ROYLE SAFARIS

Ecuador's Biodiversity Hotspots

Destination: Andes, Amazon & Galapagos Islands, Ecuador

Duration: 19 Days **Dates:** 29th June – 17th July 2018

- Exploring various habitats throughout the wonderful & diverse country of Ecuador
- Spotting a huge male Andean bear & watching as it ripped into & fed on bromeliads
- Watching a Eastern olingo climbing the cecropia from the decking in Wildsumaco
- Seeing ~200 species of bird including 33 species of dazzling hummingbirds
- Watching a Western Galapagos racer hunting, catching & eating a Marine iguana
- Incredible animals in the Galapagos including nesting flightless cormorants
- 36 mammal species including Lowland paca, Andean bear & Galapagos fur seals
- Watching the incredible and tiny Pygmy marmoset in the Amazon near Sacha Lodge
- Having very close views of 8 different Andean condors including 3 on the ground
- Having Galapagos sea lions come up & interact with us on the boat and snorkelling

Tour Leader / Guides

Martin Royle (Royle Safaris Tour Leader)
Gustavo (Andean Naturalist Guide)
Francisco (Antisana Reserve Guide)
Milton (Cayambe Coca National Park Guide)
'Campion' (Wildsumaco Guide)
Wilmar (Shanshu), Alex and Erica (Amazonia Guides)
Gustavo (Galapagos Islands Guide)

Participants

Mr. Joe Boyer
Mrs. Rhoda Boyer-Perkins

Overview

Day 1:	Quito / Puembo
Day 2:	Antisana
Days 3-4:	Cayambe Coca
Days 5-6:	Wildsumaco
Day 7:	Quito / Puembo
Days 8-10:	Amazon
Day 11:	Quito / Puembo
Days 12-18:	Galapagos
Day 19:	Quito / Puembo

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Day by Day Breakdown

Overview

Ecuador may be a small country on a map, but it is one of the richest countries in the world in terms of life and biodiversity. With a range of habitats from the dry Pacific coastline to the snow capped volcanoes and peaks of the Andes and the steamy and tropical Amazon Rainforest to the desolate and arid Galapagos Islands; there is life at every turn here.

This tour aimed to showcase as many of these different habitats as possible and of course go looking for various species which are found in each one. With a base in the pleasant suburb of Puembo in Quito we would go back and forth into the wilderness in search of animals as varied as Andean condors and Swallow-tailed gulls; Mountain tapirs and Pygmy marmosets & Giant tortoises and black caiman. Our first stop would be the paramo, the high altitude grasslands that are found above the treeline in the Ecuadorian Andes. These rolling hills and steep valleys are home to Andean (spectacled) bears, mountain tapir and Andean condor among many other species. From here we would head into the Amazon and look for primates and a wealth of birdlife before departing mainland Ecuador and flying nearly 1,000km west into the Pacific and to the enigmatic and world famous Galapagos Islands.

With over half of all the bird species in all of South America and twice as many as live in Europe, more mammals per square meter than anywhere else in the world, more frog species than any other country, 25,000 species of plants, 1,250 species of fish, 350 species of reptiles and untold hundreds of thousands of invertebrates; we would not be left disappointed with our wildlife adventure of Ecuador.

Day 1 Quito / Puembo *Arrival & Rest*

This evening Joe and Rhoda arrived from Michigan (via Dallas and Panama City) into Quito in the evening and after the short transfer with Martin and Washington they arrived at the accommodation. We met Mercedes the owner and then had dinner before getting a good nights sleep before departing for the paramo tomorrow morning.

Day 2 Antisana Reserve *Traveling & Wildlife Watching*

This morning we had an early breakfast and met our driver (Milton) and guide for the first 5 days of the trip (Gustavo) and at 6:30am we left the PBG and headed out of Quito and towards the Antisana Volcano. Along the way through the city and its various suburbs we were told about the air plants hanging from the electrical wires and that these plants grow on the wires after their tiny seeds get caught in the small plaiting of the wires. They live and create an entire little ecosystem on the wires by filtering food from the dust in the air and any insects that land and die on them. This is a relative of the pineapple and of course a bromeliad which would become a very common and important group of plants for us in the paramo and cloud forest over the next few days.

It was rather overcast today and had been for a couple of days, which was quite unusual for Quito as the valley is usually a dry valley. We were therefore unsure as to if we would see any Andean condors today (which was one of the main reasons for visiting the Antisana Reserve today. But as we couldn't change the weather we carried on and just hoped for some good luck. As we carried on we were told about the introduced eucalyptus trees and the native conifers here which are of the podocarpus and Araucaria families. These conifers of confined to the southern hemisphere and are the only conifers natives to Ecuador, which is about as far north as these species appear. We also passed through roads cut straight into the rock and you could see the various layers from centuries of volcanic eruptions. The volcanic ash forming the majority of the rock here. The rock created by the ash is the major material for the adobe construction which was used by the indigenous people of Ecuador. But because the rock was made by ash it is not very strong and has not persisted over time in the same way as the ancient architecture has in Peru for example. There are some pyramids and examples of ancient civilisations in Ecuador, but they are further north and nowadays mostly foundations as they have been eroded away.

Continuing the architectural theme we went through the different materials and methods for building as we moved upwards and into some Andean villages. From the traditional adobe, to the brick and tile which was brought by and influenced by the Spanish and then the modern cinder block construction and of course the ugly and ubiquitous concrete.

As we approached the Antisana Reserve we came to a huge lava flow, this is from the last eruption of the Antisana volcano and was from around 200 years ago. The lava flow was a slow cooling flow and the rock here had formed very hard andesite (with its reddish tinge from the high iron content) which was being quarried here. Not far from the quarry we arrived at the Antisana reserve and the rolling grasslands and rocky cliff faces of the paramo greeted us. We started stopping to scan the hillsides and cliffs for Andean bears and continued to do this for a couple of hours. We found some evidence of bear activity pretty quickly, when they feed on their favourite bromeliads they rip into them and eat the heart, this leaves the white interior of the bromeliad exposed and even from a long distance we can pick up the white and then follow the 'trails' of destruction and hopefully find a bear at the end of the trail.

We carried on and then arrived at Tambo Condor, this small restaurant is located in a valley where several condors have nested in the past. It is also a very good place for various hummingbirds around here and we stopped for an hour or so and watched as giant hummingbirds, sparkling violetears, tyrian metaltails and black-tailed trainbearers all arrived to feed. In addition to the hummingbirds we had rufous-collared sparrows, black flower-piercers, plumbeous serra-finches and brown-bellied swallows around here. In the distance and soaring we also had nice views of several caruncilated caracaras, some black-chested buzzard-eagles and a variable hawk. But the highlight here (and recurring theme for the morning) was an Andean condor on a nest on the cliff on the opposite side of the valley.

We left this valley and carried onto another area with a local guide to the Antisana (Francisco) and to a few places where bears are often seen. In this valley we had 4 condors circling, one adult and 3 juveniles. They were quite low and hung around in the valley for a good time. We had great views and were very lucky to see them so low. Being able to easily see the white markings on the wings of the adult and the lack of white on the juveniles, there was one which was patchy white and so was a sub-adult. These condors followed the road and therefore our progress for an hour or so and when we stopped to watch a pair of great-horned owls just near the road we had the condors around 40m above us and soaring around in great light. The proximity of the condors to us had Martin thinking maybe one of us looks a little sickly and they were waiting for someone to fall behind (a joke of course, but it is not common to have condors so low and for so long in Ecuador, where there are only around 80 individuals known).

Carrying on and stopping to scan every now and again we had a brief northern pudu cross the road a mother and fawn Andean white-tailed deer and several Andean rabbits, but no bears this morning. We stopped to see the endemic Ecuadorian hillstar and had another adult condor soaring even closer than before around us and below us as it went down into the valley. It was incredible to once again see this endangered species (the largest flying bird in the world) so close again. Then turning around here and heading back towards the main road through the Antisana Reserve we had an American kestrel perched on the side of the road.

On our return down the slope and towards Lake Mica we had nice views of a mother and fawn Andean white-tailed deer grazing just next to the road. Then driving through the rolling hills of the paramo we had more deer and then a pair of condors on the ground, they landed near an old carcass whilst a fresher (although still largely eaten) cow carcass was around 50m away and been devoured by many carunculated caracaras. We watched the condors hopping around on the ground and then taking off in their laboured style of running first and then spreading their wings to catch the air and up they go.

As we crossed over the continental divide and into the Amazon drainage we found many Andean lapwings and a small group of black-faced ibis in the grass. After Lake Mica and a close Andean rabbit we returned along the same road and found the condors at the carcass again, this time they were joined by a third and we watched as three adult condors (two female and one male) stood on the ground hopping around each other not 50m away from us. This was incredible, to have such good luck with so many condor sightings in one day. We then came back to Tambo Condor for lunch and carried on looking for bears, we found many broken bromeliads and knew there was a bear somewhere in the area but there was also a small forest and the trail of broken bromeliads (where the bear had been feeding) lead into the forest and so we stopped looking here and travelled across the valley towards Cayambe Coca Reserve and our lodge.

Along the way we stopped and scanned various places where Gustavo had seen bears previously and near one of these known territories Martin spotted a large male bear moving up the slope around 80m away from the road. We stopped and watched for around half an hour as the bear moved up the slope, climbing the rocks and moving through the grass with ease and stopping to feed on a few bromeliads. We watched as he tore into the heart of the plant to get to the sugar rich centres. It was perfect, a large bear, out in the open with perfect late afternoon light and we watched as he just went about his business in peace.

From here we carried on to the lodge and arrived just as it was getting dark, we were greeted by the ever present (in the daytime) of various hummingbirds at the feeders. We had some nice chestnut-breasted coronets and tourmaline sunangels this evening before we had dinner and retired to our rooms as the heavens opened and put to bed any hope for spotlighting tonight.

Day 3 Cayambe Coca National Park *Wildlife Watching*

This morning we had some time with the hummingbirds first off, there were many around including chestnut-breasted coronets, collared Incas, tourmaline sunangels, long-tailed slyphs, buff-tailed coronets, masked flower-piercers, white-bellied woodstars and turquoise jays. We then went for a walk along the forest parallel to the Papallacta River which runs next to the lodge. This is a good place for mountain tapir as at least resident tapir has gotten quite used to people, however there was work being done on a pipe line nearby and the workers were clearing away vegetation, this must have resulted in the tapir being more active at night (as we found tracks) or spending more time in the forest as the sightings of this animal had been down recently and we didn't see it either.

The river was impressive though as recent rains in the mountains had resulted in a huge torrent of water flowing very fast and expanding the river's width by almost three times its normal width. We were also shown the fast grown species of alder which is the predominant tree in this forest, there was a flash flood around a year ago and the alder had grown back in that time, the trees had grown to around 4m tall in just a year. The fertility and productivity of the forest here is so impressive.

Walking along the trail we were told about various plant species including relatives of skunk cabbage which are epiphytic, climbers and of course terrestrial; as well as being shown plants that still have spiny and thorny defences on their stems which botanist believe arose as protection from giant ground sloths that died out some 12,000 years ago but were major predators of these species. Gustavo also told us about the make up the cloud forest and one of the characterises of the cloud forest is the combination of epiphytes, hepatic, mosses and lichens all growing on the same trees.

We didn't see the tapir but were rewarded with some great views of the cloud forest and then returned to the lodge and spent the middle part of the day here. The weather had closed in and around the mountains and paramo it was very cloudy and wet. We decided to stay away from the highlands today and focus on some hummingbird photography instead. We got the speciality for Guango the wonderful sword-billed hummingbird; with its bill nearly as long as the head and body and seemingly too long for any practical purpose.

Then after lunch we tried the river trail again (we would repeatedly try this trail as it is supposedly very good for the tapir, and even though the workers had probably disturbed the tapir enough, we tried. But there was not much going on and apart from some northern mountain caciques and turquoise jay we didn't see anything. So we left the lodge and travelled down the valley to another lodge (San Idriso), here we had some new hummingbirds at the feeders, including bronzy incas and fawn-breasted brilliants as well as Inca jays, white-fronted parrots, blue-grey tanagers and blue-winged mountain tanagers. We also staked out the salt lick here, a mother and calf tapir were seen from here only a yesterday morning and so we waited until dark. Then after dark we went for a walk around the forest to try and see a couple of species of owl, including the taxonomic mystery owl known as the 'San Idriso owl' and is so far an undescribed species. As we were calling for the owl we had some very nice views of several feeding Bogota yellow-shouldered bats as they came in and fed on the dangling fruits of a cecropia tree.

We then tried for the San Idriso owl and found one above a cabin, we didn't have prolonged views but saw it well enough before it took off and flew into the forest. From here we left and travelled back to the lodge and to a late dinner and bed.

Day 4 Cayambe Coca National Park *Wildlife Watching*

This morning around the entrance to the lodge was a wonderful sword-billed hummingbird offering excellent views perched and then feeding on flowers (not the feeders). We left the lodge after an early breakfast and picked up our guide Milton in Papallacta and drove into the paramo of Cayambe Coca National Park. The weather was exceptional, whilst yesterday up here would have been bitterly cold and miserable (in fact there was plenty of ice and frost around this morning) today was warm and sunny with great views out over various volcanoes. The closest being the huge Antisana, but we also had views out of Cayambe and even Cotapaxi (the closest point to the sun on earth – as it is the highest peak on the equator) and Chimbirazo (the highest point in Ecuador) in the far distance.

As we drove around we stopped and scanned at various locations for bears and tapirs, we found various places where the bears had been feeding but didn't see any. We did have a nice stout-billed cincloides close to the road before Gustavo took us to see various species of tiny orchid living on the rock face next to the road. We were also

shown the local blueberry and lupus flowers before hiking a little way into the paramo and for a view out over a ridge line. We could once again see lots of bear feeding activity; but no bear.
Today we spent the entire day in the stunning paramo, it was largely sunny in the morning but the clouds and rain came in during the afternoon and after a packed lunch in the paramo scanning where tapir and bear had both been seen previously, we headed back to the lodge as the rain descended. Then in the late afternoon Martin and Gustavo went for a walk along the river from the lodge again. It was becoming quite apparent now that the regularly seen tapir had changed its behaviour due to the work men being here, and we didn't see it, however we did see some tracks from last night and also tracks of the little red brocket deer known from this habitat.
After dinner Joe, Martin and Gustavo travelled to the nearby luxury spa resort in Papallacta to look for the stump-tailed porcupine which are known from the grounds. Not only does the hot springs here keep the ground and vegetation warmer here than elsewhere the lodge keeps out all of the stray and feral dogs. So we spotlighted around the grounds, being careful not to spotlight the people enjoying the night time air in the romantic hot springs. We made a couple of circuits before going to the bar for a drink. Then sat having a drink in the bar Joe spotted a porcupine slowly climbing up a tree just outside the window. We all saw the distinctly short tail (non-prehensile) which marks this species out from others as it climbed methodically up the trunk and onto the roof of the building. We looked for it to see if it came down, but couldn't find it again. So we returned to the bar, finished our drinks and left back for the lodge.

Day 5 Sumaco Napo National Park *Travelling & Wildlife Watching*

This morning we left the lodge after breakfast at around 8:45am, Martin and Gustavo had given the tapir one more go early before breakfast but with no joy (but they did see a small group of torrent tyrannulets). It was another sunny day as we set off and we didn't go very far before we stopped to try some local tortillas which are still made in the traditional way over an old and traditional oven.
We then made a few stops to look for torrent ducks, but with the main river (Sangay River) being so high (like the Papallacta River) the torrent ducks were elsewhere. But we did see several other species of birds around the river such as white-collared & rufous-collared swifts, russet-backed orependulas, tropical kingbirds and a black phoebe. We then checked some of the smaller tributaries of the main river and found a juvenile male torrent duck giving nice views perched on rocks and then surfing between them as it moved upstream looking for aquatic invertebrates to feed on. We then found an adult female shortly after and watched her as she posed for us and showed off her beautiful orange breast and belly.
Then carrying on we stopped at a few places to see communal spider webs, various plants including the stunning *Maryannia hernandoy* and a nice pair of cliff flycatchers. Getting closer to the lodge we had great views of the volcano that gives the lodge its name, the very cone shaped Sumaco volcano. As we stopped for views of the volcano we also found some chestnut-fronted macaws, magpie tanagers and swallow-tailed kites. We then arrived at the lodge and spent the remaining hours of daylight on the great decking overlooking the ravine and the forest and hills beyond. This decking is very good for wildlife as it has several hummingbird feeders around and we saw several new species hummingbirds here including violet-fronted brilliants, brown violetears, gold-tailed sapphires, green crowned hermits, fork-tailed wood-nymphs and many-spotted hummingbirds.
Then after dinner we did a spotlighting drive down the road leading from the village towards the lodge, but got nothing major tonight.

Day 6 Sumaco Napo National Park *Wildlife Watching*

This morning we had breakfast and enjoyed the birds around the decking again, we had a couple of new species this morning including Gould's jewel-front, Peruvian booted racket-tail, wire-crested hermit and violet-headed hummingbird. But we also had a brief flyover by a pair of white-throated toucans, a gold-collared toucanet as well as seeing orange-winged parakeets and a squirrel cuckoo. But the highlight was the resident troop of black-mantled tamarins that came along the trees to the cecropia tree where some bananas are left for them in the morning. We watched as the group of 9 came along the same branches, jumping at the same points and started to feed. It was interesting to watch them squabble about the bananas with one (the first one to arrive and presumably the dominant male or female of the group) stood on an upper branch and watching out for predators as these small primates have to be wary of raptors when out in the open like this.

Then after breakfast we left for a walk along one of the trails, before we left a north Amazon red squirrel climbed along the trees behind a set of hummingbird feeders with a mouth full of food and descended down into the thick undergrowth below the decking. Quickly after starting the trail we watched a fork-tailed wood-nymph and green hermit feeding on beautiful red and yellow *heliconia* flowers. At the same place in a few trees back we had brief views of an Amazon dwarf squirrel scurrying down the trunk and away. We were shown various plants this morning as we walked through the forest, highlights included *borgonia* which is larger and more impressive than any we are used in the northern hemisphere as well as stunningly coloured *centropogon* (bell-flowers) which have evolved their curved shaped for scimitar billed hummingbirds. We also had various relatives of the African violet pointed out to us and the Stelli's orchid as well as a species of tree that does its best to defend itself against the epiphytes that cling to its trunk and branches and add considerable weight to the tree, by shedding its bark regularly.

We were also shown the difference between the pumpkin family and the passionfruit family, as the pumpkins have a leaf and tendril growing on opposite sides of the stem from each other whilst the passionfruit family has the tendril and leaf growing on the same side of the stem as each other. More interesting plant species including a species of ginger, a type of African violet with red on the underside of its leaves, this red brings in hummingbirds to the flowers which are located underneath the large leaves.

There were relatively few birds around, but we did see ornate flycatcher, spotted nightingale thrush, little tinamou, orange-bellied euphonia, rufous-tailed jacamars and green hermits before we started to climb back up and towards the Wildsumaco Scientific Station. Along the way we noticed it was getting warmer, we were at 1,600m in elevation and over 1,000m lower down that Guango and the temperature was proving that. We also started to see more invertebrates including a beautiful small tarantula with glossy black legs and a orange-gold line along its thorax; as well as various butterflies, caterpillars, grasshoppers and katydids.

Then at the hummingbird feeders nearby the scientific station we found the speciality at these feeders the Napo sabrewing among the many other species. We also had a red-tailed squirrel in the distance behind the feeders and a squirrel cuckoo in the bamboo overhead. After leaving the trail we headed back to the lodge for lunch and whilst we had lunch the marmoset troop came back from the forest to the sacropia tree and were once again fed a few bananas. Then in the afternoon we went down the Coopman's trail again to the first stopping point where some food is left for a species of antpitta.

On the way down to the feeding station for the antpitta we had some wonderful birds in the parking lot, including yellow-eared toucanets, Lafresnaye's piculet, fiery-throated fruiteaters, wing-barred piprites, olive-striped flycatcher and green-and-black fruiteater. We then entered the trail towards the antpitta feeding station and found a wedge-billed hummingbird feeding. Then near the station Martin found a black and red stick insect, interesting this beautifully coloured insect did not use its body form as defence from predators (by mimicking a stick) but instead had a bulbous tail and curled it up when threatened to mimic a scorpion. We were very lucky at the feeding station as we had good views of the three species that they record here, the plain-backed antpitta, white-crowned tapuculo and ochre-breasted antpitta. On the return to the lodge we even had a view of a stunning male Andean cock-of-the-rock, but he remained largely behind leaves and whilst we saw him we didn't get amazing views.

Then after dinner Gustavo and Martin headed back down this trail to spotlight and see if we could find any wildlife after dark. We didn't find anything on the trail other than hearing the calling of a tropical screech owl, but we did have the orange nectar bat and the Ecuadorian tailless bats feeding around the hummingbird feeders again and also wonderful views of an eastern olingo in the cecropia trees just in front of the decking. We watched as it climbed from tree to tree until it climbed away and out of sight.

Day 7 Quito (Puembo) *Wildlife Watching & Travelling*

This morning we left Wildsumaco, whilst having breakfast the resident hummingbirds were busy feeding and the troop of black-mantled tamarins came around to the cecropias and feed off of the bananas as normal. It had rained heavily nearly all night and early morning and so as the sun now shone out of the clouds the tamarins lined up along the branches of the tree and basked in the warmth and groomed themselves and each other. Also around this morning was a red-tailed squirrel also warming up and grooming its tail in the early morning sunlight.

On the drive we had great views out over the Amazon and made a few stops along the way, firstly for a huge communal spider web, around 3,000 spiders would live inside this web that must have spanned around 50m^3 easily. We then stopped at Hollin waterfall, where the water cascades down an old lava flow from an ancient Sumaco

eruption. There were also some hummingbird feeders here and we stopped for the specialities here which are white-tailed hillstar and violet-breasted hummingbird which we saw alongside many violaceus jays in the nearby forest.
Our next stop was for a bit of lunch at a resort that is built into a last remaining fragment of rainforest here and inside the few square kilometres of forest is a troop of Humbolt's squirrel monkeys along with Maranon white-fronted capuchins and Poeppig's woolly monkey. We had the squirrel monkeys moving around the trees nearby the café and watched them as they played around and foraged. But didn't see the other species. From here we were back in familiar ground and passed by San Idriso Lodge, Guango Logde, Papallacta and through the Cayambe-Coca paramo to get back to the city of Quito and down to Puembo Birding Garden where Mercedes was waiting and we had dinner and rested. Tomorrow we would depart for the Amazon basin and the next phase of this trip across Ecuador's ecosystems.

Day 8 Amazon Rainforest (Napo River) *Travelling & Wildlife Watching*

This morning we were treated to various species of birds around the garden, bird such as yellow-bellied grosbeaks, saffron finches, topical mockingbirds, eared doves, red-tailed hummingbirds and blue-grey tanagers were all around. Then after breakfast Mercedes took us to the airport to catch our flight over the Andes and to the
Amazonian city of Coca. The flight was quick (35 minutes) and on time and we then had a swift transfer to the lodge's office in the city for lunch and a briefing. From here we took a motor boat down the Napo River and then walked a short distance before paddling our way to the lodge. Along the way we saw a few different species of birds including black vultures, turkey vultures, russet-backed oropendulas, tropical kingbirds, snowy egrets and then on the boardwalk near the lodge there was a juvenile green anaconda. This individual just next to the trail was around 1m long and very much a baby compared to the adults that live around here.
After arriving and settling in we went out with our indigenous guide (Wilmar) for a canoe around the Pilchacocha lake, it was getting quite late in the afternoon so we didn't see lots of life but did have some nice views of several hoatzin (including one on a nest), large flocks of red-bellied macaws flying overhead, tropical kingbirds, boat-billed flycatchers and the similar looking lesser kiskadees. The mammal highlight (or only mammal for this canoe trip) was some excellent views of 4 long-nosed bats roosting on the understand of a tree trunk protruding from the water very close to the lakeside restaurant. The only other sighting of note was some splashes made by white-bellied piranha as they come to the surface to get oxygen in the oxygen depleted tannin rich black water. We watched the sun sink behind the clouds and returned to the lodge for dinner.
After dinner Wilmar took us out spotlighting on a night walk; we started off around the butterfly house and quickly spotted a black agouti moving around the forest. But for the first half an hour or so we focused on some of the smaller species of animals that make the rainforest come alive after dark. These included a few whip scorpions on the trees, one of which was enormous and must have spanned 20cm from leg to leg and 50cm from antenna to antenna. Other cool invertebrates we saw included a horned spider in its web, a procession of leaf-cutter ants, leaf crickets and their similar looking relatives the katydids. We also found a parasitic wasp sleeping on a leaf and nearby a pair of lady bugs mating (the mature adults being red in colour and just below a juvenile still yellow in colour). We then saw a praying mantis which mimics a stick-insect, the mimicry was so good it was very hard to see this animal as a typical praying mantis at all. Then around the butterfly house we found a medium sized pink-toed tarantula (still around 15cm across) a bullet ant carrying off the pupae of a poor unsuspecting insect and some stunning caterpillars.
From the butterfly house we then carried on deeper into the forest and focused more on mammals, we were quickly rewarded when a wonderful juvenile lowland paca came out of the forest right in front of Martin and crossed the road and walked casually (as if we were not there) into the forest and foraged away. This was immediately followed by the rustling of a nine-banded armadillo just on the other side of the trail. We found the armadillo easily enough and had good close views as we followed it into the forest a short way as it continued is noisy foraging, sticking its long nose into the leaf litter for food.
We then had some nice amphibian sightings including a juvenile of the very loud map treefrog and a beautiful *Rhinella margaritifera* and then great views of a diminutive Ecuadorian yellow-tailed salamander. After these amphibians we had more luck with mammals and incredible views of a rufous mouse-opossum climbing along vegetation around 2m up and allowing for incredible close views and pictures. We also had a common potoo hunting over a small creek and finally a Gray's spiny mouse climbing and running around a tangle of vines over the pathway. Considering it can often be very hard to see mammals in the rainforest we had a very successful night walk and returned to the lodge around 11pm.

Day 9 Amazon Rainforest (Napo River) *Wildlife Watching*

This morning we headed back into the forest around dawn, our focus this morning was the smallest species of monkey in the world the incredibly small pygmy marmoset. Before setting off Martin spotted a couple of dwarf caiman in the muddy water just underneath the kitchen building.

Back in the forest and on the way to a known territory of this species we were introduced to many medicinal plants and mushrooms as well as some of the other interesting plants of the forest. First was the black elongated fungus called 'dead fingers' in deed they do look like they are frost-bitten digits. They were also covered in their white spoors making them look dust covered and when Wima picked them up to show us the liquid inside (which can cure ear infections) the dust shook off, spreading their spoors far and wide. We passed an area where a tall tree had fallen around 1 year ago and created a clearing. In the clearing we saw a profusion of life, hundreds of different species of plant all fighting for sunlight and the right to grow in the space. It was incredible to see the size of some of the trees and plants in just 1 year. Sun competition in the rainforest is one of the fiercest battles in the natural world. Because of the usual life span of the majority of trees in the rainforest the forest goes through cycles of primary and secondary forest every 100-200 years when old trees fall over and open up the canopy for secondary forest to start growing again. One of the first pioneers of this kind of habitat is the walking palm which can grow around 2m per year and quickly takes over clearings like this one.

We were shown other fungi species including the poisonous devil's cup mushroom, in fact out of the hundreds of species around here only 4 are edible and they are all pure white. A little further on we found one of these edible mushrooms and Wilmar showed us how they are wrapped up in fire resistant leaf to be cooked, the same leaves are used to make cups and plates, showing the forest produces everything you need to survive here.

Walking on we also found a female black agouti who had attracted 4 males for mating, we didn't as much see them as nearly walked into them. They were all interested in mating and didn't notice us until we were very close and then they all went crashing into the undergrowth, one of the males coming towards us and nearly running right into us.

We were shown more interesting plant life including a plant that colours its leaves reddish, brown, black and other colours of mould which stops them from being eaten before they are tall enough to flush themselves with chlorophyll and photosensitise. This is also a plant that is used as a local contraception as it causes infertility in women, but when boiled, diluted and used sparingly it can allow for a few months of carefree sex.

We then moved back to some wildlife and found a resting dwarf iguana very well camouflaged on leaves next to the trail and near a huge kapok tree Martin spotted a couple of black-mantled tamarins in the distance. Carrying on we found a juvenile orange-bellied tarantula (one of the bird-eating spiders) in a hole under a root in the middle of trail and were shown a mature rubber tree. Usually when you see rubber trees they are in plantations and they do not reach the height and width as this impressive specimen. On the rubber tree was an old termite nest which had been excavated out and was now used by macaws and parrots as a nest in the right season. We then came to the largest tree in this area of forest, a huge kapok tree some 60m tall! More plants we were shown included wild ginger and garlic before we found three species of frogs in quick succession. Firstly the Amazonian rocket frog, long-nosed frog and then a beautifully coloured Ecuadorian poison-dart frog.

This morning was as much being shown about the local uses of the forest as the wildlife and next we were shown a means in which local hunters would flush animals out of hiding, they have a plant called the bullet leaf. It is a hard leaf and when held straight and hit with a stick it creates a very loud noise, similar to the firing of a gun and so aptly named. Foam on a tree trunk was not just that, it is the cocoon of a cicada species which has laid its eggs inside, when they hatch they will head downwards and into the ground, they spend several year undergrown (in the Amazon around 4-5 years and not the 13-17 years in the northern hemisphere) and then emerge to breed and lay eggs in just a couple of days as an adult. The next plant we were shown is the tawa palm which produces a nut which is incredibly hard and pearlescent. It is called the ivory nut and the local people would carve into decorative pieces for trade and sale. We were then taken to a rare tree in the forest today, an old and mature mahogany tree, these trees were systemically taken for timber for hundreds of years and they are very rare now.

We then made it to the pygmy marmoset habitat and after mimicking their squeaking call we found an adult male. Being around 10cm long in head and body and that again for the tail they are the smallest monkey in the world and absolutely adorable. We watched this lone individual climb and scurry around the trees and vines for around 15 minutes before he got tired of us and disappeared, the rest of his family group didn't emerge, but what an incredible little animal and the highlight of this morning.

On our way back towards the lodge we were shown more medicinal uses for organisms in the forest including another mushroom, this one had the skin peeled from it and placed on your skin. It sticks very well and is good for skin irritations and was called devil's ear. Martin and Wilmar then tried one of the sweet (almost honey like) seed from large brown seed pod, the local children would collect many of these as a treat after school. We were also shown soothing balm similar to aloe vera, the iron palm which is very hard and used for blow darts and pipes, a tree which the roots of are boiled down for 10 hours to make an energy drink which hunters would drink before embarking on a long trek to hunt. Martin then had a go (a bad go) at weaving the royal palm frond which is what the rooves of the traditional houses in the amazon are made from. It was quite time consuming to do one and the average house has around 2,000 of these fronds to make the roof thick enough and water proof. The royal palm is also called tawa palm and the trunk is also used for timber for the frame of the building here, even the fibres when

stripped from the individual fronds is woven together to form a very strong rope, which is used for fishing and tying things together. We were also shown the stunningly beautiful Amazon lily flower, this plant is used medicinally for stomach problems and diarrhoea. The last tree of note we were shown was a white barked tree that was phosphorescent and the indigenous people would cut small sections of this bark and hold them when walking through the forest at night so they can see each other.

We did see a couple more animals on the final stretch of pathway before coming back to the lodge, including a blue-crowned manakin perched above the path and a great black agouti on the path and allowing us to have good views on the path and then in the forest as it searched for fruit and nuts without paying any attention to us around. Just at the end of the path we came across the largest and longest procession of leaf-cutter ants we had ever seen, around 30-40cm wide and stretching as far as we could see into the forest in both directions; there were tens of thousands of ants all carrying leaves in one direction and just as many heading in the opposite direction to collect more. They had cleared a pathway in the forest that would be more than wide enough as a human footpath.

After lunch in the afternoon we had the large troop of squirrel monkeys feeding and sunbathing in the trees near the jetty and restaurant. They were feeding on some berries as best we could tell and we had great views of a large male just basking in the afternoon sun, spreading himself along a branch to catch as much sun as possible. We were then taken across the lake to cruise quietly down the 'anaconda' canal. The forest closed in around us as we entered the narrow stream, but it was quiet without any wildlife of note other than the noisy and smelly hoatzin which kept landing ahead of us and then flying onto the next tree, before being spooked by us again and flying a further 5m ahead. This carried on for around 10 minutes before he flew away and into the forest to get back to the lake.

We were then met by the sound of a marching army above us, this is in fact the rhythmic beating of wings by the marching wasp in a nest hanging above the canal. They beat their wings to keep cool and do it in such harmony that it sounds remarkably like a small marching army moving through the canopy. We then spooked a pair of large Spix's guans and had some nice views as they perched and looked at us intently before flying off into the forest. Another nice bird we saw before getting to the watch tower was a mature and a juvenile rufuscent tiger heron close to the bank.

At the watch tower Joe and Martin joined Wilmar up the 46m tower and onto the platform attached to the top of an enormous kapok tree. There was a further 4m tower on the top which made a nice round 50m and the views from the top were incredible. We could see back over the lake and the Napo River tracing its course through the forest and see the forest spread in every direction for miles and miles. But it wasn't the only thing we saw as we were also confronted by dark rain clouds heading our way. We didn't have very long on the tower before the rain came and we descended when it started to fall heavily. We did have views of a pair of Linneaus' red howler monkeys in a distant palm tree before we left and met Rhoda at the shelter at the base of the tower. We waited for the rain to settle down and then returned to the lodge for dinner.

After dinner we had a short trip around the lake but it was very quiet, apart from a beautiful sky with some stunning stars we only found a couple of black caiman. Including a very nice sighting of a young one (around 1.2m long) just under the surface with only its head above in typical crocodilian pose.

Day 10 Amazon Rainforest (Napo River) *Wildlife Watching*

This morning after breakfast we departed for Yasuni National Park which is located on the opposite side of the Napo River, we specifically went to a large clay lick on the banks of the river. Every morning hundreds of parrots and parakeets of various species arrive to eat the mineral rich earth here. The minerals they are looking for include magnesium, potassium and various salts that their diets are very poor in.

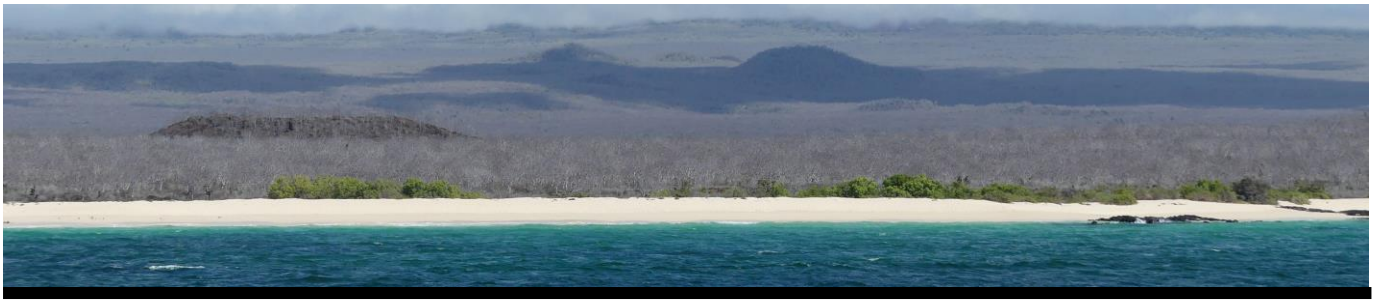
Whilst we were there we had three different species of parrot and two different species of parakeets there; blue-headed parrots, yellow-crowned amazons, mealy amazons, dusky-headed parakeets and white-eyed parakeets. At first they were all flying noisily around the trees and not approaching the lick. But gradually as they were sure there were no predators around and they got bolder and bolder in numbers they started to arrive and feed. It was interesting that they were all clustered around one part of the clay lick but they all stayed in same species flocks on the rocks. It was then easy to see the differences between the species including the size differences with the mealy amazons towering over the blue-headed parrots who in turn bullied the parakeets on the rocks. They eventually started to feed on the clay so much that they formed two groups as their numbers reached a peak. Then Wilmar somehow spotted a boa constrictor on a branch around 80m away from us. How on earth he spotted it is a mystery

to everyone, including the other guides on ours and other boats. The boa constrictor was only visible at first when he took pictures of the branch on our cameras and then we zoomed in and could see the snake clearly on the branch and then found the branch and scanned with our binoculars. Martin was already convinced that Wilmar was the right guide but this spot was just breath-taking.
We then left the clay lick and travelled upstream and passed our lodge to the Shipati community. We were taken to their interpretation centre and then two local women (Erica and Margot) along with our indigenous guides Wilmar and Alex talked and showed us about the local culture here.
First we were told that it is the women that do most of the gardening and that men are in charge of the weaving, a man who can weave a good basket as a gift for a women is a man who can weave a basket good enough to bring home lots of manioc and plantain from the gardens. Their days start very early, not having electricity and it being dark in the tropics at around 7pm each night they are often asleep by 7:30-8pm and so usually wake up between 3-4am. Their days start with a cup of local herbal tea. This tea is made from the dried leaves of the yisua plant, the longer it is brewed the more bitter it becomes and there are various family recipes for this tea. Some people like it very bitter (maybe being brewed for 1.5 hours or longer) and this level of bitterness induces throwing up and is seen as a daily bodily cleanse.
This tea is believed to have properties that will keep away bees, wasps and snakes, in fact recent studies have found links between chemicals in the tea leaves and a deterrent for some species of snakes. So some hunters or fishermen will rub the tea on their arms and legs when going into the forest or streams for protection. The major talking point of the morning is about everyone's dreams that night, dreams have a strong importance in the cultural of the Kichwa people and if you had a bad dream it is not unusual to be confined to the house all day so that bad things cannot happen to you.
Then the women would go down to their garden or chakra which could be located close or quite far from their house, sometimes of seasonally flooded islands in the major rivers. These islands are very fertile and in the growing season they can grow almost anything and very fast. The major crops here and what form the bulk of the diet are manioc (otherwise known as cassava or yuca) and plantain. The manioc is native to the Amazon but the plantains were brought over by the slave trade to South America in the 1500's. If the women have babies they go with them and they are set up in a hammock type sling and a small fire is made in a nearby termite mound. This smoulders and the smoke will keep away wasps and bees from the baby. The work will carry on for 3-4 hours and then they will return to the family home. Then the process of preparing the manioc and plantain takes place. The manioc is not just used for food but also fermented into a weak alcohol which is known as chichar. The chichar is made in a large bowl that looks like a mini canoe and a massive pounder. These are made from cedar and are very hard, they are often smoked. Nearly all of the wood and leaves used in construction are smoked here, this is a way of increasing waterproofness and also making them stronger. The manioc is boiled or roasted and then pounded to a paste, then a small amount of yam or sweet potato is added, this is the fermenting agent. The grater is also locally produced, the spiny roots of the walking palm are used to grate the potato. This is then washed at least twice as the manioc has a high level of cyanide in it before it is washed. From here the paste is put into a gourd and sealed. There is no liquid added at this point and instead it ferments dry and only when needed is water added. This is to save in weight as the chichar paste is often carried around and so by not adding the water until ready to drink the weight is significantly reduced. This paste is then left for a minimum of 3 days; this length of time long enough to make an alcohol around 5% in strength, but there are many recipes and some much stronger variations exist.
We were then next shown how the houses are constructed, the most important plants for construction is the royal palm and the iron palm, these produce the thatching and the major beams and struts respectively. Bamboo is also used to produce walls and twine from royal palms is used to secure everything in place. If made correctly and smoked right the building including the thatching can survive for around 15 years with minimum repairs. They are assembled as a collective, with the whole village contributing to the collection of materials and then a few days later the construction, this is paid for by the family in chichar and food.
Next we were introduced to the blow pipe, probably the most iconic item of the Amazonian people's culture. The long pipe is used to blow darts (tipped with poison) through to catch animals for food. However there is a myth associated with this, the poison that is used is a weak anthestic as opposed to a deadly poison. They wouldn't want to poison the meat they are then due to eat and so they just paralyze the animal and collect it and then dispatch it. We then all had a go at the blow pipe, aiming at a wooden target of a monkey we were not too bad, one of our group hit the target, but it doesn't seem impossible to master quite quickly.
We then had a visit from a pink-toed tarantula, who came crawling out of the thatch (probably disturbed by the constant rain which had been falling for a couple of hours now) and found a drier place to wait out the day.
We were then shown the red dye that is used to decorate people's faces for ceremonies (usually in the figures and images that are important to families such as rivers, snakes or tarantulas) such as weddings. This red dye is produced from the achioti which is the fruit of a liana species.
Because of the difficulty in getting fires started in the perpetually damp Amazon the fire in the house is always going and the smoke produced is used to smoke and preserve any leftover meat. We were then treated to various local foods including plantain, manioc, palm hearts and pacu cooked in a leave and roasted beetle grubs. Similar to witicha grubs from Australia they were nice and tasted like bacon.
We then left the community and boarded our boats again and headed back down the Shipatu river towards the Napo. We found an oilbird perched just over the river, this is a very unusual species of bird famous in the Amazon.

They are called oilbird as they feed on the fruit of the oil palm, they usually roost in caves in colonies are nocturnal. In fact they are the only nocturnal frugivorous bird in the world. So it was very unusual to see a lone one in the day and in the open.
Then closer to our lodge and along the narrow channel we found a small family of three Spix's night monkeys. They were all peering gremlin like out of a small hole in an old palm tree. They must have been disturbed by the sound of our canoes and came out to have a look. They are such a funny looking primate and with their heads just peaking out they looked remarkably like owls. Then we had one of the sightings of our time in the Amazon, where a male and female pair of Linneaus's red howler monkeys came down from the cercopia trees and to the banks of the stream. They were in the open and only around 4m away from us and we watched them climb and feed for around 5 minutes before they moved a little further back and we continued around to the lodge for lunch.
After lunch we hiked to the 500m long canopy walkway, along the way we found a beautiful green-backed trogon and a pair of chestnut long-tongued bats roosting at eye level in a dark nook of a kapok buttress root. Next Wilmar spotted a tiny froglet of the *Rhinella margaritifera* species of toad on the path, it must not have been more than 1cm in any measurement. As we were looking at this miniature toad we spooked a collared peccary on the path a short way ahead, we saw it bolt off into the forest chattering its teeth loudly in anger at us. Wilmar then showed us a volcano mushroom which shot its spoor into the air from a bubble like dome when pressed.
Reaching the canopy walk we climbed up the 45m tower and then walked across to the mid-point tower, we then spend some time looking for wildlife, it was a little too hot up here for mammals but we did see several beautiful species of canopy birds including paradise tanager, opal-crowned tanager, bare-necked fruitcrow, plumbeous kite, copper-winged parakeet, blue dacnis and many others. The only mammal we did see whilst up here was a family of 7 Linneaus' red howlers in a large tree and feeding on the fresh leaves.
We then left and headed back to the lodge, packed ready for our departure tomorrow and enjoyed a wonderful BBQ for our final night. The highlights of the BBQ included exquisite arapaima (a huge Amazonian fish) and a very local dish which was a red-bellied piranha spiced with Amazonian spices and wrapped in leaves before being encased in red clay from the Amazon and baked. It was wonderful.

Day 11 Quito / Puembo *Traveling*

This morning we had a lie in and didn't have to get up until 6:30am, we then had breakfast and left the lodge, on the way to the Napo River we had views of a rufous-and-green kingfisher and more howler monkeys foraging and climbing right above us on the channel. This group was quite large and included a couple of youngsters.
We then left and sped down the Napo River to Coca and waited for our flight to arrive from Quito, it was a little late but we got there in the mid afternoon and then arrived back in the PBG with some time to rest and relax and repack our bags as we would be leaving the chilly high altitude weather of the Andes and the humid heat of the Amazon and traveling to the dry and hot Galapagos early tomorrow morning.



Day 12 Galapagos Island (Isla Santa Cruz) *Travelling & Wildlife Watching*

This morning we were taken to the airport at a very early hour and flown out into the middle of the Pacific, following the equator for around 1,000 kilometres we flew direct to the airport island of Baltra.
On arrival we met Gustavo our naturalist guide for the trip and were taken the short distance to the harbour, at the harbour we saw several species of birds including blue-footed boobies, brown noddys, brown pelicans, great frigatebirds and some small tree finches around. There was also a couple of basking marine iguanas and some Galapagos sea lions too. We were treated to a good overview of species in the wait for our dinghies to arrival and transfer us to the boat. We had a close sea lion under the harbour and posing for us, many sally-lightfoot crabs around on the rocks, their bright red, yellows, blues and oranges contrasting starkly with the black lava rocks; and of course plunge diving boobies and pelicans all around. Whetting the appetite for the next week we all couldn't wait to get on board the *San Jose* and start our adventure.
After a briefing we had lunch, cast off and travelled the short distance to Bachas Beach on the north coast of Santa Cruz. Along the way there were various nice sea birds around including a very rare sighting of a wandering albatross gliding effortlessly across the waves and many small Elliott's storm-petrels dancing on the surface as the fed on small floating animals.

Once we arrived at Bachas Beach we had a short walk around the beach before our first snorkelling trip. The beach was full of Pacific green turtle nests, many of them around, they will be hatching in the next week or so and hundreds of tiny turtles will be making their way down the beach and into the ocean. Avoiding the dozens of threats along the way, crabs, birds, fish, octopus, sharks, snakes, etc all hoping to get an easy meal as the hatchlings make their way to the open ocean. The sky was full of blue-footed boobies, brown pelicans and magnificent frigatebirds cruising the ocean or scanning the beach up and down.
On the rocks dozens of gloriously coloured adult sally lightfoot crabs and smaller juveniles scurried around feeding on algae and other organic matter washed up on the slippery rocks. In the scrub bushes and stumpy trees on the boundary of the beach were vegetarian finches. We then had a very nice view of a pair of breeding lava gulls, with only around 400 of these birds in the world we were treated to very close views of them on the beach and could see the small bright red dot on the tip of the beak and around the eyes. This occurs during the breeding season and is great to see.
Walking along the beach we found the last remnants of a metal skeleton of a ship that run aground here in the 1940's when it was transporting water between the islands. Nearby here we watched an American oystercatcher moving through the rocks and checking each small tidal pool for food and we had great views of a marine iguana feeding on the green algae growing on the rocks here. It is usually done underwater and so not often observed like this. Their blunt faces perfectly suited for grazing the algae off the surface of the rocks.
Further along the beach we came to a brackish pool, these small ponds and lakes are scattered around the islands and are home to some wonderful freshwater birds, here we found a Caribbean flamingo feeding. Moving its head from side to side, filtering the water for microscopic shrimp (*Artemia salina*) which gives the flamingo the carotenoids needed to produce the pink colouration of their plumage. It was great to the see the flamingo using another technique to get the shrimp to the surface, it was 'dance' in the water, moving its feet forward and backwards quickly (like a two-step) to stir up the mud and scare the shrimp out of cover. Also in the pond were a few pink-cheeked pin-tailed ducks and a couple of elegant black-necked stilts patrolling the edge of the pond.
From here we returned along the beach, donned our snorkelling gear and entered the water off the beach for our first snorkelling activity of the trip.
The water was nice an warm, but this little cove was not too productive. There were many yellow-tail damselfish, a couple of larger blue-chin parrotfish and lots of sea cucumbers on the rocks. This snorkel was more to get everyone used to the gear and make sure people feel comfortable snorkelling. After around half an hour we headed back to the *San Jose.* Before dinner we were introduced to the crew who would keep us safe, comfortable, well fed and watered and in short make sure we had everything we would need for the next week. They were; Captain – Francisco, First Mate – Fabian, Second Mate – Oscar, Sailor-on-board – Steven, Chief Engineer – Freddy, Oilman – Jose, Cabin Boy – Harold, Head Chef – Eddy, Sous Chef – Loris and last but certainly not least the Bartender – Jefferson.
We then had dinner and went to bed as the boat navigated its way from Santa Cruz south-west to the southern tip of Isabela Island.

Day 13 Galapagos Islands (Isla Isabela) *Wildlife Watching*

This morning at 6:30am we had our first landing, as we drove out in the dinghies to the landing we had a huge flock of blue-footed boobies dive bombing the water feeding on fish. Also in the melee were brown pelicans, great and magnificent frigatebirds and the odd Galapagos sea lion.
Our first stop is Tintoreras Point, this is one of the most active volcanos in the Galapagos and we would be on the hotspot (where the islands are born) for the next couple of days. As we landed the lava formations were the most noticeable thing, they were sharp and jagged and this is typical of aa lava formations. Scurrying around the rocks were many sally lightfoot crabs, of all ages and a sea lion had made itself a bed on a welcome bench and lay oblivious to our presence.
The coastline here is lined with mangroves and the sea birds and sea lions were enjoying fishing in and between the tangle of roots, many species of fish use these mangroves as nurseries for their young and so there are many vulnerable fish around (if you can catch them). We moved along the trail which ran parallel to a fissure, the fissure created a canal cut next to a lagoon. Inside the fissure were many yellowtail damselfish, as we were there three sea lions entered the fissure and started to look for fish and octopus underneath the rocky crevices and holes, standing on their heads almost, tail flippers out of the water as they search every possible hiding place.
On the rocks fringing the pathway and the fissure we found dozens of baby marine iguanas. They were of various sizes and ranged in age from around 6 months old to 5 years old. The aa lava further away from the fissure and on the other side of the trail was covered in a white lichen, the lichen here being one of the first pioneer species to attach itself to the newly cooled lava.
The lave here is from the Sierra Negra volcano, that is currently erupting, however the low cloud cover today was blocking the view this morning.
Walking along to the end of the pathway we watched a large male sea lion aggressively chase off a younger male from his stretch of beach, sprinting over the sand and rocks and diving into the water and like a torpedo speeding towards the other as the smaller male swam as fast as it could away and to safety. The only other sighting of note

this morning were some of the lava lizards (*Microlophus albemarlensis*) that live in and around the jagged lava formations.
We then had our first deeper water snorkel and whilst the water was significantly colder than yesterday it was a brilliant snorkel. We had many fish again including the commonly occurring yellowtail damselfish, blue-chin & azure parrotfish, king angelfish, Galapagos seabream, spotted corbilla, blue-and-gold snapper, bullseye pufferfish, surge wrasse (among many other species); many invertebrates including the aptly named chocolate-chip sea star. But the highlights this morning were a very large diamond stingray resting on the bottom and measuring around 1.4m by 1.4m at the disc and then an extra 40-50cm for the tail; and the show was well and truly stolen by a young Galapagos sea lion. The sea lion played with us for 20 minutes or so, flipping, rolling, spinning, somersaulting and whipping around and around with delight. Clearly wanting us to engage and play back, but no one here (or any human) is capable of matching the quick and supple movements of a sea lion in full flow as this one was. The sea lion would come to within centre-metres of us before doubling back on its self or diving below and away, only to turn on itself and come straight back to us. Some of our group did also see a Pacific green turtle on this snorkel, but we hoped for more and better views of this other iconic marine species in the coming days.
After all of this excitement we arrived back at the boat. As it approached midday the group on board split into two, the English contingent went with Captain Francisco and Gustavo to the town of Villamil and to a restaurant to watch the England v Croatia World Cup semi-final. Whilst the rest of the group had lunch on board and then we all met up after the match and went to the Galapagos giant tortoise breeding centre in the town. We were told about the ongoing conservation of the 11 still extant species of giant tortoise, the poor fate of the Isla Pinta species (of which Lonesome George was the sole surviving member until his death a couple of years ago) and the fate of the other species which has shifted from human exploitation to the dangers of introduced species which either compete with the tortoises for resources or directly kill them.
The story of the tortoises is a fascinating one and one that started several millions of years ago when one or a few normal sized tortoises from mainland South America washed up here. Tortoises can survive for up to a year without food or water and float remarkably well. From this 'seed' population the entire population boomed. If there were several then they obviously bred together but even if only one arrived and it was a female the population could still spring from this. If the female was gravid (bearing eggs) that is the obvious solution, but Gustavo also told us about some recent discoveries where the females are known to store sperm for months and sometimes years before using it to fertilize their eggs. This kind of adaptation is not uncommon and many groups of animals can store sperm (but not the length of time possible for tortoises) and they tend to fertilize the eggs when conditions are good for reproduction (food, water are plentiful for example). So once the population was established they started to colonise other islands in the archipelago. Here they faced different pressures, some faces very dry habitats where the only food grew high on woody trees or tall cacti, some faced wetter conditions with abundant lush grasses etc. So in time the different island conditions suited different adaptations, some developed upturned shells near their necks and longer necks and legs which allows them to reach up high to get vegetation high up for example. And they lived in their isolated, predator free homes for many millennia…until humans arrived. First buccaneers, privateers, pirates, whalers and then later scientists and explorers. But for 500 years or so every boat that arrived here took with them dozens or hundreds of tortoises (among other species). The animals here have never faced or had to evolve strategies for dealing with land based predators and so were very easy to catch and kill. Also due to some strange features of the tortoises biology they were particularly appealing for people on long distance and long-term oceanic travel (which all of the above mentioned people were). Tortoises can store many litres of fresh water in a pseudo bladder type organ and when flipped on their backs they cannot move and can survive for up to a year alive without food or water.
This meant that boats could stock up on fresh drinking water and fresh meat whenever they arrived here and stacked the tortoises high in the ships stores. So for half a millennia they were exploited to the point of extinction. In fact it took over 100 years from when Darwin first described the species and brought it to the forefront of scientific thinking in 1839 on his return to the UK; until an alive specimen made it back to Europe for proper examination. The reason it took this long (which is over 500 years since their discovery) was simply that they tasted too good and they were always eaten on the long journey back.
But things started to change for the tortoises here by the 1960's, people were acutely aware of the need to protect rare and isolated species around the world by now and with the Galapagos Islands being so international known and famous there was pressure on the people of Ecuador to protect them. With the help of foreign help many of the species where protected and national parks and marine reserves were created, followed by strict rules and laws and then sustainable and well managed ecotourism. Coupled with these processes breeding centres (such as this one and the one on Santa Cruz) were started. The tortoises were bred back, being bred in captivity (and having their eggs collected from the wild) you can assure the survival of nearly egg (in modern incubators) and by tweaking the temperatures you can control what sex you get. For breeding you want many females and few males, and so by making the incubation a little hotter (27-28^{o}C) you will get females and not males (24-25^{o}C). Another quirk of their biology which counts against them in breeding terms is that they have stopped producing dozens of eggs (which is common among large reptiles) and the tortoises now only produce around 7-8 eggs per clutch and the iguanas here even less with 3 the average clutch size. This is an adaptation to lack of predators, eggs are expensive to produce on an energy level and if you have no predators a large percentage of your offspring will survive and so you do not

have to ‘waste’ energy into excess eggs; like you have to when you have many predators to deal with and a small percentage will survive to breed again.
Once they reach around 5 years old they are too large to be taken by their predators, Galapagos hawk, short-eared owl etc and also too big to be seriously threatened by the introduced species. They are then reintroduced into the wild and so far their numbers are steadily increasing again.
This is just one problem to solve, the other is the one posed by introduced species; so humans no longer exploit the tortoises but animals that people have brought with them over the years do cause problems. Goats, donkeys, cattle, horses, pigs, sheep all compete for food (the larger of these animals also stand on and crush eggs and small hatchlings), cats, dogs and rats eat eggs and young tortoises and so you can see the problems continue. So a huge amount of the revenue that the islands makes from tourism is used to exterminate these animals one by one from island to island. There has been some incredible success, with the largest islands in the world free from non-native species nearly all being Galapagos Islands. There is still a long way to go but the progress is good, an example of the scale of the problem was highlighted when feral goats were exterminated from one of the five volcanoes on Isabela and the total killed was over 180,000!
But at least these problems are being dealt with and the current population trend for the tortoises is an upwards one, which hasn’t been the case for at least 500 years.
The breeding centre has tortoises of various ages and some giants which measure around 1.6m across and can weigh up 200kg. Also around the corrals of tortoises were various lava lizards and some nice birds including the colourful yellow warbler. We then walked along through mangrove forest and towards a series of ponds making a wetland area. Here we found some nice species of birds including more Caribbean flamingos, black-necked stilts and pink-cheeked pintails which we saw yesterday, as well as common gallinules, striated herons and medium-ground finches.
We then arrived back at Villamil and had a bit of free time around the beach, before returning to the boat. At the jetty we watched a few sea lions chasing small fish into the shallows and attempting to catch them, however the only successful animal here seemed to be the opportunistic brown pelican who would swoop in (literally) and steal the catch as the fish swim fast away from the sea lions.
During the night, some of our group had great views of the erupting Sierra Negra volcano, the sky and sea glowing red as lava was shot several metres into the sky.

Day 14 Galapagos Islands (Isla Isabela) *Wildlife Watching*

This morning we rose a little later than yesterday and before breakfast there were sightings of a couple of Pacific green turtles cruising around, a flightless cormorant fishing, large numbers of Audobon’s shearwaters and some smaller numbers of Elliot’s storm-petrels, blue-footed boobies, brown pelicans, frigatebirds and a lonely wedge-tailed storm-petrel.
After breakfast we landed on Punto Moreno and had nice views of Sierra Negra volcano, the plume of smoke billowing skywards. We took the dinghies around the coast for a while first and had nice sightings of many turtles, some sea lions and sea birds and then the speciality of this are the flightless cormorants. We had great sightings as a male brought back a couple of large pieces of seaweed to impress his female on the nest with. She didn’t look too impressed at first but then accepted them and incorporated them into the nest. It was great to see the nesting activity of such a rare and unique bird. Gustavo told us about their change in mating strategy in recent years, where the they used to be monogamous but for some reason they had failing nesting and the numbers declined, and more recently they have switched to strategic polyandry partnership, where the female mates with many males (should the incubation not work or a predator take the egg or chick) and for this breeding season the male will stay around and share the responsibility for the raising of the chick. Since this change in strategy occurred the numbers have increased. An actual example of evolution occurring within the lifetime of people here on the Galapagos Islands.
Carrying on around the small inlet we had great views of a young sea lion coming to investigate our dinghy and then some of the largest marine iguanas in the world. The conditions are so good for this species here that they grow much bigger than anywhere else on the archipelago (and therefore world), the largest being around 1.5m long and very muscular. They were basking on the black lava rocks with the sally lightfoot crabs feeding on their excrement around them. We then had our first view of the Galapagos penguins, the most northern occurring penguin and the ones that nearly occur in the northern hemisphere, in fact we are sure that the occasional one must have swam over the equator and meaning the fact of penguins only being the southern hemisphere is not altogether accurate.

Our final view before coming ashore was of a couple of flightless cormorants drying their very short, stubby and tatty looking wings to dry, by holding them outspread.
We then landed and were told about the different lava formation here, it is called pillipilli lava and it covers a huge expanse of land here. Walking along it we were told about the different volcanism here and elsewhere in Ecuador and the world. Highlighting the special features for the Galapagos Islands, such as the dome volcanoes here in the Galapagos which do not erupt under massive pressure and so are not explosive, compared to the conical volcanoes on the mainland (such as Cotopaxi) which explode in fire and fury when they erupt. As we walked along we could smell the sulphurous gas which is common around geothermal features and particularly volcanoes. Watching from our lava vantage point we saw a brown pelican washing in a small pool and in the distance watched a flightless cormorant struggling to kill and swallow a large octopus, so much so that after a while it just gave up and the octopus got away.
We then went snorkelling around the bay and spotted four Pacific green turtles including a male and female together and a very large individual male feeding on the seaweed. We had very close and prolonged views of them as they swam around and fed completely oblivious to us. There were lots of fish around this morning with large shoals of yellow-tailed damselfish and several colourful blue-chin parrotfish. There was a brief penguin but again we didn't see it very well in the water. They are far too quick to get good views of underwater, they are like mini torpedoes and mostly all you see is a line of bubbles whizz past.
We then cast off and moved north towards Targus Cove along the western coast of Isabela. Along the way there were some interesting animals spotted from the bridge, including two long-fin mako sharks breaching high into the air, followed by several manta rays; both breaching and swimming along at the surface near the boat, the latter of which we had good views of as the glided past us. There were at least 3 humpback whales at the surface and blowing around 1km away, but we didn't see any marine mammals close today. There were many birds around including large numbers of Elliot's storm-petrels and Audobon's shearwaters as well as smaller numbers of frigatebirds, Nazca boobies and a couple of waved albatross.
When we arrived at Targus Cove we had our second snorkel and along with the species which were becoming common on our snorkels, such as Pacific green turtles, yellow-tailed damselfish and Mexican hogfish we had many juvenile harlequin wrasse and then near the end of the snorkel and the deeper water some adult harlequin wrasse, wahoo, Galapagos sunbream, orangeside triggerfish and then a couple of turtles being cleaned by wounded wrasse and king angelfish.
The afternoon landing was around Targus Cove and we hiked up the 146 steps to have stunning views over Darwin Lake and our cove with the boat in it. It was a very scenic hike and wonderful views of the nearly circular lake and crescent shaped cove beyond. Also here is some graffiti from many boats that have arrived here from the 1840's up until it was banned to leave marks on the rocks in the 1990's. Many of these marks were made so as to advertise the presence of freshwater here as there is a spring and so passing boats were encouraged to stop to stock up on fresh water.
After the hike we came back to the boat for the evening and spent the night anchored and relaxed in this nice sheltered cove.

Day 15 Galapagos Islands (Fernandina & Isabela) *Wildlife Watching*

This morning we crossed the channel from Isabela to Fernandina before breakfast and after breakfast we landed at Espinoza Point, this is where the largest colony of marine iguanas is and also a very famous nesting ground. It is also the location where the BBC filmed the incredible footage of the snakes hunting the baby marine iguanas for *Planet Earth II*. We hoped to see one of the western racer snakes but they are quite hard to see, what wouldn't be hard to see is the numerous marine iguanas that cover pretty much all of the rocks around here.
Shortly after we landed we had some sea lions fishing with Elliot's storm-petrels feeding on the debris from the dead fish. Along with the hundreds of iguanas on the rocks there were several turtles in the water and we had nice views of a small diamond stingray in one of the sandy tidal pools, there were also large shoals of Galapagos mullet in the tidal pools, presumably trapped by the outgoing tide, they were still and idle and just waiting for the tide to come back in and take them out to the open ocean again. It was great to see the marine iguanas along the rocks and sand basking in the morning sun and also swimming around to and from their grazing grounds just offshore. The rocks were also full of a smaller lizard, the lava lizard. These lizards were either dull grey or black or brightly coloured with a red head (depending on their receptiveness to breeding). The more we walked the more the rocks seemed to move, with the countless marine iguanas, lava lizards and crabs the ground was alive with animals.
We also observed some interesting behaviour as we watched some of the large males shaking and bobbing their heads in display. They were threatening other males and telling them to stay away from their basking area and their females. We also saw several sneeze, blowing out salt from a gland above their nose. This is their mechanism to get rid of excessive salts after spending hours in the sea feeding.
We also spent some time looking at the adaptations they have to a life feeding on marine algae, the long claws for gripping the rocks under the water as they feed, the blunt nose and face which allows them to get right up to the rocks to graze the layer of algae off the rock and their flattened and elongated tails which act as the main thrust and rudder when swimming on the surface and underneath the water. There were also some larger lava lizards hunting for flies and watching them jump high off the rocks to nab flies and other insects from the air.

Underneath a bush on the sandy shore Gustavo found a nice sized (80cm) western racer curled up. We watched for a while and it came out and slithered right between us and away into a larger bush. It was amazing to see this species, one of the top predators on the whole archipelago and the star of the dramatic *Planet Earth II* footage. Nearby here was a female flightless cormorant on a very well constructed nest of guano, seaweed, rocks, branches and other odds and ends they can scramble together from the beach. Whilst scanning the sea shore from our lava vantage point we found another top predator on the islands, a large great-blue heron hunting in the shallow tidal pools. As we watched the heron caught a small Galapagos threefin blenny, beating it against the ground to kill it before swallowing it whole headfirst and continuing its hunting.

Offshore we had a oceanic manta breaching and closer to the land we had several Pacific green turtles and sea lions in the shallow inlets. In fact it was because some of our group had spotted a turtle out on the rocks we turned around and headed back to this lava formation to have a closer look. Whilst here we spotted a huge western racer, around 1.3m long and as big as this species gets. It was hunting, moving in and out of the rocks and crevices as it looked for iguanas and lava lizards. There were several of these around the same area, and so we stopped and waited and watched the snake go about its business. It was very patient, going in every hole and searching every rock until it saw a small marine iguana run from one rock to another. Like a switch had been flipped in the snake's mind the snake jerked forward, then in quick speed moved forward in the direction of the iguana. But moving behind a rock and out of the line of sight of the iguana. It then stopped and remained perfectly still. The iguana moved, just down the rock and snap…quick as a flash the snake struck, grabbed the iguana around the shoulder and twisted and coiled as fast as it could and the struggling iguana was entwined in the snakes coils. We then watched for the next 20-30 minutes as the snake slowly overpowered the iguana, the iguana did everything it could to escape, including biting the snake. But to no avail, the small teeth of the iguana not making a difference to the snake as it moved its hold from the shoulder to the head. Then the gruesome reality, we watched the snake start to swallow the iguana alive, first the head and then the shoulders and we left as we had to leave and get back to the boat for our snorkel. But wow! What a sighting, what a privilege, the first time Gustavo had ever seen this and we felt like we were watching the BBC footage live. Incredible, what a morning!

As we were walking back to the landing spot we came to a collection of bones, clearly ones that had been collected from the coast and placed here for people to see as there were many vertebra and ribs of a small whale, a broken dolphin skull, some arm bones and scapula of a sea lion and a marine iguana jaw. Back on the boat we had a quick change of clothing and then went out for our first snorkel of the day.

In the water we immediately found several turtles including some young ones, but the highlight here is the diving and feeding marine iguanas. Having seen so many on the land it was incredible to see them diving down, using their flattened tails to propel them down to the bottom, there they anchor themselves with their long claws and graz on the algae. We found a few of these iguanas and in some instances were able to get really close to them and watch as they fed, before returning to the surface and climbing onto the rocks to get some more sun. The cool water withdraws their body heat quickly and this is the limiting factor for them in the water and why they are so often seen basking in the sun so much, so maximise their internal body temperature and so to be able to stay underwater feeding for as long as possible. As far as the fish here went there was a larger number of Mexican hogfish here than we had seen in other areas, but there was nothing new species wise on this snorkel.

As we got out and into the dinghies we had a penguin nearby, but once again the penguin had eluded us under the water. The rocks here were lined with blue-footed boobies or flightless cormorants all perched and looking rather regal on the rocks as they soaked up the suns rays before diving or flying expeditions to find food.

We then left Espinoza Point and travelled north and back to Isabela and specifically Vicente Roca Point. Along the way we spotted numerous Audobon's shearwaters and a few of the larger and rarer dark-rumped shearwater. There was also a huge shoal of fish being attacked by hundreds of storm-petrels, shearwaters, boobies (both blue-footed and Nazca) and other marine birds and in the midst of all this chaos was a pod of short-beaked common dolphins and a shoal of yellowfin tuna. They were quite distant at first but over the course of the next 15-20 minutes they came closer but at they got into better view only a few tuna were around and the dolphins had left. Also along the way we spotted a couple of smooth-tailed mobula rays breaching to rid themselves of parasites.

We then had the impressive shape of the equator volcano (or what is left of its cone) come into view, however it was left largely obscured by the huge ash cloud that was a result of the eruptions on Wolf Volcano and Sierra Negra Volcano.

On arrival at Vicente Roca Point we had our second snorkel of the day. This can only be described as the snorkel of the Pacific green turtles. There must have been 50 plus turtles in around 150m^2 of shore. The numbers and density was incredible, as soon as jumped from the dinghy we were surrounded by at least 12 and every few metres along the coastline we found another group of turtles similar in number and then a little further into the cove the sandy bottom was the resting place for many more sleeping turtles on sea bed. They were all very relaxed here and clearly like the shelter that this cove provides and use it as a communal sleeping area. All of the turtles we saw were relaxed and not feeding, obviously socialising and in fact just drifting with the current back and forth. There were so many it was getting quite annoying to try and film or take pictures of other animals as turtles would constantly get in your way. Both human and turtle would do their best to move out of each other's way and it was hard to know who was more frustrated when they both moved in the same direction.

But along with the turtles we had many species of fish including some very nice blue-chin parrotfish and a large shoal of razor surgeonfish mixed with some king angelfish. There was also a brief cameo by a sea lion as a few sea

lions played in the surf around a large wave splashed rock and a small colony of flightless cormorants were on the rocky shore. In fact it was nice to see one of the cormorants underwater, using its powerful feet to propel itself underwater, unlike a penguin, not using its wings to 'fly' through the water, but its feet to kick its way through. Then we heard the call from the dinghy that was following us 'MANTA!' Swimming as fast as we could towards where the wing tips would break the surface we didn't get there in time, there was a brief view of a white wing tip as it came down for a beat underwater, but luckily Gustavo and Fabien got the boat closer and took some great video of what was estimated to be around 6-7m wide.
After this we returned to the boat and changed again before a dinghy safari around the coast. This entire bay was the volcanic cone of a volcano and whilst half of it still remains as the cliffs and mountains beyond the other half is now completely underwater. So we were shown some of the unique geology here, including the layers of ash that have been compacted over time to produce the rocks here. It is a soft rock and has the appearance of sandstone, the waves and wind over millennia shaping and sculpting the surface into incredible shapes. Along the jagged and patterned surface we had a colony of brown noddies nesting and a smaller number of blue-footed boobies. The noddies had managed to find any foothold they could and secured a nest site for them selves, whilst the pelicans and marine iguanas used the flatter surfaces for themselves and the many sally lightfoot crabs scurried around and clung incredibly to any surface they could get too; which seems to be every surface.
A feature of dome volcanoes (as they are in the Galapagos) is that they relieve pressure from the magma chamber over time (other than in one explosive eruption in cone volcanoes) and we could see some of these pressure breaks in the fissures that run up and down the rock faces. The magma would crack open the soft ashrock and create cracks / fissures (called volcanic dykes) in which the magma (now becoming lava) would run through and reach the surface, run out and then down to the sea – thus creating new land. But we could also see the layers of ash and then the layers of lava rock above from such slow eruptions and lava flows. We then went inside the remnants of the magma chamber, the waves cashing against the back of the cave to create the deepest booming noises. The magma would have come up to a similar level as the water does today and the rest of the chamber would be filled with gases and other nasty bi-products of the volcanic activity. It is these gases that create the pressure that creates the fissures and it was amazing to get inside one of these chambers.
On our return to the boat we cruised over where we snorkelled and we had the turtle groups again, however only around 20% of them as we could only see the ones at the surface or maybe 2m below. We also had several sea lions put on a show for us, chasing each other and barking loudly as they played in the water. We also watched a flightless cormorant washing itself in the sea before coming back to its roost for the night.
Back on board we started up and started to cruise northwards, it wasn't long before we reached the equator and at this point the captain invited us all to the bridge to see the instruments all read 0.000 as we were exactly on the equator. We had a nice cocktail to celebrate the moment and to make sure we turned around and headed from north to south and then back to the north again. It was all good fun and after we carried on through the night on our way around the northern tip of Isabela before heading south-east towards Santiago and our destination tomorrow morning.

Day 16 Galapagos Islands (Santiago Isla) *Wildlife Watching*

This morning it was rather overcast and a little cooler than previous mornings. Before breakfast there was a pod of around 10 common bottlenose dolphins cruising along and past another boat near us. They silently and smoothly made their way from one end of the bay to the other. Also active early this morning were some fishing blue-footed boobies, brown pelicans, great frigatebirds and Elliot's storm-petrels.
After breakfast we had a dinghy safari around the bay, we first visited a lone rock, its black rock turned white with years or guano. It was a nesting site for a small number (maybe 20) Nazca boobies, they are beautiful birds, lacking the brightly coloured feet of the blue-footed and red-footed boobies but having a dazzling white plumage with black markings and a pinkish peak. They resemble their cousins the gannets more than the other boobies in their exterior appearance. They also had some chicks of various ages, including one pure white chick which was still covered in its flurry down feathers. Also nesting on this rock were a pair of swallowtailed gulls, these are the world's only nocturnal gull and they are also very attractive birds. With dark heads, necks and wings, white elsewhere, a bright red eye ring and large black eyes complete with a forked tail. As we watched the colony a frigatebird came over and started to harass one of the boobies, diving and peaking at it. Presumably the frigatebird had seen the boobie recently come back from a fishing trip and it knew it had food in its crop and was doing its best to get the boobie to drop its catch. At the same time this was going on a Galapagos shark surfaced near the boat and we saw the dorsal

and caudal fin of this wonderful animal. Estimated between 2.5-3m long based on the distance between the dorsal and caudal fins.
This was a good opportunity for Gustavo to tell us about the problems protecting the marine life (particularly sharks), as well as the islands forming a national park there is a Galapagos marine national park, this extents to around 300 miles around the archipelago and encompasses all of the islands and lots of water. However policing this vast area is very difficult and for years fishing boats have been patrolling the outskirts of the protected area and at night fall coming in and illegally fishing. There are many NGO's trying to help the situation but it is a very big problem and there are huge numbers of sharks fished illegally from within the protected areas. There is good news in that the new president of Ecuador is very tourism friendly and wants to increase the sustainable eco tourism in the country. This will be massive for the country in terms of protecting the wildlife but also providing revenue as the price of oil has dropped in South America from USD $120 per barrel to as little as USD $25 per barrel.
Carrying on around the coast we came to some pretty rock formations, the red and black rocks here carved by wind and waves to form curves, turrets, caves, platforms and many more shapes. On these rocks were many blue-footed boobies (including a young chick in down feathers), swallow-tailed gulls and some yellow-crowned night herons. We snorkelled around here also this morning, the snorkel was fantastic, there were larger shoals of fish and a higher diversity of species than we had seen before. Snorkelling alongside the cliff face we could see many smaller species of fish such as sabretooth blennies, triplefin blennies, marbled gobies and many sea urchins in all of the holes along the cliff face. Just off the cliff face massive shoals of white and black-striped salema hung in the water, flashing their silvery scales rhythmically as we passed by. There were also shoals of razor surgeonfish, Galapagos grunts, kind angelfish, milkfish and many individual giant damselfish and Galapagos seabream. We also had some interesting fish including a bumphead parrotfish, trumpetfish, stone scorpionfish, Panamic graysby and splinter wrasse. But there were some other highlights from this morning's snorkel.
Shortly after jumping in from the boats we found a huge marbled stingray on the bottom and as we were looking at this a Galapagos sea lion swam into view and must have spooked a white-tipped reef shark which came out of nowhere and swam beneath us for around 40m. The shark was probably around 1.4m long and was around 3m beneath us. What a greats sighting, we then had some fun with a trio of very playful sea lions inside a cave. It was amazing snorkelling inside an old lava tunnel and to have sea lions in there too entertaining us it was incredible. We then snorkelled over what looked like a lobsters' graveyard, hundreds of shells all piled on the floor, it was where lobsters had come out to moult their shells which they do annually as they grow.
Near the end of the snorkel we were in a huge shoal of black-striped salema when a line of bubbles came from nowhere and dissected the shoal, the fish went everywhere and before we could realise what had happened the shape of a blue-footed boobie rushing to the surface with a fish in its mouth appeared. We watched him feeding on the surface, swallowing the fish in one go, catching its breath and then up into the air again, within a minute it was back down and had caught another one.
After lunch we had a wet landing on a black volcanic beach, the beach was already occupied with a small group of Galapagos sea lions, including one very young pup (maybe 1 month old) just lay down resting nearby its mother. We landed in and among the sea lions and spotted a Galapagos shark from the beach, just cruising with its dorsal fin cutting through the surf.
We were then told about the various physiological adaptations the Galapagos sea lions have which make them unique among sea lions. For example the water temperature here varies dramatically here (from 18-34^{o}C) and so they cannot rely on regular food from their normal diving range (0-50m) so they have to dive to depths of 400m when the temperatures are high, in order to get enough food for them. This is a massive depth and one that is usually only reached by seals, whales and dolphins (among the marine mammals). It has led to the development of higher concentrations of haemoglobin in the blood and better oxygen binding in the muscle tissues for slow release when under the water. They cannot store oxygen in the lungs when diving as the pressure would force the lungs to burst, so they collapse their lungs and store the oxygen in their blood and muscles and can stay under for 40 minutes as they fish the depths. This kind of fishing brings them into contact with large sharks and one of the sea lions here had old scars from a shark bite.
We left the beach as the youngster started to suckle from its mother and walked up and along the western coast. We walked by an old homestead, the abandoned house, granary and water tower all here but no one has lived here since 1965. In fact the name of this port is named after the sole occupier of this port and the only person to have ever lived on the Island of Santiago; Mr. Egas. Between 1963-65 he lived here illegally and ran a salt industry from here. Just in land there is a lava tunnel which is connected to the sea and every low tide the water leaves a layer of salt and he would collect the salt and sell it to the fisheries around here. The Galapagos Islands had been a protected area and national park since 1959, but at that time they had hardly anyone working to patrol and enforce the law and it took 3 years before the authorities found Mr Egas and his operation and he was deported from the islands and Ecuador.
Walking along the coast we saw a wealth of wildlife including marine iguanas, many lava lizards, sally lightfoot crabs, sea lions, medium-tree finches, yellow warblers and had incredible views of a Galapagos penguin. This is very rare as they are not known from Santiago and other than larger populations on Fernandina and Isabela the only population in the Galapagos is 25-30 individuals from Bartolome further to the south. Not only was it very unusual to see a penguin here we were able to get close up views of it posing on the rocks as it didn't care about us at all.

Then an immature Galapagos hawk came out of the shirt trees and landed on the beach very close to us. We had great views as he just perched there and watched us as we watched it, before flying on and further along the coast. This was close to a pair of nesting American oystercatchers, the male keeping a very keen eye on us as the female walked back to her camouflaged pair of eggs and sat on them as we walked around. The main point of coming this far along the coast from Egas port is to see the second endemic pinniped species, the Galapagos fur seal. There is a good sized colony here and they live among the lava rocks and tunnels. We found several lying on the rocks and a few in the water. They were much more relaxed than the sea lions and being more nocturnal they are more inclined to rest and sleep during the day. We did see a minor territorial spat as one tried to infringe on the resting spot of another. Also around here were a few pretty looking yellow-crowned night herons.
On our way back to the beach we had a pair of Galapagos mockingbirds land on a path-side bush but nothing else of note. We also had a snorkel off the beach but it was pretty quite, there was a Pacific green turtle sighting and a large male sea lion, but just the usual fish and not in the numbers we had seen on previous snorkels.
On getting back to the main boat we departed Egas port and carried on south in between Santiago and Isabela until we arrived at Rabida Island. Before it was dark we spotted another Galapagos shark from the boat, a few of manta rays and a huge flock of mixed shearwaters (mostly Audobons' but some dark-rumped) and storm-petrels feeding on a massive shoal of fish that were at the surface and making the water boil.
We then reached Rabida, anchored and had our dinner anchored in one spot all night.

Day 17 Galapagos Islands (Rabida & Sombrero Chino) *Wildlife Watching*

This morning we woke up to the red rocks and sand of Rabida Island just off the yacht. The red colour of this island coming from the high concentrations of iron-oxide in the rocks here. It is unique among the Galapagos Islands for its colouration. This morning we had a wet landing on the red sandy beach and went for a walk along the coastline.
The first animal we noticed was a Galapagos mockingbird coming to investigate us, it was brilliant to see this bird, with zero fear of people, coming and walking right in between us all, looking for food. In fact the small land birds were the highlight of the walk this morning with a couple of pairs of mockingbirds coming very close, several pretty Galapagos doves feeding on the ground and many medium tree finches too.
We were taken to a lake here, this used to have many flamingos in the lake, but in 1997 one of the strongest *El Nino* events occurred and there was 9 months of heavy daily rainfall. This extra precipitation raised the pH to quite a high alkali level. This killed off the microorganisms and therefore the shrimp died and so did the flamingos or they moved away. None have been seen here since, as this was a completely natural event it is thought that this is part of a cycle and that in time the pH will come back to its normal levels and the microorganisms, shrimp and flamingos will all come back in due course.
Rabida Island was also closed until recently, it reopened maybe around 2 years ago after 7-8 years of being closed as the authorities worked to eradicate the introduced rats on the island. This was a success and you can see the positive affect it has had on the land birds as we saw a high number today.
We then had a short snorkel off the red beach, it was a nice snorkel and some of our group saw a small <1m white-tipped reef shark and a sea lion. But otherwise it was many black-stiped salema, king angelfish, concentric pufferfish, razor surgeonfish, blue-chinned parrotfish and some sleeping Galapagos grunts on the sandy bottom. The red sandy beach just offshore was actually a good place for garden eels also.
From here we made the short (1 hour) cruise to Sombrero Chino Islet, with its volcanic cone looking somewhat like a traditional paddyfield (Chinese) hat; and once here we had our last snorkel of the trip. It was beautiful and clear water and we could see large shoals of razor surgeonfish, black-spot cardinalfish, black-striped salema , Mexican hogfish and also good numbers of blue-chinned and bicolored parrotfish. On the sandy bottom we had our best sightings of triggerfish so far, with the finescale species being dominate here.
We had seen a penguin swimming nearby as we arrived to the snorkelling area from the dinghy but we didn't see it once in the water, we did have a great sea lion views as one came and played with us for a couple of minutes, this came after a short cameo from a white-tipped reef shark before it swam into a cave and didn't come out again.
All together a nice snorkel to finish our underwater section of the trip.
After lunch on board we landed on Sombrero Chino Islet and walked around some of the coast. We saw many lava lizards, sally lightfoot crabs and some basking sea lions on the coral beach or lava rocks. We also watched some young sea lions playing with each other in the shallow tidal pools. We watched from close quarters a mother and pup sea lions relaxing and was interesting when the two younger pups came ashore and went up to the adult female, sniffed each other (as is common when sea lions meet each other), one went further away and was ignored whilst one remained close to the female and this was not tolerated. The female barked and chased the youngster away from her sunbathing spot.
The tide was coming in and we watched the crabs (which would drown in the water) running and jumping from rock to rock in a mass exodus from the tide exposed lava rocks. This was the time of the lava heron and we watched as one stalked, lunged and caught a crab. Quickly dismembering the crab and breaking apart the body to get the flesh.
On our way back to the landing beach there was a diamond stingray in the shallows and a very large adult female and nearly mature male sea lion in the shallow water. The female came ashore and we gave her room but the male was being a little boisterous and barked loudly at us. Gustavo spooked him away so we could get on the boats, the

testosterone fuelled males are known to chase people on beaches and in the water. So it was better to steer clear of this one.
Back on the boat we hauled anchor and started our cruise further south and to the largest town in the archipelago, Puerto Ayora. Along the way we hoped for marine mammals and saw a couple of oceanic manta rays but the cetaceans were remaining aloof.

Day 18 Galapagos Islands (Santa Cruz) *Wildlife Watching*

This morning we left the boat after breakfast and took the dinghy through the busy harbour to the jetty in Puerto Ayora. This is the largest town in the Galapagos and the island of Santa Cruz is the most populated with around 15,000 people currently living here. Our destination today was into the highlands of the island, the cloud covered landscape up in the dormant volcano was a stark contrast to the dry and sparse islands we had been travelling around up until this point.
We took a bus through the town and up along the only road that dissects the island and finally arrived into farm land. The terrain looked remarkably like the cloud forest we had travelled around in the mainland, with orchids and epiphytes clinging to the moss and lichen covered trees and everything was a bright luscious green. As we approached the national park border (we were currently in some of the 3% of the islands that are used as human habitation) we started to see some of the tortoises in the fields alongside the road. Their giant domed shells standing out among the grasses and bushes.
We then arrived at the Reserva el Chato and had a small briefing about the tortoises here and their plight, going over what we had been told previously about how they colonised the islands, how they had bee persecuted and now how they are being bred back and are finally recovering in numbers due to the eradication of the invasive species and also the captive breeding projects. We also had the opportunity to 'become a tortoise' and climb into the old shells of animals that had died of natural causes a long time ago. This was before we set out into the fields to find the fully wild Galapagos giant tortoises.
The search was neither long or hard, there are many around here and we quickly found 3 large individuals, all males close to the path. Whilst they are fascinating animals and their size (over 300kg in weight for a big male) is incredible, they are not always the most 'exciting' animal. We watched the individuals as they slowly grazed, took great interest in us, raising their long necks and staring at us with their piggy eyes and if we got a little too close they would issue a hiss and withdraw their necks and heads into their shells. Over the course of the next hour or so we found several more in the vegetation grazing and some wallowing deep in the mud. One mud wallow had 14 individuals in it. All male (by the size, as the males are usually at least twice the size of females) except for one female who was being mounted by an enormous male. She didn't seem too impressed and as soon as he had released his grip (his colossus weight was not fully on her) she made a run for it. They can move quicker than people often think and whilst they will never win any races, she moved away from him and deeper into the wallow with him in quick chase with ease. They are surprisingly mobile animals and moved around 2km per day in search of food, mud and mates and when fully grown need to eat around 40kg of food per day.
Also around these fields were several birds, including many medium and large tree finches, lots of medium ground finches a smaller number of large ground finches and even a green warbler-finch. These are all native birds, but there were a couple of conspicuous species which have been introduced, the cattle egret and the smooth-billed ani. The cattle egret came by accident, they are often around cattle and have spread all over the globe as they follow the cattle trade but the smooth-billed anis were purposely introduced to keep a check on the cattle parasites. As the cattle were brought here to be farmed they picked up parasites and also brought their own with them from the mainland. But there are no large mammals on the islands and so there are no animals that naturally take parasites off large mammals. So the smooth-billed ani was introduced to solve that problem, however the anis soon found a better and easier source of food. They started to kill and eat the eggs and chicks of the various Darwin's finches around here. The finches not evolving a mechanism for concealing their nests or defending them and the anis took full advantage. So now there are eradication programmes for the anis in the islands where they are inhabitants.
Before leaving the reserva we were also told about the effects the tortoises have the ecosystems here, they are seed dispersers, they add huge amounts of valuable fertiliser (particularly to the drier islands without thick layers of top soil) and so where they had been lost the vegetation also started to die off. Since they have been brought back to many places the vegetation is also coming back strong. This is another key reason for the important work being done at the Charles Darwin Research Station (CDRS), which is where we would be visiting after lunch.

So from the highlands we headed back down to the town and to the boat, we had lunch and then in the mid afternoon we headed to the CDRS. On arrival we were fist taken to the impressive shrine to the most famous former inhabitant of the islands, Lonesome George. He died on the 24th June 2012 as the last member of his species (*Chelonoides abingdonii*), he was found in 1971 on the island of Pinta and was the sole tortoise there, so he was quickly collected and brought to the research station. Many searches were made for other Pinta tortoises (both on Isla Pinta and around the world for the Galapagos giant tortoise is a popular animal in zoos and private collections), but no other individuals were found; despite a USD $10,000 reward for anyone who could find a female Pinta tortoise. So he was placed in a pen with two females from Wolf Volcano on Isabela island. These tortoises are deemed genetically the closest to him and it was hoped that they would breed and then their young could be introduced to Pinta and maybe the evolution process would start again and produce similar genetic tortoises to Lonesome George. But he never did successfully bred, they mated many times, but he was genetically too far removed and no eggs were fertilised. And on closer inspection it was found that some of George's sexual organs had began to calcify. For not having sex for so long his private parts had started to turn to stone. But all of this work was for naught as he died suddenly and of natural courses (the exact reason is unknown) in 2012. No body knows exactly how old he was but probably no older than 100, with most sources dating him from around 70-90 years old. Which is probably just approaching middle-aged for a Galapagos giant tortoise.

So after seeing Lonesome George and hearing his heartbreaking story we walked around some of the corrals to see the opposite end of the conservation story, a very successful story and a male called Diego who has to date sired nearly 1,000 baby tortoises and is nearly single handily repopulating the island of Espanola. In 1976 there was found to be just 2 males and 5 females remaining on Espanola and to the *Chelonoides hoodensis* species. They were bred together but the males didn't seem to know what to do and then another search went around the world to find another member of this species. One was found a male in San Diego Zoo, he was shipped here and almost as soon as he arrived he started to mate. His name was Diego and he has mated ever since, he is a veru successful male and he will soon be taken from his captivity and released onto the island to live the rest of his days in the wild as the numbers of his species are doing well again with around 1,600 currently free ranging.

We also saw the last three breeding individuals from a recent captive breeding programme for the subspecies of land iguana that lives on the Island of Baltra. Their captive breeding has been so successful that there are now around 840 iguanas on the island and these three individuals will be released back to the wild as their job is done.

From here we left the CDRS and had some free time around the town, we went our separate ways, souvenir shopping, relaxing and just taking in the relaxed atmosphere for the beachside town. Near when it was time to meet back up and get the dinghies back to the boat the tide was high and many juvenile black-tip sharks were around the jetty and a couple of elegant golden cownose rays glided by.

We then boarded the ship again and had our farewell cocktail with the whole crew, said our thanks and toasted to a great trip, wonderful crew and magical set of islands. But our journey wasn't over yet, in the night we would make the short 1.45 hour trip to North Seymour Island where we would have our final morning excursion to see the nesting sea birds and land iguanas here, before catching our flight back to the mainland. As it was at the end of the breeding season there were not many males displaying and so we didn't see many frigatebirds with their bright red throat sac expanded. There were some in the trees and flying however, we also didn't see many bright blue feet. The boobies feet get brighter in the breeding season and so they were a little dull blue at the moment.

Also on the island were many brown pelicans and smaller numbers of swallow-tailed & lava gulls, yellow warblers and Joe spotted a red-footed booby among the colony too.

We also found a small group of three land iguanas resting under a sparse bush as they waited for the sun to come out and warm them up fully for the day ahead.

After the hour here we made our way back to the boat for breakfast, we couldn't spend longer here as we had to get to the airport for our morning flight. All of the flights coming and going the Galapagos are in the morning or early afternoon, this is because the airport island of Baltra is not inhabited full time and so after 2-3pm the island is left to the animals here. So we said our goodbyes to the crew and made our way through the airport and to the plane.

The plane was on time and the flight uneventful, we arrived back around 2:30pm and made our way to the Puembo Birding Garden for our final night together in Ecuador.

Day 19 Quito / Home *Travelling*

This morning Joe and Rhoda went into Quito city centre to meet some of their extended family, they would be exploring the city and meeting relatives for the next few days. Whilst Martin left for the airport in the afternoon to catch his return flight home.

Species List

Ecuador's Biodiversity Hotspots – Jun / Jul 2018

Mammals (* = heard or signs only / CT = camera trap only)

	Common Name	Binominal Name	Jun	July																
			30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Linneaus' red howler monkey	*Alouatta seniculus*									3	6	7								
2	Ecuadorean tailess bat	*Anoura aequatoris*					~20	~20													
3	Spix's night monkey	*Aotus vociferans*										3									
4	Galapagos fur seal	*Arctocephalus galapagoensis*																15			
5	Flat-faced fruit-eating bat	*Artibeus planirostris*									3										
6	Eastern olingo	*Bassaricyon alleni*						1													
7	Common short-tailed bat	*Carollia perspicillata*					2														
8	Pygmy marmoset	*Cebuella pygmaea*									1										
9	Stump-tailed porcupine	*Coendou rufescens*				1															
10	Lowland paca	*Cuniculus paca*								1											
11	Black agouti	*Dasyprocta fuliginosa*						*		1	6	1									
12	Nine-banded armadillo	*Dasypus novemcinctus*								1	*										
13	Short-beaked common dolphin	*Delphinus delphis*															~30				
14	Jaguaroundi	*Herpailurus yagouaroundi*									*										
15	Capybara	*Hydrochoerus hydrochaeris*										*									
16	Western Amazonian hyaeleamys	*Hylaeamys perenensis*								1											
17	Chestnut long-tonuged bat	*Lionycteris spurrelli*										2									
18	Orange nectar bat	*Lonchophylla robusta*					~30	~30													
19	Red mouse-opossum	*Marmosa rubra*								1											
20	Little red brocket	*Mazama rufina*				*															
21	Humpback whale	*Megaptera novaeangliae*														3					
22	Little big-eared bat	*Micronycteris megalotis*								~5	2										
23	Montane long-tailed mouse	*Microryzomys minutus*			1																
24	Amazon dwarf squirrel	*Microsciurus flaviventer*						2													
25	Green acouchi	*Myoprocta pratti*									*										
26	Lesser bulldog bat	*Noctilio albiventris*									2	4									
27	Andean white-tailed deer	*Odocoileus ustus*		8		*															
28	Ecuadorian long-tailed mouse	*Oligoryzomys spodiurus*					1														
29	Collared peccary	*Pecari tajacu*										1									

30	Kinkajou	*Potos flavus*							*											
31	Northern pudu	*Pudu mephistophiles*		1																
32	Proboscis bat	*Rhynchonycteris naso*							4	~10	6									
33	Black-mantled tamarin	*Saguinus nigricollis*					9	10		3										
34	Humbolt's squirrel monkey	*Saimiri cassiquiarensis*						~20		~130										
35	Red-tailed squirrel	*Sciurus granatensis*					1	1												
36	Northern Amazon red squirrel	*Sciurus igniventris*					1													
37	Gray spiny mouse	*Scolomys melanops*							1											
38	Botoga yellow-shoulderd bat	*Sturnira bogotensis*			~10															
39	Andean rabbit	*Sylvilagus andinus*		2	1	1														
40	Mountain tapir	*Tapirus pinchaque*			*		*													
41	Andean bear	*Tremarctos ornatus*		1		*														
42	Common bottlenose dolphin	*Tursiops truncatus*															~10			
43	Galapagos sea lion	*Zalophus wollebaeki*											5	~30	28	26	54	13	8	~30

Birds (* = heard or signs only / CT = camera trap only)

	Common Name	Binominal Name	Jun	July																
			30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Orange-winged parrot	*Amazona amazonica*						4													
2	Speckled hummingbird	*Adelomyia melanogenys*			5																
3	Shining sunbeam	*Aglaeactis cupripennis*		1																	
4	Long-tailed sylph	*Aglaiocercus kingii*			4																
5	White-fronted parrot	*Amazona albifrons*			3		3														
6	Southern mealy amazon	*Amazona farinosa*										~50									
7	Yellow-crowned amazon	*Amazona ochrocephala*										~50									
8	Yellow-browed sparrow	*Ammodramus aurifrons*					2		1												
9	White-cheeked pintail duck	*Anas bahamensis*												3	19					2	
10	Blue-winged mountain tanager	*Anisognathus somptuosus*			3																
11	Brown noddy	*Anous stolidus*												~40	~60	~30	~60	~80	~161		11
12	Chestnut-fronted macaw	*Ara severus*					2	3	*												
13	Cocoi heron	*Ardea cocoi*										1									
14	Great blue heron	*Ardea herodias*															2	2			
15	Chestnut-capped brushfinch	*Arremon brunneinucha*			1																
16	Buff-tailed coronet	*Boissonneaua flavescens*			29	18															
17	Chestnut-breasted coronet	*Boissonneaua matthewsii*		3	~31	22	18														
18	White-winged parrot	*Brotogeris versicolurus*										3									
19	Great horned owl	*Bubo virginianus*		2																	

20	Cattle egret	*Bubulcus ibis*													1				~49	
21	Galapagos hawk	*Buteo galapagoensis*													2	3	2			
22	Striated heron	*Butorides striata*												3						
23	Lava heron	*Butorides sundevalli*											1	2			6	1	2	
24	Mountain cacique	*Cacicus chrysonotus*			3															
25	Ecuadorean cacique	*Cacicus sclateri*			1															
26	Least sandpiper	*Calidris minutilla*												1	10			1		
27	Small tree finch	*Camarhynchus parvulus*											8							
28	Medium tree finch	*Camarhynchus pauper*															14	8		
29	Large tree finch	*Camarhynchus psittacula*																3		
30	Napo sabrewing	*Campylopterus villaviscensio*					1													
31	Turkey vulture	*Cathartes aura*							3		3									
32	Spotted nightingale-thrush	*Catharus dryas*					1													
33	Amazonian umbrellabird	*Cephalopterus ornatus*									3									
34	Warbler finch	*Certhidea olivacea*												1						
35	Green warbler finch	*Certhidea olivacea*																	1	
36	Gorgeted woodstar	*Chaetocercus heliodor*				1	1													
37	White-bellied woodstar	*Chaetocercus mulsant*			7	4														
38	Green-and-rufous kingfisher	*Chloroceryle inda*										1								
39	Green honeycreeper	*Chlorophanes spiza*									1									
40	Western emerald	*Chlorostilbon melanorhynchus*	3						1			2								
41	Andean gull	*Chroicocephalus serranus*		9				1												
42	Golden-tailed sapphire	*Chrysuronia oenone*					~10	~40	~40											
43	Chestnut-winged cinclodes	*Cinclodes albidiventris*		1		2														
44	Stout-billed cinclodes	*Cinclodes excelsior*				1														
45	Cinereous harrier	*Circus cinereus*		1																
46	Magpie tanager	*Cissopis leveriana*					3													
47	Red-rumped bush tyrant	*Cnemarchus erythropygius*				1			1											
48	Bronzy inca	*Coeligena coeligena*			~10															
49	Collared inca	*Coeligena torquata*		1	11	6	6													
50	Bananaquit	*Coereba flaveola*						1												
51	Sparkling violetear	*Colibri coruscans*	2	7								2								
52	Brown violetear	*Colibri delphinae*					6	~25	~25											
53	Green violetear	*Colibri thalassinus*						2												
54	Capped conebill	*Conirostrum albifrons*			2															
55	Black vulture	*Coragyps atratus*					4			12		2	4							
56	Spangled cotinga	*Cotinga cayana*										1								
57	Swllow-tailed gull	*Creagrus furcatus*														1	21			6
58	Smooth-billed ani	*Crotophaga ani*					6		1	7		1							26	
59	Little tinamou	*Crypturellus soui*						2												

60	Violaceous jay	*Cyanocorax violaceus*						8												
61	Inca jay	*Cyanocorax yncas*			6															
62	Turquoise jay	*Cyanolyca turcosa*			5	2	2													
63	Blue dacnis	*Dacnis cayana*									1									
64	Violet-bellied hummingbird	*Damophila julie*						2												
65	Black flowerpeircer	*Diglossa humeralis*		6																
66	Masked flowerpeircer	*Diglossopis cyanea*			1		1													
67	Wandering albotross	*Diomedea exulans*											1							
68	Wire-crested thorntail	*Discosura popelairii*						2	1											
69	Crimson-breasted woodpecker	*Dryobates cathpharius*									1									
70	Snowy egret	*Egretta thula*								2		3	1							
71	Swallow-tailed kite	*Elanoides forficatus*					2	6												
72	Sword-billed hummingbird	*Ensifera ensifera*			1	1														
73	Grey-headed tanager	*Eucometis penicillata*			3															
74	Orange-bellied euphonia	*Euphonia xanthogaster*						2												
75	Peregrine falcon	*Falco peregrineus*				1														
76	American kestrel	*Falco sparverius*		1																
77	Magnificent frigatebird	*Fregata magnificens*											18			~15	~20			~200
78	Great frigatebird	*Fregata minor*											6	~40	~35	~20		18	3	~50
79	Coppery-chested jacamar	*Galbula pastazae*						2												
80	White-chinned jacamar	*Galbula tombacea*									1									
81	Common gallinule	*Gallinula galeata*												~25					1	
82	Sharp-beaked ground finch	*Geospiza difficilis*													3					
83	Medium ground finch	*Geospiza fortis*												~40						
84	Small ground finch	*Geospiza fuliginosa*											2						~29	
85	Large ground finch	*Geospiza magnirostris*																1	~43	
86	Common cactus finch	*Geospiza scandens*													3					
87	Black-chested buzzard eagle	*Geranoaetus melanoleucus*		6					1											
88	Variable hawk	*Geranoaetus polyosoma*		1		2														
89	Plain-backed antpitta	*Grallaria haplonota*						1												
90	Chestnut-capped antpitta	*Grallaria ruficapilla*			1															
91	Ochre-breasted antpitta	*Grallaricula flavirostris*						1												
92	Bare-necked fruitcrow	*Gymnoderus foetidus*									1									
93	American oystercatcher	*Haematopus palliatus*											1				6	4		
94	Tourmaline sunangel	*Heliangelus exortis*			9	13	8													
95	Gould's jewelfront	*Heliodoxa aurescens*						3												
96	Green crowned brilliant	*Heliodoxa jacula*						1												
97	Violet-fronted brilliant	*Heliodoxa leadbeateri*					1	~15	~20											
98	Fawn-breasted brilliant	*Heliodoxa rubinoides*			4															
99	Black-necked stilt	*Himantopus mexicanus*											3	4						

100	Cliff flycatcher	*Hirundinea ferruginea*					2													
101	Barn swallow	*Hirundo rustica*					4													
102	Plumbeous kite	*Ictinia plumbea*									1									
103	Violet-headed hummingbird	*Klais guimeti*						1												
104	Mountain velvetbreast	*Lafresnaya lafresnayi*		2																
105	Montaine woodcreeper	*Lepidocolaptes lacrymiger*			2															
106	Blue-crowned manakin	*Lepidothrix coronata*								1										
107	Gray-headed kite	*Leptodon cayanensis*									1									
108	Black-tailed trainbearer	*Lesbia victoriae*		2																
109	Lava gull	*Leucophaeus fuliginosus*											5							1
110	White-banded tyrannulet	*Mecocerculus stictopterus*			1															
111	Ringer kingfisher	*Megaceryle torquata*							1	1										
112	Boat-billed flycatcher	*Megarynchus pitangua*							5											
113	Tropical screech owl	*Megascops choliba*					*													
114	Torrent duck	*Merganetta armata*				2														
115	Tyrian metaltail	*Metallura tyrianthina*		2																
116	Black-winged ground dove	*Metriopelia melanoptera*		9				1												
117	Yellow-headed caracara	*Milvago chimachima*					1	2												
118	Tropical mockingbird	*Mimus gilvus*					1	1												
119	Galapagos mockingbird	*Mimus parvulus*															4	4		
120	Black-and-white warbler	*Mniotilta varia*		1																
121	Blue-crowned motmot	*Momotus momota*					1													
122	Black-fronted nunbird	*Monasa nigrifrons*						1												
123	Fruit-eating flycatcher	*Myiarchus crinitus*					1													
124	Spectacled whitestart	*Myioborus melanocephalus*			2															
125	Orante flycatcher	*Myiotriccus ornatus*					1													
126	Grey-capped flycatcher	*Myiozetetes granadensis*									1									
127	Blue-and-white swallow	*Notiochelidon cyanoleuca*						28	3	~10										
128	Brown-bellied swallow	*Notiochelidon murina*		~20		33														
129	Yellow-crowned night heron	*Nyctanassa violacea*															4			
130	Common potoo	*Nyctibius griseus*							1											
131	Elliot's storm-petrel	*Oceanites gracilis*											16	3	~77	~567	~343	~40	~10	~10
132	Wedge-rumped storm-petrel	*Oceanodroma tethys*													3					
133	Rufous-breasted chat-tyrant	*Ochthoeca rufipectoralis*			1															
134	White-booted racket-tail	*Ocreatus underwoodii*					6	4												
135	Hoatzin	*Ophisthocomus hoazin*							5	2	3	1								
136	Ecuadorian hillstar	*Oreotrochilus chimborazo*		2																
137	Red-bellied macaw	*Orthopsittaca manilatus*							29		~44									
138	Giant hummingbird	*Patagona gigas*		2																
139	Brown pelican	*Pelecanus occidentalis*											~23	~33	31	13	9	~10	12	~15

140	Spix's guan	*Penelope jacquacu*								2											
141	Red-billed tropicbird	*Phaethon aethereus*																			2
142	Green hermit	*Phaethornis guy*					3														
143	Great-billed hermit	*Phaethornis malaris*									2	2									
144	Flightless cormorant	*Phalacrocorax harrisi*													15	16					
145	Carunculated caracara	*Phalcoboenus carunculatus*		36																	
146	Golden grosbeak	*Pheucticus chrysogaster*	2																		
147	Waved albotross	*Phoebastria irrorata*													2						
148	Caribbean flamingo	*Phoenicopterus ruber*											1	17							
149	Plumbeous serria-finch	*Phrygilus unicolor*		~20		4															
150	Ecuadorean tyannulet	*Phylloscartes gualaquizae*					1														
151	Squirrel cuckoo	*Piaya cayana*					1														
152	Lafresnaye's piculet	*Picumnus lafresnayi*					1														
153	Blue-headed parakeet	*Pionus menstruus*									~20										
154	Blue-and-yellow tanager	*Pipraeidea bonariensis*	1									1									
155	Fiery-throated fruiteater	*Pipreola chlorolepidota*					3														
156	Green-and-black fruiteater	*Pipreola riefferii*					2														
157	Wing-barred piprites	*Piprites chloris*					1														
158	Lesser kiskadee	*Pitangus lictor*							2		2										
159	Vegetarian finch	*Platyspiza crassirostris*											2								
160	Grey-breasted martin	*Progne chalybea*										4									
161	Brown-chested martin	*Progne tapera*									6	~60									
162	Russet-backed oropendula	*Psarocolius angustifrons*					13	1	1	~10		~50	10								
163	Crested oropendula	*Psarocolius decumanus*					1					3	4								
164	White-eyed parakeet	*Psittacara leucophthalmus*									~70										
165	Dark-rumped shearwater	*Pterodroma phaeopygia*														4	16				
166	Lettered aracari	*Pteroglossus inscriptus*					1														
167	Galapagos shearwater	*Puffinus subalaris*											~42		~128	~232	~358	~194			
168	Cinnamon flycatcher	*Pyrrhomyias cinnamomeus*			1																
169	White-throated toucan	*Ramphastos tucanus*						2		*											
170	Channel-billed toucan	*Ramphastos vitellinus*						*													
171	Silver-beaked tanager	*Ramphocelus carbo*					1					~10									
172	Andean cock-of-the-rock	*Rupicola peruvianus*						1													
173	Roadside hawk	*Rupornis magnirostris*					2														
174	Black phoebe	*Sayornis nigricans*					1		1												
175	Wedge-billed hummingbird	*Schistes geoffroyi*						1													
176	White-crowned tapaculo	*Scytalopus atratus*						1													
177	Golden-collared toucanet	*Selenidera reinwardtii*						2													
178	Yellow-eared toucanet	*Selenidera spectabilis*						3													
179	Torrent tyrannulet	*Serpophaga cinerea*					2														

180	American yellow warbler	*Setophaga petechia*											1	4	1	2	2			1
181	Saffron finch	*Sicalis flaveola*	6	2						1										
182	Galapagos penguin	*Spheniscus mendiculus*													4	1	1	1		
183	Oilbird	*Steatornis caripensis*										1								
184	Chestnut-collared swift	*Streptoprocne rutila*					8													
185	White-collared swift	*Streptoprocne zonaris*					8													
186	San Idriso owl	*Strix.* Sp. Nov			1															
187	Nazca booby	*Sula granti*													1	~50	~30	13		
188	Blue-footed booby	*Sula nebouxii*											~62	~250	~272	~102	~91	6	5	~50
189	Red-footed booby	*Sula sula*																		1
190	White-shouldered tanager	*Tachyphonus luctuosus*						1												
191	Opal-crowned tanager	*Tangara callophrys*									3									
192	Paradise tanager	*Tangara chilensis*									1									
193	Blue-necked tanager	*Tangara cyanicollis*							1											
194	Scrub tanager	*Tangara vitriolina*	5									3								
195	Many-spotted hummingbird	*Taphrospilus hypostictus*					1	2	4											
196	Fork-tailed woodnymph	*Thalurania furcata*					1	1	5											
197	Lined antshrike	*Thamnophilus tenuepunctatus*						*												
198	Black-faced ibis	*Theristicus melanopis*		6																
199	Blue-grey tanager	*Thraupis episcopus*			2					1		4								
200	Palm tanager	*Thraupis palmarum*						1	1											
201	Rufsecent tiger heron	*Tigrisoma lineatum*									2									
202	Masked trogon	*Trogon personatus*			3		1													
203	Amazon trogon	*Trogon ramonianus*						1												
204	Green-backed trogon	*Trogon viridis*									1									
205	Great thrush	*Turdus fuscater*	1	6	2	3	1					1								
206	Tropical kingbird	*Tyrannus melancholicus*					4	1			1	2	1							
207	White-tailed hillstar	*Urochroa bougueri*							2											
208	Rufous-vented white-tip	*Urosticte ruficrissa*					3		1											
209	Andean lapwing	*Vanellus resplendens*		32			1													
210	Andean condor	*Vultur gryphus*		9																
211	Strong-billed woodcreeper	*Xiphocolaptes promeropirhynchus*				1														
212	Eared dove	*Zenaida auriculata*	~10	~23					1	~10		~15								
213	Galapagos dove	*Zenaida galapagoensis*												~20				10		
214	Rufous-collared sparrow	*Zonotrichia capensis*	13	~10	4		~20					~10								

Reptiles (* = heard or signs only / CT = camera trap only)

	Common Name	Binominal Name	Jun	July																
			30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Marine iguana	*Amblyrhynchus cristatus*												24	~192	~50	100's	~42	2	3	
2	Boa constrictor	*Boa constrictor*										1									
3	Pacific green turtle	*Chelonia mydas*												*	1	24	~73	6	4	1	
4	Galapagos giant tortoise	*Chelonoidis porteri*																		~51	
5	Galapagos land iguana	*Conolophus subcristatus*																			3
6	Amazon wood lizard	*Enyalioides laticeps*									1										
7	Green anaconda	*Eunectes murinus*								1											
8	Black caiman	*Melanosuchus niger*								1	3										
9	Galapagos lava lizard	*Microlophus albemarlensis*													~25	1	46	~30	11	6	
10	Cuvier's dwarf caiman	*Paleosuchus palpebrosus*									2										
11	Giant Amazon river turtle	*Podocnemis expansa*										1									
12	Yellow-spotted Amazon river turtle	*Podocnemis unifilis*								2											
13	Western Galapagos racer	*Pseudalsophis biserialis*															2				

Amphibians (* = heard or signs only / CT = camera trap only)

	Common Name	Binominal Name	Jun	July																
			30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Amazonian rocket frog	*Allobates femoralis*									1										
2	Ecuador poison frog	*Ameerega bilinguis*									1										
3	Long-nosed stubfoot toad	*Atelopus longirostris*									1										
4	Ecuadorean yellow-tailed salamander	*Bolitoglossa equatoriana*								1											
5	Map treefrog	*Hyla geographica*								1											
6	Waxy-monkey treefrog	*Phyllomedusa bicolor*								*											
7	South American common toad	*Rhinella margaritifer*								1		2									

Fishes (* = heard or signs only / CT = camera trap only)

	Common Name	Binominal Name	Jun	July																
			30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Panamic sergent major	*Abudefduf troschelii*												~10	~40	~55	~80	~60			
2	Galapagos barnacle blenny	*Acanthemblemaria castroi*															~10	~28			
3	Wahoo	*Acanthocybium solandri*														6					

4	Convict surgeonfish	*Acanthurus triostegus*												~10					
5	Pacific white-spotted eagle ray	*Aetobatus laticeps*											5						
6	Black-striped cardinalfish	*Apogon nigrofasciatus*													~1,000	~1,000			
7	Pink cardinalfish	*Apogon pacificus*												~100					
8	Galapagos sea bream	*Archosargus pourtalesii*											3		~30				
9	Guineafowl pufferfish	*Arothron meleagris*													2		6		
10	Chinese trumpetfish	*Aulostomus chinensis*											3		1				
11	Finscale triggerfish	*Balistes polylepis*															1		
12	Mexican hogfish	*Bodianus diplotaenia*												1	22	~40	~20		
13	Halequin wrasse	*Bodianus eclancheri*												1,000's					
14		*Brachyrhamidia imitator*						2											
15	Honeycomb pufferfish	*Canthigaster janthinoptera*													3				
16	Galapagos shark	*Carcharhinus galapagensis*														5			
17	Blacktip shark	*Carcharhinus limbatus*																14	
18	Panamic graysby	*Cephalopholis panamensis*														1			
19	Pacific spadefish	*Chaetodipterus zonatus*													~50				
20	Three-banded butterflyfish	*Chaetodon humeralis*										~55							
21	Racoon butterflyfish	*Chaetodon lunula*										3							
22	Milkfish	*Chanos chanos*												~160					
23	Silverstripe chromis	*Chromis alta*										~10	~100						
24	Scissortail chromis	*Chromis atrilobata*										12	~50	~20					
25	Giant hawkfish	*Cirrhitus rivulatus*										4		1					
26	Yellowfin surgeonfish	*Creagrus furcatus*											~40						
27	Three-spot blenny	*Crossosalarias macrospilus*											18	~10					
28	Diamond stringray	*Dasyatis dipterura*									2		1	3	1				
29	Leather bass	*Dermatolepis dermatolepis*												7	1				
30	Galapagos four-eyed blenny	*Dialommus fuscus*											1	~20					
31	Rainbow runner	*Elegatis bipinnulata*										~25							
32	Spotted cabrilla	*Epinephelus labriformis*									1	2	1						
33	Dusky chubb	*Girella freminvilli*										~500		~300					
34	Black wrasse	*Halichoeres adustus*										2							
35	Wounded wrasse	*Halichoeres chierchiae*										4		~25	~10				
36	Chameleon wrasse	*Halichoeres dispilus*									3	~50	~70	~30					
37	Spinster wrasse	*Halichoeres nicholsi*												1					
38	Galapagos garden eel	*Heteroconger klausewitzi*													1				
39	Marbled stingray	*Himantura uarnak*												1					
40	King angelfish	*Holacanthus passer*								3	1	1	25	~50	~80				
41	Long-fin mako	*Isurus paucus*										2							
42	Striped sea chub	*Kyphosus analogous*									~50								
43	Bravo clinid	*Labrisomus dendriticus*									2	5		~20					

44	Galapagos triplefin blenny	*Lepidonectes corallicola*										5	~35	~20						
45		*Lepidosiren pulmonado*						1												
46	Whipper snapper	*Lutjanus jordani*												3						
47	Blue-and-gold snapper	*Lutjanus viridis*									~30			~80						
48	Blue-banded goby	*Lythrypnus dalli*								6			2	1						4
49	Throatspotted blenny	*Malacoctenus tetranemus*										2		8						
50	Giant oceanic manta ray	*Manta birostris*										3	2	2	1					
51	Bumphead damselfish	*Microspathodon bairdii*												1						
52	Giant damselfish	*Microspathodon dorsalis*												8						
53	Munk's devil ray	*Mobula munkiana*										5	5	1						
54	Oceanic sunfish	*Mola mola*											1							
55	Panamic soliderfish	*Myripristis leiognathus*										~50								
56	Bignosed unicornfish	*Naso vlamingii*								1	1	7								
57	Loosetooth parrotfish	*Nicholsina denticulata*										1								
58	Rockmover wrasse	*Novaculichthys taeniourus*										1								
59	Panamic fanged blenny	*Ophioblennius steindachneri*												~35	~20					
60	Galapagos grunt	*Orthopristis forbesi*									~40	~60	~90	~400	~100					
61	Marbled goby	*Oxyeleotris marmorata*												~10						
62	Camotillo	*Paralabrax albomaculatus*										~30								
63	Pacific creolefish	*Paranthias colonus*										6								
64	Sabretooth blenny	*Plagiotremus azaleus*								1				~50	~50					
65	Razor surgeonfish	*Prionurus laticlavius*										~5	~50	100's	~70					
66	Sailor flyingfish	*Prognichthys sealei*											2							
67	Golden cownose ray	*Rhinoptera steindachneri*																		
68	Azure parrotfish	*Scarus compressus*									1					1				
69	Blue-chin parrotfish	*Scarus ghobban*									8	8	13	28						
70	Bicolor parrotfish	*Scarus rubroviolaceus*										~15		3	~15					
71	Stone scorpionfish	*Scorpaena mystes*												1						
72	Barred serrano	*Serranus psittacinus*										3	~20	~20						
73	Slender piranha	*Serrasalmus elongatus*					3	2												
74	Concentric pufferfish	*Spheroides annulatus*													12					
75	Galapagos pufferfish	*Sphoeroides angusticeps*									1			6						
76	Bullseye pufferfish	*Sphoeroides annulatus*									2									
77	Yellow-tailed damselfish	*Stegastes arcifrons*								~30	~400	~40	100's	~100	~150					
78	Galapagos ringtail damselfish	*Stegastes beebei*									~30	~20	~200	~90						
79	Orangeside triggerfish	*Sufflamen verres*										3		2						
80	Cortez rainbow wrasse	*Thalassoma lucasanum*								1		~30	~60	~70						
81	Surge wrasse	*Thalassoma virens*									3									
82	Yellow-fin tuna	*Thunnus albacares*											~25							
83	White-tipped reef shark	*Triaenodon obesus*												1	2					

84	Galapagos drum	*Umbrina galapagorum*											~10	~15						
85	White salema	*Xenichthys agassizi*										100’s			~600		~300			
86	Black-striped salema	*Xenocys jessiae*													~1,000	~2,000				