *ardernei*, also known as "Ardernes White". *W. borbonica* is a native plant from South Africa, which grows in the Cape Peninsula. It does well on this slope as a non-native plant probably because the terrain is not particularly rich, as it has undergone fires, which in fact is the natural habitat for it.

After a chilly early start, we enjoyed a warmer morning and eventually a hot and sunny afternoon. After lunch at Las Playas, we drove straight to our landmark for the equatorial dry forest: an individual of *Ceiba trischistandra* about 45 meters high and with a canopy of 20 metres! It is one of the few well grown trees in the area that we are able to photograph, and touch. *Ceiba trischistandra* is a shared endemic between Ecuador and Peru (Malvaceae). At this site, we also used the chance to take photos of some of the equatorial dry forest species: *Acacia macracantha* (Fabaceae-Mimosoidea), *Tillandsia multiflora* (Bromeliaceae), *Vriesea espinosae* (Bromeliaceae), *Opuntia quitensis* (Cactaceae), and *Erythrina velutina* (Fabaceae-Faboidea). As we looked around, we also spotted a bird species that has become a frequent record during our trips to the south: Beautiful Jay. It flew by and perched within reach of our cameras on the nearby vegetation.

We continued our drive, and another stop along the road produced *Selenicereus megalanthus* (Cactaceae), the group of plants that we previously reported as an extension of distribution of this rarely seen epiphytic cactus for Ecuador. We walked along the road and we added to our records *Cordia lutea* (Boraginaceae), and further on, *Espostoa lanata* (Cactaceae). Continuing on, other highlights of the dry forest were: a) the endemic *Armatocereus brevispinus* (Cactaceae), restricted to the Loja province, b) *Bouganvillea pachyphylla* -shared endemic: ECU-PER (Nyctaginaceae) with red bracts protecting red floral tubes -a record not yet reported in the Catalogue of Vascular Plants of Ecuador, and c) *Capparis scabrida* (Capparaceae) also shared between ECU-PER.. Before dark we arrived back at Catamayo. We had dinner and also enjoyed fresh juice, beer and wine. A well deserved meal after a long day, before closing our visit to the south.

Day 9 Thursday 3rd October

Quito to Papallacta / Cayambe-Coca NP

After a good night's sleep we had breakfast at our hotel in Catamayo before catching our flight to Quito. Up, at the mountains around Papallacta Pass, weather was rainy and foggy and visibility was reduced. Therefore, we decided to leave the pass for the last day and focus on our drive to Papallacta, the town, having our picnic lunch indoors. A warm chicken soup cheered us up, as we waited for the rain to ease. As we returned to the van, we photographed a large array of plants of *Brugmansia sanguinea* outside the restaurant.

I attempted to lead the way up the road to the Cayambe-Coca National Park. However I felt unwell, so, for the rest of the afternoon the group split as follows. Joan decided to walk up the road with the support of our vehicle. Meanwhile, the others explored the lodge or enjoyed the private pools of the Thermal Springs. *Cyrtochilum* and *Oncidium* orchids in flower surrounded the pools. One of the species flowering next to the thermal baths was *Odontoglossum aff hallii*, along with *Vallea estipularis*, and *Fuchsia vulcanica*. Introduced species such as *Fuchsia magellanica* from South America, are important at the gardens because they attract hummingbirds and make them easy to photograph. Hummers that come to the gardens surrounding the pools include Shining Sunbeam and Tyrian Metaltail. Vegetation easily found up the hill and around the lodge included interesting findings such as *Siphocampylus lucidus* (Campanulaceae), and *Dorobaea pimpinellifolia*. After resting for a few hours, I re-joined the group at the dining hall for a chat over dinner.

Day 10 Friday 4 October

Above Termas

Today we went to the access gate to the Cayambe-Coca National Park to photograph the plant species of the eco zone between Cloud Forest and Paramo.

The valley is glacier-originated. Healthy mature vegetation covers both the hillsides and the rocky faces at an altitude above 3000 meters (9900 feet). Water is available throughout the year from various sources: as rainfall, and in the ground and vegetation as a slow release supply. Soil here is a thick and moist compost that decomposes slowly, slower than at lower altitudes. All these elements: the almost constant supply of water, the vegetation - its debris and microorganisms, build a fertile soil where native and endemic plants thrive. During a first stretch, we recorded *Tristerix longebracteatus* (Loranthaceae) a hummingbird favorite, *Solanum nigrescens* - (Solanaceae), *Hypericum laricifolium*, *Dorobaea pimpinellifolia*, and *Epidendrum frutex* (Orchidaceae). Other flowers seen and described to genus included Ribes sp (Grossulariaceae), Senecio sp (Asteraceae), and Brachyotum sp. (Melastomataceae).

Other highlights of the walk were *Halenia longicaulis* (Gentianaceae), *Polylepis pauta* (Rosaceae), *Siphocampylus lucidus* (Campanulaceae), *Greigia vulcanica* (Bromeliaceae), *Gentianella rapunculoides* (Gentianaceae), *Pentacalia vaccinioides* - (Asteraceae), *Bartsia pedicularioides* (Orobanchaceae), *Fuchsia ampliata* - (Onagraceae), *Sisyrinchium palustre* (Iridaceae), *Calceolaria perfoliata* (Calceolariaceae), *Escallonia myrtilloides* (Escalloniaceae), and *Gunnera magellanica* - (Gunneraceae).

During our walk, one of the frequent species along the highlands, *Coriaria ruscifolia* -Panama to Chile (Coriariaceae), presented a sample of its flowers. Although not a rare find, its flowers are minute, delicate and

form a dark-purple and yellow raceme, hanging from this fern-like plant. Also, we sighted an unusual *Bomarea* cf *multiflora* – COS to ECU (Alstroemeriaceae), different than the usual ones, more red-orange and spotted. We also photographed other species in the genera; Aa, Epidendrum and Stellis (Orchidaceae), Brachyotum (Melastomataceae), Diplostephium, Gynoxis, and Barnadesia (Asteraceae), Disterigma, and Pernettya (Ericaceae), Geranium (Geraniaceae), Escallonia (Grossulariaceae), and Stellaria (Caryophyllaceae).

We regularly have two target species: *Lepanthes mucronata* -regional endemic: COL-ECU-BOL (Orchidaceae) and *Pinguicula calyptrata* -regional endemic: COL to BOL (Lentibulariaceae). Today we looked thoroughly but did only record the tiny Lepanthes orchid. As we explored the vegetation, Black-chested Mountain-tanager appeared and was our bird highlight today. We saw it as it was eating off *Escallonia* cf *myrtilloides*. Back at the lodge, the group enjoyed a dip in the thermal pools before dinner.

Day 11 Saturday 5th October

Lava Flow and San Isidro Lodge

After breakfast at the hotel, we left to the Papallacta Lava Flow. Along this accumulation of Andesite (a form of basalt rock with high contents of iron and other elements), we walked on the sometimes wobbly rocks looking for plants who are first colonizers on these bare and acidic rocks. This geological feature originated in the caldera of Antizana Volcano and is over 100 years old. Over the years, it has offered shelter to a rich array of colonizing species starting with lichens, mosses, herbs, and now bushes and trees in some areas. This richness of flora and its proximity to a main road are the reasons for it to be disturbed by human activities. However, its beauty persists and botanizing is productive here. Species recorded here are *Pentacalia arbutifolia* (Asteraceae), *Pachyphyllum crystallinum* (Orchidaceae), *Calceolaria perfoliata* (Calceolariaceae), *Cranichis ciliata* (Orchidaceae), *Cyrtochilum ramosissimum* (Orchidaceae), *Bomarea hieronymi* (Alstroemeriaceae), *Miconia salicifolia* (Melastomataceae), *Hesperomeles ferruginea* (Rosaceae), and *Maxillaria* aff *gigantea* (Orchidaceae). Our group was also interested in a dwarf tree-fern species in the genus Blechnum (Blechnaceae), which inhabits the Paramo.

We arrived at the cloud forest at San Isidro Lodge. The slopes are not so steep on the plateau where the lodge is located. However, moisture dynamic changes at different altitudes. Throughout the year there is higher humidity here than in the nearby highlands. The most important factor is condensation and humidity. When in San Isidro Lodge, a Cinnamon Flycatcher welcomed us to our cabins. We also saw Chestnut-breasted Coronet. We also recorded one of the important trees around the lodge which in fact is used as a source of food and shelter for birds: *Cecropia andina* – a regional endemic COL-ECU-PER (Cecropiaceae). Other flowers seen at the lodge were *Salvia* aff *quitensis* (Lamiaceae), *Epidendrum excisum* (Orchidaceae), *Abutilon pictum* (Malvaceae), and Pleurothallis sp. (Orchidaceae).

In the afternoon, before dinner, we walked along the road looking for local common plants. We found *Diodia radula* native to South America and Panama (Rubiaceae) and a frequent plant along roads in tropical areas. Other flowers seen along our walk were *Fuchsia sylvatica* (Onagraceae), *Calceolaria tripartita* -Tropical America along the Sierra Madre and the Andes (Calceolariaceae), *Monochaetum lineatum* – Tropical America from COS to PER (Melastomataceae), Cecropia sp. (Cecropiaceae), Monochaetum sp. (Melastomataceae) and Saurauia sp. (Actinidiaceae). Back at the lodge, a superb dinner was waiting for us…

Day 12 Sunday 6th October

Guacamayos ridge

First thing in the morning, right after breakfast, we attended the feeding of White-bellied and Chestnut-crowned Antpittas. We saw the White-bellied and we were the only group watching the Chestnut-crowned. Along the trail to the Chestnut-crowned Antpitta, on our way out and heading to our cabins, we found the orange inflorescences of *Centropogon baezanum* -endemic (Campanulaceae). After this, we prepared our equipment and collected our pack lunch for a day outing at Los Guacamayos ridge and beyond.

At the ridge we explored the roadsides and found *Cavendishia bracteata* (Ericaceae), *Passiflora cumbalensis* (Passifloraceae), *Meriania hernandoi* (Melastomataceae), *Utricularia unifolia* (Lentibulariaceae), Psammisia sp. (Ericaceae), Guzmania sp. (Bromeliaceae), Maxilaria sp. (Orchidaceae). We even saw a Collared Inca approaching *C. bracteata* to drink from it. Weather was very cloudy and foggy so we decided to go away from the clouds, to a lower altitude where clouds would not be present. Other species we photographed, which I identified only to Family, included a spike of white flowers in the Boraginaceae, a minute inflorescence of white flowers with a remarkable foliage, rough and deeply green probably in the Urticaceae, and a Rubiaceae with white tubular flowers.

Further on along the road, we looked for three species of Pitcairnias: *Pitcairnia bakeri* -shared endemic COL-ECU; *Pitcairnia hitchcockiana* -regional endemic: VEN-ECU, and *Pitcairnia lehmannii* -regional endemic: VEN-COL-ECU. We only found *P. hitchcockiana* still in flower. The others were not in flower, though the plants were still where we have seen them before. The rain followed us all the way, but eased as we stopped to photograph the red spikes of *P. hitchcockiana*. At lunch time we stopped at a restaurant along our drive where we had a warm soup on this cold day. The soup came also with great views of a White-tailed Hillstar approaching the feeders right above the tables.

On our way back to San Isidro, we stopped to take pictures of colorful and showy flowers along our drive: *Sobralia rosea* (Orchidaceae), and *Heliconia aff robusta* -described only for Peru and Bolivia (Heliconiaceae). This last species requires further research in order to report it as a new record for Ecuador. We returned early to the lodge and used our time there to enjoy the birds before our departure tomorrow. Newly seen species included Speckled Hummingbirds, Black-billed Thrush, and White-capped Parrot. We had a relaxed late afternoon at the lodge walking around the gardens right before dinner.

Day 13 Monday 7th October

Falls trail in San Isidro and drive to Guango

As it was our last morning at San Isidro Lodge, we decided it would be appropriate to dedicate our time to explore one of the trails to experience the high altitude Cloud Forest of the Amazon. In this case, we chose the Falls Trail for our last morning session. Along the walk we photographed *Fuchsia orientalis* (Onagraceae), *Ceratostema megabracteatum* (Ericaceae), *Psammisia ecuadorensis* (Ericaceae), *Pleurothallis dunstervillei* (Orchidaceae), *Pleurothallis macrocardia* (Orchidaceae), *Passiflora cf alnifolia* (Passifloraceae), Marcgravia sp (Marcgraviaceae), *Cyclanthus bipartitus* (Cyclanthaceae), Guzmania sp. (Bromeliaceae), Tradescantia sp. (Commelinaceae), Palicourea sp (Rubiaceae), Columnea sp (Gesneriaceae), Solanum sp (Solanaceae), and a white-flowered Rubiaceae.

After lunch, we left San Isidro. Upon our arrival at Guango Lodge we spotted *Racinaea tetrantha* -Tropical Andes COL-ECU-PER-BOL. The hummingbird garden also welcomed us with Tourmaline Sunangel, Sword-billed Hhummingbird, Chestnut-breasted Coronet and Masked Flowerpiercer. Our group dedicated the afternoon session to photographing from the porch the hummingbirds coming to the feeders during the drizzle that turned into rain.

Day 14 Tuesday 8th October

Guango lodge, La Virgen and drive to Airport

Early in the morning Joan and I went to explore the Papallacta River as it receives the Guango River. We walked up stream looking for birds but mainly scanning the river for Torrent Duck. Eventually, we did succeed. We had great looks at a male and a female. It was worth walking under a light rain along the now muddy trails.

Meanwhile at the cabins, the rest of our group woke up to watch and photograph hummingbirds. Specialties here included Tourmaline Sunangel (males and females), and Sword-billed Hummingbird. Other good looking hummers included Collared Inca, Buff-tailed Coronet, Chestnut-breasted Coronet, Purple-throated Woodstar and White-bellied Woodstar. Additional species well seen from the porch of our cabin were Masked Flowerpiercer and Turquoise Jay.

We all joined up for breakfast and prepared ourselves for a short walk. We slowly walked the wet trails of this mature forest, which harbored several species in flower such as *Bomarea multiflora* (Alstroemeriaceae), *Tillandsia complanata* (Bromeliaceae), *Cranichis lehmannii* (Orchidaceae), *Kohleria affinis* (Gesneriaceae), *Ceratostema peruvianum* (Ericaceae), *Calceolaria aff alata* (Calceolariaceae), *Caucaea cucullata* (Orchidaceae), *Alonsoa meridionalis* (Scrophulariaceae), and an Aphelandra sp. with yellow flowers and spiny leaves (Acanthaceae). Other species seen were Racinaea sp. (Bromeliaceae), Colignonia sp (Nyctaginaceae), Tradescantia sp. (Commelinaceae), Convalescence sp. (Caricaceae), Oxalis sp (Oxalidaceae), Begonia sp. (Begoniaceae), Salvia sp1, sp2 (Lamiaceae), Solanum sp. (Solanaceae), and Axinaea sp (Melastomataceae).

We departed after packing our luggage in the car, in order to have some time on the drier slopes of the valley facing Quito. Our plan was to use our last few hours as a group looking for plants on our way to the airport. At the Papallacta Pass, we started our search. We stopped there mainly for the flowers of *Bomarea glaucescens* -regional endemic: ECU-PER-BOL (Alstroemeriaceae), and *Diplostephium ericoides* (Asteraceae). We found only dry spikes of *Puya hamata* (variety with a shorter spike than in the Southern Ecuadorian Andes), *Bomarea multiflora* (Alstroemeriaceae), *Baccharis genistelioides*, and *Hypochaeris sessiliflora* (Asteraceae).

We kept descending and stopped to record *Buddleja pichinchensis* -shared endemic COL-ECU (Buddlejaceae), a particular request from Peter, because we had not seen any Buddlejas along our previous days in the Inter-Andean Valleys. Lower along our drive we also found *Calceolaria crenata* (Calceolariaceae) next to a small stand of *Polylepis cf incana* (Rosaceae). Our last request was a stop for a picture of *Agave americana* (Agavaceae) a frequent plant used for fencing. After this we headed straight to the airport to say goodbye to the group as they got ready to leave to the UK…

Species List

Plants

Acanthaceae
Aphelandra aff phaina Wassh.

Adoxaceae
Sambucus nigra L.

Alstroemeriaceae
Bomarea brachysepala Benth. (END)
Bomarea chimboracensis Baker (END)
Bomarea dissitifolia Baker
Bomarea distichifolia (Ruiz & Pav.) Baker
Bomarea glaucescens (Kunth) Bakers
Bomarea hieronymi Pax
Bomarea hirsuta (Kunth) Herb.
Bomarea lancifolia Baker (END)
Bomarea lutea Herb. (END)
Bomarea multiflora (L. f.) Mirb.
Bomarea nervosa (Herb.) Baker
Bomarea pardina Herb.

Amaryllidaceae
Phaedranassa dubia (H.B.K.) Macbr.

Annonaceae
Annona cherimolla Mill.
Annona muricata L.

Apocynaceae
Plumeria rubra L.

Apiaceae
Arracacia xanthorrhiza Bancr.
Cotopaxia asplundii Mathias & Constance (END)
Eryngium humile Cav.

Araucariaceae
Araucaria heterophylla (Salisb.) Franco
Araucaria imbricata Pav.

Arecaceae
Geonoma macrostachys Mart.
Iriartea deltoidea Ruiz & Pav.
Mauritia flexuosa L.f.

Asparagaceae
Agave americana L.
Furcraea andina Trel.
Yucca guatemalensis Baker

Asteraceae
Baccharis genistelloides (Lam.) Pers.
Chuquiraga jussieui J.F. Gmel.
Diplostephium ericoides (Lam.) (END)
Dorobaea pimpinellifolia (Kunth) B. Nord.
Hieracium frigidum Wedd.
Hypochaeris sessiliflora Kunth
Loricaria ferruginea (Ruiz & Pav.) Wedd
Loricaria thuyoides (Lam.) Sch. Bip.
Pentacalia arbutifolia (Kunth) Cuatrec. (END)
Pentacalia vaccinioides (Kunth) Cuatrec.
Xenophyllum humile (Kunth) V.A. Funk
Xenophyllum cf rigidum (Kunth) V.A. Funk (END)

Basellaceae
Ullucus tuberosus Caldas

Bignoniaceae
Pyrostegia venusta (Ker Gawl.) Miers.
Tecoma stans (L.) Juss. ex Kunth

Boraginaceae
Cordia lutea Lam.

Bromeliaceae
Aechmea aff fraseri Baker
Aechmea chantinii (Carrière) Baker
Aechmea napoensis L.B. Sm. & M.A. Spencer
Aechmea penduliflora André
Aechmea tessmannii Harms
Aechmea cf woronowii Harms
Aechmea zebrina L.B. Sm. (END)
Greigia mulfordii L.B. Sm.
Greigia sodiroana Mez (END)
Greigia vulcanica André
Guzmania gloriosa (André) André ex Mez.
Guzmania monostachia (L.) Rusby ex Mez.
Guzmania weberbaueri Mez
Mezobromelia capituligera (Griseb.) J.R. Grant
Pitcairnia arcuata (André) André
Pitcairnia bakeri (André) Mez

Pitcairnia cosangaensis Gilmartin (END)
Pitcairnia hitchcockiana L.B. Sm.
Pitcairnia lehmannii Baker
Pitcairnia nigra (Carrière) André
Pitcairnia pungens Kunth
Pitcairnia trianae André
Puya cuevae Manzanares & W. Till (END)
Puya eryngioides André (END)
Puya glomerifera Mez & Sodiro
Puya hamata L.B. Sm.
Puya lanata (Kunth) Schult. f.
Puya nutans L.B. Sm. (END)
Puya parviflora L.B. Sm. (END)
Puya pygmaea L.B. Sm. (END)
Puya retrorsa Gilmartin (END)
Racinaea aff tetrantha (Ruiz & Pav.) M.A. Spencer & L.B.
Tillandsia complanata Benth.
Tillandsia incarnata Kunth
Tillandsia lindenii Regel
Tillandsia multiflora Benth
Tillandsia cf pastensis André
Tillandsia recurvata (L.) L.
Tillandsia secunda Kunth
Tillandsia tectorum E. Morren
Vriesea espinosae (L.B. Smith) Gilmartin

Buddlejaceae
Buddleja pichinchensis Kunth

Cactaceae
Armatocereus brevispinus J. E. Madsen
Cereus diffusus (Britton & Rose)
Cereus hexagonus (L.) Mill
Cleistocactus leonensis Madsen
Cleistocactus sepium (Kunth) F. A. C. var. sepium (END)
Espostoa frutescens Madsen (END)
Espostoa lanata (Kunth) Britton & Rose
Hylocereus polyrhizus -F.A.C. Weber- Briton & Rose
Opuntia cylindrica (Lam.) DC.
Opuntia ficus-indica -L.- Mill
Opuntia quitensis F.A.C Weber
Selenicereus megalanthus (Vaupel) Moran

Calceolariaceae
Calceolaria aff alata (Pennell) Pennell
Calceolaria crenata Lam.

Calceolaria ericoides Vahl
Calceolaria fusca Pennell
Calceolaria lojensis Pennell
Calceolaria nivalis Kunth
Calceolaria oxyphila Molau (END)
Calceolaria pedunculata subsp. pedunculata
Calceolaria perfoliata L. f.
Calceolaria rosmarinifolia Lam. (END)
Calceolaria trilobata Hemsley
Calceolaria tripartita Ruiz & Pav.

Campanulaceae
Burmeistera cylindrocarpa Zahlbr.
Centropogon baezanus Jeppesen (END)
Centropogon steyermarkii Jeppesen (END)
Lysipomia montioides Kunth
Siphocampylus lucidus E. Wimm. (END)

Capparaceae
Capparis scabrida Kunth

Caricaceae
Carica x heilbornii nm. pentagona -Heilborn- V. M. Badillo (END)
Carica parviflora (A. DC.) Solms

Cecropiaceae
Cecropia andina Cuatrec.

Clusiaceae
Clusia elliptica Kunth

Convolvulaceae
Ipomea batata -L.- Lam

Coriariaceae
Coriaria ruscifolia L.

Crassulaceae
Echeveria quitensis (Kunth) Lindl.
Kalanchoe daigremontiana Raym.-Hamet & H. Perrier

Cucurbitaceae
Cucurbita ficifolia Bouché
Sechium edule (Jacq.) Sw.

Sechium aff pittieri (Cogn.) C. Jeffrey

Cuscutaceae
Cuscuta cf stenolepis Engelm.

Cyclanthaceae
Carludovica palmata Ruiz & Pav.
Cyclanthus bipartitus Poit. ex A. Rich.

Elaeocarpaceae
Vallea stipularis L. f.

Ephedraceae
Ephedra rupestris Benth

Equisetaceae
Equisetum giganteum L

Ericaceae
Bejaria subsessilis Benth (END)
Cavendishia bracteata
Ceratostema megabracteatum Luteyn (END)
Ceratostema peruvianum J.F. Gmel.
Gaylussacia loxensis Sleumer
Pernettya prostrata (Cav.) DC.
Psammisia ecuadorensis Hoerold
Semiramisia speciosa (Benth.) Klotzsch

Escalloniaceae
Escallonia myrtilloides L. f.

Euphorbiaceae
Croton wagneri Müll. Arg. (END)
Euphrobia laurifolia Juss. ex Lam.
Manihot sculenta Crantz
Ricinus communis L.

Fabaceae – Faboideae
Astragalus geminiflorus Bonpl. (END)
Erythrina amazonica Krukoff
Erythrina edulis Triana ex Micheli
Erythrina velutina Willd.
Lupinus microphyllus Desr.
Lupinus mutabilis Sweet
Lupinus pubescens Benth.

Fabaceae – Mimosoideae
Acacia macracantha Humb. & Bonpl. ex Willd.
Inga spectabilis -Vahl- Willd.
Mimosa quitensis Benth.

Fabaceae – Caesalpinioideae
Senna multiglandulosa

Gentianaceae
Gentianella cf cerastioides (Kunth) Fabris
Gentianella hyssopofila (Kunth) Fabris (END)
Gentianella nummuraliifolia (Griseb.) Fabris
Gentianella rapunculoides (Willd. ex Schult.) J.S. Pringle
Gentiana sedifolia Kunth
Halenia longicaulis J.S. Pringle (END)
Halenia pulchella Gilg (END)
Halenia cf weddelliana Gilg.
Macrocarpea arborescens Gilg

Gesneriaceae
Kohleria affinis (Fritsch) Roalson & Boggan
Monopyle cf macrocarpa Benth.

Gunneraceae
Gunnera magellanica Lam.

Heliconiaceae
Heliconia hirsuta L. f.
Heliconia orthotricha L. Andersson
Heliconia aff robusta Pax
Heliconia stricta Huber
Heliconia vaginalis Benth

Hypericaceae
Hypericum laricifolium Juss.

Iridaceae
Sisyrinchium palustre Diels
Watsonia borbonica ssp ardernei (Sander) Goldblatt - "Ardernes White"

Lamiaceae
Clinopodium nubigenum (Kunth) Kuntze
Clinopodium tomentosum (Kunth) Govaerts (END)
Leonotis nepetifolia (L.) R. Br.
Prunella vulgaris L.
Salvia aff quitensis Benth.

Lentibulariaceae
Pinguicula calyptrata Kunth
Utricularia unifolia Ruiz & Pav.

Loasaceae
Nasa auca (Weigend) Weigend (END)
Nasa grandiflora (Desr.) Weigend (END)

Loranthaceae
Gaiadendron punctatum (Ruiz & Pav.) G. Don
Psittacanthus zonatus (Diels) Kuijt (END)
Tristerix longebracteatus (Desr.) Barlow & Wiens

Malvaceae
Abutilon pictum (Gillies ex Hook. & Arn.) Walp.
Cavanillesia platanifolia (Bonpl.) Kunth
Ceiba trischistandra (A. Gray) Bakh.
Gossypium aff hirsutum L.
Nototriche hartwegii A.W. Hill (END)

Maranthaceae
Calathea roseopicta (Linden) Regel

Marcgraviaceae
Marcgravia atropunctata de Roon

Melastomataceae
Arthrostema ciliatum Pav. ex. D. Don
Brachyotum ledifolium (Desr.) Triana
Meriania hernandoi L. Uribe.
Miconia salicifolia Naudin
Monochaetum lineatum (D. Don) Naudin

Myrtaceae
Callistemon citrinus (Curtis) Skeels
Callistemon viminalis (Sol. ex Gaertn.) G. Don
Eucalyptus globulus Labill.

Nyctaginaceae
Bouganvillea pachyphylla Heimerl ex Standl.
Colignonia ovalifolia Heimerl

Onagraceae
Fuchsia ampliata Benth.
Fuchsia lehmannii Munz (END)
Fuchsia magellanica Lam.

Fuchsia orientalis P.E. Berry (END)
Fuchsia scabriuscula Benth.
Fuchsia scherffiana André
Fuchsia steyermarkii P.E. Berry (END)
Fuchsia summa P.E. Berry (END)
Fuchsia sylvatica Benth.
Fuchsia vulcanica André

Orchidaceae
Aa paleacea (Kunth) Rchb. f.
Altensteinia fimbriata Humb., Bonpl. & Kunth
Altensteinia aff virescens Lindl
Anacheilium fragrans (Sw.) Acuña
Caucaea cucullata (Lindl.) N.H. Williams & M.W. Chase.
Cischweinfia parva (C. Schweinf.) Dressler & N.H. Williams
Cranichis ciliata (Kunth) Kunth
Cranichis lehmannii Rchb. f.
Cyrtochilum aureum (Lindl.) Senghas
Cyrtochilum aff funis (F.Lehm. & Kraenzl.) Kraenzl.
Cyrtochilum pardinum Lindl.
Cyrtochilum ramosissimum (Lindl.) Dalström
Epidendrum excisum Lindl.
Epidendrum fimbriatum Kunth
Epidendrum frutex Rchb. f.
Epidendrum cochlidium Lindl.
Elleanthus maculatus (Lindl.) Rchb. f.
Elleanthus myrosmatis (Rchb. f.) Rchb. f.
Epidendrum lacustre Lindl.
Epidendrum summerhayessii Hágsater
Gomphichis macbridei C. Schweinf.
Gongora scaphephorus Rchb. f. & Warsz.
Huntleya aff meleagris Lindl.
Lepanthes alticola C. Schweinf.
Lepanthes imitator Luer & Hirtz
Lepanthes mucronata Lindl.
Lycomormium aff fiskei Sweet
Maxillaria brunnea Linden & Rchb. f.
Maxillaria buchtienii Schltr.
Maxillaria fletcheriana Rolfe
Maxillaria aff gigantea (Lindl.) Dodson
Odontoglossum aff epidendroides Kunth
Oncidium baueri Lindl.
Oncidium aff retusum Lindl.
Otoglossum brevifolium (Lindl.) Garay & Dunst
Pachyphyllum crystallinum Lindl.
Pachyphyllum falcifolium Rchb. f.

Pelexia hirta (Lindl.) Schltr.
Phragmipedium wallisii (Rchb. f.) Garay
Pleurothallis aff antonensis L.O. Williams
Pleurothallis canaligera Rchb. f.
Pleurothallis aff cardiostola Rchb. f.
Pleurothallis aff dubbeldamii Luer
Pleurothallis dunstervillei Foldats
Pleurothallis lilijae Foldats
Pleurothallis macrocardia Rchb. f.
Prosthechea crassilabia (Poepp. & Endl.) Carnevali & I. Ramírez
Sobralia rosea Poepp. & Endl.
Stanhopea connata Klotzsch
Stelis aff adrianae Luer (END)
Telipogon hausmannianus Rchb. f.
Telipogon polyrrhizus Rchb. f. (END)
Telipogon cf puruantensis Dodson & R. Escobar (END)

Orobanchaceae
Castilleja pumila (Benth) Wedd. ex Herrera
Bartsia stricta (Kunth) Benth.
Bartsia pedicularoides Benth.
Pedicularis incurva Benth.

Oxalidaceae
Biophytum aff heinrichsae R. Knuth (END)
Oxalis tuberosa Molina

Papaveraceae
Argemone mexicana L.
Bocconia integrifolia Bonpl.

Passifloraceae
Passiflora cf alnifolia Kunth
Passiflora cumbalensis (H. Karst.) Harms
Passiflora edulis fo. flavicarpa Degener
Passiflora ligularis Juss.
Passiflora manicata (Juss.) Pers.

Phytolaccaceae
Phytolacca bogotensis Kunth
Phytolacca rivinoides Kunth & C.D. Bouché

Poaceae
Cortaderia nitida (Kunth) Pilg.

Podocarpaceae
Podocarpus oleifolius D. Don ex Lamb

Proteaceae
Oreocallis grandiflora

Ranunculaceae
Ranunculus gusmannii Humb. ex Caldas

Rosaceae
Hesperomeles ferruginea (Pers.) Benth.
Polylepis incana Kunth
Polylepis pauta Hieron. (END)
Prunus serotina Ehrh.

Rubiaceae
Diodia radula (Willd. ex Roem. & Schult.) Cham. & Schltdl.
Nertera granadensis (Mutis ex L. f.) Druce
Warszewiczia coccinea (Vahl) Klotzsch

Sapindaceae
Cardiospermum corindum L.

Scrophulariaceae
Alonsoa meridionalis (L. f.) Kuntze
Ourisia chamaedrifolia Benth.

Solanaceae
Browallia speciosa Hook.
Brugmansia sanguinea (Ruiz & Pav.) D. Don
Lycianthes lycioides (L.) Hassl.
Physalis peruviana L.
Solanum betaceum Cav.
Solanum quitoense Lam.
Solanum nigrescens M. Martens & Galeotti
Streptosolen jamesonii (Benth.) Miers

Tropaeolaceae
Tropaeolum tuberosum R. & P.
Tropaeolum pubescens Kunth

Valerianaceae
Valeriana aretioides Kunth (END)
Valeriana convallaroides (Schmale) B.B. Larsen
Valeriana microphylla Kunth
Valeriana plantaginea Kunth

Valeriana rigida Ruiz & Pasv.

Verbenaceae
Lantana rugulosa Kunth

Birds

English name	***Scientific name***
Andean teal	*Anas andium*
Yellow-billed pintail	*Anas georgica*
Torrent duck	*Merganetta armata*
Black vulture	*Coragyps atratus*
Turkey vulture	*Cathartes aura*
White-throated hawk	*Buteo albigula*
Black-chested buzzard-eagle	*Geranoaetus melanoleucus*
Variable hawk	*Buteo polyosoma*
Aplomado falcon	*Falco femoralis*
Harris' hawk	*Parabuteo unicinctus*
Carunculated caracara	*Phalcoboenus carunculatus*
Peregrine falcon	*Falco peregrinus*
American kestrel	*Falco sparverius*
Southern lapwing	*Vanellus chilensis*
Andean lapwing	*Vanellus resplendens*
Crested guan	*Penelope purpurascens*
Rufous-headed chachalaca	*Ortalis erythroptera*
Baird's sandpiper	*Calidris bairdii*
Rufous-bellied seedsnipe	*Attagis gayi*
Andean gull	*Larus serranus*
Rock pigeon	*Columba livia*
Band-tailed pigeon	*Columba fasciata*
White-throated quail-dove	*Geotrygon frenata*
Eared dove	*Zenaida auriculata*
Black-winged groun-dove	*Metriopelia melanoptera*
Croaking ground-dove	*Columbina cruziana*
Smooth-billed ani	*Crotophaga ani*
Pacific parrotlet	*Forpus coelestis*
White-capped parrot	*Pionus seniloides*
Pacific pygmy-owl	*Glaucidium peruanum*
San Isidro owl	*Strix sp nov*
Andean potoo	*Nyctibius maculosus*
White-collared swift	*Streptoprocne zonaris*
Chestnut-collared swift	*Cypseloides rutilus*
Lesser swallow-tailed swift	*Tachornis squamata*
White-bellied woodstar	*Chaetocercus mulsant*
Sparkling violetear	*Colibri coruscans*
Fawn-breasted brilliant	*Helidoxa rubinoides*
Loja hummingbird	*Amazilia amazilia*

English name	*Scientific name*
Ecuadorian hillstar	*Oreotrochilus chimborazo jamesonii*
Chimborazo hillstar	*Oreotrochilus chimborazo chimborazo*
Shinning sunbeam	*Aglaeactis cupripenis*
Sword-billed hummingbird	*Ensifera ensifera*
Bronzy inca	*Coeligena coeligena*
Collared inca	*Coeligena torquata*
Buff-winged starfrontlet	*Coeligena lutetiae*
Black-tailed trainbearer	*Lesbia victoriae*
Long-tailed sylph	*Aglaiocercus kingi*
Buff-tailed coronet	*Boissonneaua flavescens*
Chestnut-breasted coronet	*Boissonneaua matheusii*
Mountain velvetbreast	*Lafresnaya lafresnayii*
Tyrian metaltail	*Metallura tyrianthina*
Amethyst-throated sunangel	*Heliangelus amethysticollis*
Tourmaline sunangel	*Heliangelus exortis*
Purple-throated sunangel	*Heliangelus viola*
Masked trogon	*Trogon personatus*
Turquoise jay	*Cyanolyca turcosa*
White-tailed jay	*Cyanocorax mystacalis*
Inca jay	*Cyanocorax yncas*
Crimson-mantled woodpecker	*Piculus rivolii*
Montane woodcreeper	*Lepidocolaptes lacrymiger*
Olive-backed woodcreeper	*Xiphorhynchus triangularis*
Azara's spinetail	*Synallaxis azarae*
Many-striped canastero	*Asthenes flammulata*
White-chinned thistletail	*Schizoeaca fuliginosa*
Pearled treerunner	*Margarornis squamiger*
Stout-billed cinclodes	*Cinclodes excelsior*
Bar-winged cinclodes	*Cinclodes fuscus*
Pacific hornero	*Furnarius cinnamomeus*
Collared antshrike (female)	*Sakesphorus bernardi*
Chestnut-crowned antpitta	*Grallaria ruficapilla*
White-bellied antpitta	*Grallaria hypoleuca*
Jocotoco antpitta	*Grallaria ridgelyi*
Tawny antpitta	*Grallaria quitensis*
Unicolored tapaculo	*Scytalopus unicolor*
Spillman's tapaculo	*Scytalopus spillmanni*
Chusquea tapaculo	*Scytalopus parkeri*
Rufous-breasted flycatcher	*Leptopogon rufipectus*
Rufous-crowned tody-flycatcher	*Poecilotriccus ruficeps*
Tufted tit-tyrant	*Anairetes parulus*
Torrent tyrannulet	*Serpophaga cinerea*
Cinnamon flycatcher	*Pyrrhomyias cinnamomea*
Smoke-colored pewee	*Contopus fumigatus*
Páramo ground-tyrant	*Muscisaxicola alpina*

English name	*Scientific name*
Crowned chat-tyrant	*Crowned chat-tyrant*
Black phoebe	*Sayornis nigricans*
Pale-edged flycatcher	*Myiarchus cephalotes*
Western syristes	*Sirystes albogriseus*
Tropical kingbird	*Tyrannus melancholicus*
Snowy-throated kingbird	*Tyrannus niveigularis*
Brown-bellied swallow	*Notiochelidon murina*
Blue-and-white swallow	*Notiochelidon cyanoleuca*
Fasciated wren	*Campylorhynchus fasciatus*
Grass wren	*Cistophorus platensis*
Mountain wren	*Troglodytes solstitialis*
Long tailed mockingbird	*Mimus longicaudatus*
Tropical gnatcatcher	*Polioptila plumbea*
Black-billed peppershrike	*Cyclarhis nigrirostris*
Great thrush	*Turdus fuscater*
Chiguancco thrush	*Turdus chiguanco*
Glossy-black thrush	*Turdus serranus*
Blackburnian warbler	*Dendroica fusca*
Canada warbler	*Wilsonia canadensis*
Slate-throated white-start	*Myioborus miniatus*
Spectacled whitestart	*Myioborus melanocephalus*
Cinereous conebill	*Conirostrum cinereum*
Bluish flowerpiercer	*Diglossopis caerulescens*
Masked flowerpiercer	*Diglossopis cyanea*
Glossy flowerpiercer	*Diglossa lafresnayii*
Black flowerpiercer	*Diglossa humeralis*
Blue-necked tanager	*Tangara cyanicollis*
Scarlet bellied mountain-tanager	*Anisognathus igneiventris*
Blue-winged mountain-tanager	*Anisognathus sumptuosus*
Hooded mountain-tanager	*Buthraupis montana*
Black-chested mountain-tanager	*Buthraupis eximia*
Blue-gray tanager	*Thraupis episcopus*
Palm tanager	*Thraupis palmarum*
Blue and yellow tanager	*Thraupis bonariensis*
Silver-beaked tanager	*Ramphocelus carbo*
Yellow-throated bush-tanager	*Chlorospingus flavigularis*
Black-backed bushtanager	*Urothraupis stolzmanni*
Southern-yellow grosbeak	*Pheucticus chrysogaster*
Black-backed grosbeak	*Pheucticus aureoventris*
Saffron finch	*Sicalis flaveola*
Plumbeous sierra-finch	*Phrygilus unicolor*
Ash-breasted sierra-finch	*Phrygilus plebejus*
Rufous-naped brush-finch	*Atlapetes latinuchus*
Rufous collared sparrow	*Zonotrichia capensis*
Northern mountain cacique	*Cacicus leucoramphus*

English name	***Scientific name***
Subtropical cacique	*Cacicus uropygialis*
Russet-backed oropendola	*Psarocolius angustifrons*
Scrub blackbird	*Dives warszewiczi*
Shiny cowbird	*Molothrus bonariensis*

Mammals

English name	***Scientific name***
Brazilian rabbit	*Silvilagus braziliensis*
Lowlands agoutti (San Isidro)	*Cuniculus paca*
Northern red squirrel (San Isidro)	*Sciurus cf igniventris*

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