



A political ecology of San Cristobal Island: mapping local environmental knowledge and justice in Galapagos, Ecuador

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Picture 1: Galapagos Science Center, University San Francisco of Quito, San Cristobal Island (Emilie Dupuits)

Ways of living and knowing: being a foreign student in San Cristobal Island

In the Anthropocene, islands are often seen as highly vulnerable places facing climate change impacts, especially sea level rise and natural disasters. However, a growing literature aims to transform our perception of islands through the lenses of ‘more-than-wet’ ontologies (Peters and Steinberg, 2019). With this perspective, islands are not only seen as mere sinking places with no other future than destruction and extinction (DeLoughrey, 2019). The objective of ‘island thinking’ is to envision the possibilities for climate-resilient

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futures and alternatives to development not only in islands but also for the rest of the planet (Chandler and Pugh, 2021). Islands represent a wide inspiration as their inhabitants often have a particular relationship with non-human and more-than-human nature because of their interconnectedness in daily life with wild animals and endemic and native species.

As part of a group of nine foreign students from the United States and United Kingdom, we have been living in San Cristobal, one main island of the Galapagos archipelago, for ten weeks studying abroad at University San Francisco of Quito (USFQ). Studying abroad absolutely changed our lives. Especially in an environmental context of a global hotspot of cultural and biological diversity, our worldview was completely shifted by experiencing a different ecosystem that collaborates with the community in a way we had never experienced before. For Laurette,

“Being a foreign student in San Cristobal has been an absolutely incredible experience. Initially being a foreign student here was a really intimidating concept but I have found that every day I am meeting new people and having new experiences here on the island. In contrast to Quito, I have felt much safer here and found that the people are so kind and relaxed. The lack of cars and hustle bustle has been really nice as well. I just feel so at ease here. The nature has been such a gift as well, I feel like any given moment can turn into a National Geographic moment you really never know. Overall, I have loved every second of my time here and wouldn't trade it for anything. I have met so many wonderful people and learned and grown so much as a person. I can't wait to carry these lessons and experiences with me for the rest of my life”.

Living in San Cristobal has been an eye-opening experience. Throughout our time on the island, we have been able to slowly accumulate local knowledge primarily related to human-wildlife interactions and the general systems on the island. We had the opportunity to take three classes while on the island: Strategic Management and Planning, Climate Change, and Political Ecology. While the material in these classes was different, they were all interconnected in explaining the struggles and wonders of the islands, particularly San Cristobal, and the importance of conservation.

During our Political Ecology class, we had various discussions around the ecology of knowledge, the role of local environmental knowledge in providing alternatives to sustainable development, and the possibility of decolonizing knowledge. Local or traditional environmental/ecological knowledge refers to the “cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Berkes, 2012: 7). Local and traditional environmental knowledge has often been marginalized as opposed to techno-scientific knowledge production, especially in the fields of climate science and biodiversity conservation. Today, claims revolve around the need to integrate and legitimize other ways of living and knowing from local and indigenous communities' experiences, to respond to the climate, biodiversity and energy crisis facing the planet and humanity (Cusicanqui, 2018).

Another key aspect of political ecology discussed during our class was about environmental justice movements and struggles and their potential to reach global audiences and solutions. The environmental justice approach focuses on fairness in the distribution of environmental benefits and burdens, and in the processes that determine those distributions, as well as on the inequalities in access to environmental goods and services (Martinez-Alier et al., 2016). It means amplifying the voices of poor, racialized and Indigenous communities in environmental and natural resource policy-making venues. It also means paying attention to the manner through which disadvantaged and historically oppressed peoples within those communities will often be disproportionately harmed, often along familiar social characteristics of gender, class, sexuality, caste and (dis)ability. One dimension of environmental justice explored in this essay is food sovereignty, defined by La Via Campesina, actually the main transnational agrarian movement, as “the right of Peoples to healthy and

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culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems”².

Drawing from the perspective of the ‘environmentalism of the poor’, this activist contribution aims to give voice to the local community actors directly affected and involved in environmental justice struggles and local environmental knowledge production from the experience lived as foreign students in San Cristobal Island, Galapagos.

Local knowledge and food sovereignty dialogue

Throughout our study abroad experience, there have been many experiences and conversations that have shifted our perspective on the world in terms of food sovereignty and the overall growing process. Some conversations include those with Giovanni from Hacienda Tranquila about their sustainable agriculture practices on the island, and an interview we conducted with Milton Aguas, local owner of Finca Guadalupe. One of the biggest topics to bring about in terms of food sovereignty and the overall growing process on the Galapagos is the introduction of invasive species on the island. The introduction of invasive species on the island can affect native and endemic plants growing cycle and have the possibility to eliminate species. On April 25th, we had the opportunity to interview Milton Aguas from Finca Guadalupe. Milton has spent his whole life in Finca Guadalupe and was born in the hacienda. One of the main goals throughout the Finca is to work on preserving natural biodiversity on the island and one of the biggest responsibilities of the hacienda is to restore biodiversity and freshwater sources. Freshwater on the island is really scarce with only one known freshwater lake so it is important for smaller communities to focus on water conservation.

[Video interview with Milton: <https://youtu.be/e3-uhK1tjPo>]

At Hacienda Guadalupe, they are lucky to have one of the largest amounts of freshwater on the island on their property, therefore they feel a responsibility to maintain, restore and preserve the natural resources and to take advantage of freshwater resources not only to benefit themselves but also the native environment. The sustainable use of freshwater is at the core of the three main programs they implement in the agroecological farm:

1. Conservation of freshwater resources: They use management techniques including a blend of ancestral traditions and scientific knowledge, such as agroforestry, to eliminate the proliferation of invasive species as blackberries, and promote recuperation of endemic species. These techniques have shown positive results for island conservation and promote a healthy environment for future generations.
2. Responsible production and consumption: Through the use of circular economy techniques, they don't buy or import anything as they grow what they consume.
3. Ecotourism: Tourists have the satisfaction of consuming sustainable, healthy and delicious products. They also have trails to allow tourists to visit sites that are unique and beautiful, for example waterfalls. The Finca is also an opportunity for education on the island's unique species. For example, the petrel is a marine species that also roosts in the highlands, making this a unique opportunity to witness this species in its natural habitat.

² [Food Sovereignty, a Manifesto for the Future of Our Planet | La Via Campesina](#)

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Milton also expressed the inherent issues with external dependence for food in the Galapagos, highlighting the unsustainability of it as well as the health issues associated with imported food. He expressed that the lack of traceability for imported products has led to many health issues in the Galapagos, and that locals suffer from it. In general, the Galapagos Islands are heavily dependent on imported goods from the mainland of Ecuador which, as we have observed throughout our time on the island, can increase the potential for residents to experience food insecurity.

One of the most special characteristics about Finca Guadalupe is that all of the products available for sale and used for consumption at the site have been made using resources from the farm itself. This ranges from many different flavors of jam to sugar cane juice to honey and even medicinal herbs. During the interview, Milton emphasized the minimal amount of imports received to the farm. This way of operating is central to developing processes relevant to food sovereignty, as one of the main principles of the framework is to achieve control over the food that is going into our bodies and being distributed to our communities.



Figure 2. Products from agroecological production at Finca Guadalupe (Emilie Dupuits)

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The tension between reserving lands for protected areas in the national park and the desire for locals to have a good quality of life also has effects on food sovereignty. Since only 3% of land area on the island is populated, there is not a lot of space for sustainable agriculture and locally grown food. In addition to the increasing demand for imported food from the mainland, the lack of access to education about growing food and sustainable farming practices is limited and has adverse impacts on the food sovereignty of those who live on San Cristobal. However, Finca Guadalupe is a positive example of how there is still a chance for people to engage in these practices while sustaining their livelihoods. Everything they make is sourced from the land, yet not overused. The activities at Finca Guadalupe demonstrate an approach to food and environmental relationships that encourages care and reciprocity for the land.

In our interview with Milton, we had the opportunity to learn about how he and his family, as locals, are able to sustain themselves off their own finca. However, he expressed that their dependence on ecotourism as their main source of income left them vulnerable, as tourism is a fragile industry. During the Covid-19 pandemic, they had 0 tourists, and they weren't able to fund enough production to sustain themselves. He also expressed that during the pandemic, the agriculturists and fishers were responsible for supporting the entire island's population at times, when imports were scarce, and that there wasn't enough governmental support for this to be sustainable. He explained that there is a lack of programs that allow the island to support itself during times of crisis such as the pandemic. Therefore, he is trying to diversify the economy of his finca, to create a system which can support him and his family in the long term.

Community-based biodiversity conservation: a threatened responsibility

Gianni Arismendi is a lifetime resident of San Cristobal and worked for the Galápagos National Park for over 40 years. He worked for the municipality of San Cristobal for 10 years and went on to work in environmental protection for 32 years. He worked on several projects to promote the well-being of residents and the natural ecosystem. He collaborated on issues surrounding pets on the islands and waste management. Arismendi then went on to work with local youth at schools and the University of San Francisco de Quito-Galápagos campus. He was devoted to fostering a love of the Galápagos in children and students who wanted to work in environmental protection and with the Scouts of Ecuador. After his recent retirement from the national park, he is working with kids from ages 6-14 who are interested in the environment.

We began our interview with Gianni by asking what he believes is the biggest environmental threat to the Galápagos right now. He noted many things that the National Park is currently dealing with, and what the park should be managing better. The biggest issue that he cited was the introduction of invasive species, and how they have damaged the environment. Controlling these invasive species, especially cats and dogs, must incorporate the community into the management strategy to be most effective. The local government must work with the community on waste management as well. Involving the local community in these initiatives will better promote sustainable practices on the island. Zooming out of the local community, Gianni called for more national action in the protection of terrestrial and marine environments for Galápagos and in the mainland of Ecuador. These protections are necessary to achieve the best health of the ecosystem.

When interviewing Gianni, we also inquired about the different ways that the park wicks with the local community. He explained that since 97% of the island is protected by the national park, most of the projects of the national park have involved working closely with the community. With such a small community, it's imperative to mobilize educational resources for local residents so they are better equipped to exist in their environment. He gave the example of the prohibition of plastic which is a good example of the importance of

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transparency. The efforts of the National Park to educate community members on alternatives to plastic and the ban of single use plastic is essential to make sure these efforts to protect the biodiversity of the Galapagos actually come into fruition. Another benefit to educating the local community is that they in turn have the ability to educate the transient population that San Cristobal has with a high frequency of tourists moving in and out of the islands.

Living in San Cristobal for ten weeks, it has become very evident that community-based monitoring systems are key to livelihoods and conservation on the island. We discussed these concepts with Gianni to better understand a locals view on the needs of San Cristobal. The topic of overconsumption was heavily discussed in the interview, with Gianni explaining how people on the island continue to want more and more, increasing consumption and energy usage. He specifically discussed houses installing multiple fans and air conditioning units per room, stating that this is unnecessary overconsumption leading to increased energy consumption. As the energy grid in San Cristobal relies almost entirely on diesel, energy conservation is crucial to helping protect against environmental harm. Additionally, water consumption continues to increase at high levels, due particularly to people taking unnecessarily long showers. Gianni discusses how the average shower should only need to last six to seven minutes, but instead people tend to take up to twenty or thirty minutes. This overconsumption trend continues regarding vehicles, as more and more of the local community are using cars over bikes. Throughout our classes taken on the island, we have discussed how the local community of San Cristobal, and other islands in the Galápagos, tend to desire similar lives to mainland Ecuador, meaning they want access to similar items and ways of life. This idea feeds into the concept of overconsumption as people demand more than the island can sustain, primarily air conditioning, water and motorized vehicles. While the people of San Cristobal deserve equal rights and ways of life to mainland Ecuador, they also have a unique duty to work to conserve energy and water. Therefore, as Gianni states, “necesitamos reglas más fuertes” or we need stronger regulations about controlling consumption on San Cristobal. These regulations should not only be in the form of legal policies but should also be enforced and promoted by the community as behaviors tend to be copied. Therefore, if a group of the population begins to act in a certain manner others will eventually follow suit.

[Video interview 1 with Gianni: <https://youtu.be/GKOLFisZ9HI>]

While biodiversity and climate conservation traditionally fall onto the National Park Service and the Municipality, the local community, especially tourist guides of San Cristobal and the other Galápagos Islands, have become so interconnected with their environment that they are able to understand changes at a higher level than the officials.



Figure 3. Biodiversity monitoring by local guides and communities (Emilie Dupuits)

For example, one of the guides of San Cristobal, Jhosellyn Aguas, guided us as we explored Santa Cruz, another island in the Galápagos archipelago. Throughout our time spent with her, she mentioned many different scenarios from their own local knowledge. She discusses how the abundance of flamingos has increased over the past few years, stating that although there have been no academic reports proving an increase in the flamingo population, she has first-handedly witnessed an increase. Additionally, recently, a volcano in the archipelago erupted, and Jhosellyn explained how she predicted the explosion days before official scientists knew it was going to happen. This might seem impossible without having proper prediction tools, however, since she is in the natural environment every day for her job, she is able to pick up on animal and plant behaviors and has adapted a true sense of their norm, allowing her to see when behaviors shift, indicating changes that may occur.

The promises and dilemmas of mass tourism in the face of local environmental injustices

Regarding environmental justice issues, we deemed it vital for the interviewee to be a guide as they have immense knowledge on both the positives and negatives of tourism. We asked a few main questions when interviewing Gianni Arismendy, with a general focus around the impact of tourism on the local community, and how the local community has dealt with some of their environmental issues.

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[Video Excerpt 2 with Gianni: <https://youtu.be/etr7TocHfng>]

The first question asked was: “How do you feel about the increase in tourism on San Cristobal Island? Is it overall negative or positive?”. Gianni began to describe how there has been somewhat of a competition between the Galapagos Islands to draw in tourism. Santa Cruz Island has had around a 20-year head start on the other islands; however, each one is prospering well with the benefits of tourism. According to Gianni, regarding San Cristobal, there are many more positives than negatives with the tourism industry. He states that San Cristobal is split into two sectors, the fishing sector, and the local culture sector. Tourism drives the economy of both sides, as it gives a plethora of job opportunities, helping develop San Cristobal Island as a whole. However, because tourism is still growing on the island, Gianni believes it still requires greater promotion, and this comes from authoritative groups. However, sustainability practices and environmental justice issues need to be addressed along with this promotion. He believes that the authorities on the island need to recognize that tourism is a great strength of the island, thus they need to boost its growth by improving all the activities and opportunities that are present around the island.

Following this discussion, the next question of, “Have you observed a loss of biodiversity due to tourism?” was proposed to Gianni. With this question, he reiterated the importance of tourism as the greatest strength of the Galapagos and how more tourism means more economic income. However, he emphasized that the attractions of the tourism are all within the Galapagos National Park. Therefore, there is much to regulate such as what you are allowed to bring into the National Park, prohibited items like alcohol, waste and speakers, and what can only be accessed with a guide, in order to maintain healthy biodiversity within the ecosystems of the Galapagos. He then calls out to the authorities and institutions which have the most influence on the conservation of the natural environment on San Cristobal. He portrays that it is very important to maintain constant regulations now, especially from the government, the municipality and all other institutions involved with the conservation and protection of the National Park. It is crucial that these separate institutions work together, or else problems will emerge regarding the biodiversity within the National Park if not handled properly.

Transitioning into a separate topic, we wanted to hear his opinion on the Ecuadorian Government’s support to the Galapagos Islands. So, we posed the question, “Does the Ecuadorian government support the issues of the Galapagos Islands enough?”. To this, Gianni delved into the issue that the Ecuadorian Government does not recognize the Galapagos Islands as a massive strength, if not the largest strength, to Ecuador. He states that the Galapagos receives just as much support from other countries like the United States or neighboring South American countries as it does from Ecuador itself. Since the concrete development of the main cities of the Galapagos, they have had the same problems with energy, water and health, yet the government does not strive to help the Galapagos with alternatives. For example, there are no specialized health workers on the island, therefore if anyone has a medical emergency, they must fly to Guayaquil in mainland Ecuador to get properly treated. This in turn requires the people of the Galapagos to internally attempt to find solutions that are not really there, leading to poor infrastructure and a lack of resources which eventually circles back to being detrimental to the natural environment.

As foreign students in San Cristobal Island, we have seen the water treatment plant along with the recycling facility and seen what the locals are doing to clean San Cristobal. We have witnessed how basic services such as electricity can be rare on the Galapagos, especially due to the consistent blackouts from the unsustainable power grid throughout the island. We have also done water testing to see how clean our drinking and tap water was. In some cases, there was fecal matter and other contaminants in the water from each student's house. Although these contaminants were only in two of the nine students drinking water in the class it was very surprising. Most of this uncleanliness is since water storages are not regularly cleaned in San Cristobal. As for waste management, on the other hand, we saw how recycling has been done and we have seen how unsustainable the landfill is as it is close to getting full and their only option right now is to simply expand it.

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Thankfully barely any residents live near the landfill. However, when tourists and locals aren't aware of these problems, they can easily be forgotten which can increase the amount of unsustainable waste disposal.



Figure 4. Water treatment plant in El Progreso, San Cristobal Island (E. Dupuits)

Finally, we closed the interview with the question, “Have you noticed cultural erosion or changes throughout the Galapagos?”. Gianni deemed that yes, there has been some noticeable cultural change over time in the Galapagos. People on the islands have differing perspectives on the environmental aspects of their way of life. This is attributed to what occupation you fill on the island, and depending on this you may not notice or care to notice sustainability or conservation in your daily life. Additionally, the rise in technology has allowed the people of the Galapagos, especially children, to see the lifestyles lived in Global North countries. Thus, as more people want to live these lives of consumerism and capitalism, a greater cultural shift away from environmental ideals takes place.

Some final reflections on the daily environmental knowledge and wills of local residents in San Cristobal Island

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Interviews with local community members and guides, and the overall living experiences as foreign students in San Cristobal Island, reveal the importance of the personal and direct connection with the environment for reaching harmonious interconnectedness between human and non-human nature. Beyond the well-known scientific knowledge produced by conservation foundations and the National Park, local people hold a lot of accumulated environmental knowledge tied to their daily lives and working activities in the island. For example, most local guides are able to monitor the decrease or increase of marine species such as turtles or flamingos through their daily touristic activities on boats and their constant observations of the ocean and overall environment. In this way, community-based biodiversity monitoring is a valid tool to produce evidence related to marine conservation that complements more technical-scientific monitoring activities. This highlights the need to integrate and value local environmental knowledge in a modern world.

Another important issue coming from the interviews is the need to find a balance between economic livelihoods and conservation activities in San Cristobal Island. One of the best ways to conserve marine and terrestrial ecosystems in the Galapagos is to provide local people with alternatives to development. Mass tourism represents both a key opportunity to get economic development for local residents and access to decent working conditions, but also a threat as it brings all the attention towards often privileged foreign or national tourists over access to basic services and good living conditions for the locals. This is one among others environmental injustices that have been identified in the island.

Finally, food sovereignty is one of the most important challenges while living on an island. Dependency towards the continent and foreign products importation contributes to deepening environmental injustices for local people in San Cristobal. One way of struggling against food injustice is to promote local environmental knowledge from local residents in the island but also through artisanal fisheries. For example, various local residents work in their own agroecological farms to produce organic and healthy food for their own consumption and the one of tourists visiting their farms, while restoring and preserving watersheds and endemic and native species through their accumulated knowledge.

Understanding and valuing the stories and knowledge of local residents and guides of San Cristobal Island in Galapagos is vital to provide solutions towards a better harmony between human and non-human nature. Looking at islands as places of environmental, social and cultural innovations and inspiration is a way to think more broadly about solutions to the actual and future environmental crisis in the Anthropocene.

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