



Reimagining the Galapagos Islands Through a Socio-Ecological Lens:

A Historical Analysis and Modern Contextualization
of the "Pristine Nature" Myth

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Abstract

This paper was completed to satisfy the requirements of the Global Environments and Sustainability Capstone research paper for the University of Virginia. The paper was completed under the advisement of Program Director and Professor Phoebe Crisman.

The Galapagos Islands are represented as an oasis for biodiversity unbothered by human threats. Advertisements of the islands depict spotless beaches, otherworldly terrain, and unique species coexisting all devoid of human settlement. The reality is far from this representation. This paper focuses on rethinking the socio-ecological relationships at play in the Galapagos. Here, I analyze the ways in which the Ecuadorian populations are affected by the modern secular cosmologies surrounding the Galapagos; when looking at species threats of endangerment or extinction, who is blamed? What is the impact of the blame on the communities? Furthermore, I explore the relationship between foreign actors and local actors regarding species protection and preservation. These questions introduce complex challenges that require a socio-ecological lens. After analyzing the history of human-nature engagement in the Galapagos and addressing the ways in which the same dynamics manifest today in the first and second section, I propose alternative worldviews and present arguments for their benefits.

Introduction

Through this text, I examine the roots of the “pristine nature” myth that governs our current understanding of the Galapagos. To do so, I dissected the cosmology by first analyzing the history of humans in the Galapagos. Before exploring the current socio-ecological state, I first

needed to expose the foundation of the current beliefs surrounding the pristine depictions of the Galapagos. I was captivated by the discussion in Diego Quiroga and Gonzalo Rivas-Torres' article "Darwinian Emergence, Conservation, and Restoration. Novel Ecosystems and Hybrid Environments." The authors present and explain the image of the Galapagos as a "natural laboratory" and delve into the historical and modern implications. They engage with the implication of this Darwinian myth on tourism and conservation as well as invasive species, their impact, and proposed options for action.

Like Quiroga and Torres, I sourced historical information on the Galapagos to provide context for the current implications in the islands. However, they used invasive species case studies to illustrate the impact of various approaches. The authors present a shift in this way of thinking and challenge this mentality. They note that, yes, the invasive species do change the ecosystem: "transformation of 'historic recipient native ecosystems' into new plant assemblages 'novel ecosystems,' which are mostly dominated by these exotic and pervasive organisms"¹; but they also question the premise of conservation schemes. They note that these schemes function on a falsified version of history in which Darwin was the first person to touch the Galapagos islands and since that moment the islands have been kept pristine. Because I anticipate a different audience, I dedicated my first section to history to provide readers with a collective understanding from which to move into contextual analysis. With a shared knowledge base, I delve into current issues resulting from the history followed by proposed changes in cosmology

¹ Diego Quiroga and Gonzalo Rivas-Torres, "Darwinian Emergence, Conservation, and Restoration. Novel Ecosystems and Hybrid Environments," in *Darwin, Darwinism and Conservation in the Galapagos Islands*, n.d., 151–62.

and perspective. My investigation has three parts: Demystifying the History of the Galapagos, Contextualizing Darwin's Modern "Living Laboratory," and Reimagining the Galapagos Through a Socio-Ecological Lens.

After analyzing the history of human-nature engagement in the Galapagos and addressing the ways in which the same dynamics manifest today in the first and second section, I propose alternative worldviews and present arguments for their benefits. In the article, "Clarifying Values, Risk Perceptions, and Attitudes to Resolve or Avoid Social Conflicts in Invasive Species Management: Confronting Invasive Species Conflicts," the author discusses the social conflicts that arise in conservation of species. It starts by discussing terms "native, exotic, and invasive" and the contexts in which they are used. These terms are not definitive, but constructed by science and culture. The arbitrary nature of these labels introduces conflict: "For example, numerous exotic species that are considered invasive by some social sectors are simultaneously recognized by others as providing valuable ecosystem services or cultural benefits or as having intrinsic worth."² This is an unexpected approach—instead of accepting science as the basis of objectivity, they illustrate the global history of "invasive species." The process reveals the ways in which humans have brought species from its original ecosystem to another in many situations. I use their lens of human created science and incorporate global history as a means to critique the current system.

² Rodrigo A. Estévez et al., "Clarifying Values, Risk Perceptions, and Attitudes to Resolve or Avoid Social Conflicts in Invasive Species Management: Confronting Invasive Species Conflicts," *Conservation Biology* 29, no. 1 (February 2015): 19–30, <https://doi.org/10.1111/cobi.12359>.

The results of my investigation are important because the current power dynamic perpetuates neo-colonial relationships between the Global North and the Global South. These relationships often discredit local community experience and knowledge. As climate change continues to shape our narrative, it is vital that we be intentional about and aware of the ways in which we view ourselves as a part of the environment. For this reason, I decided to investigate the harmful impacts of a “pristine nature” narrative, explain their historical ties, present current issues resulting from the narrative, and then propose alternatives that resolve the identified issues. The exploration is profoundly historical, qualitative, theoretical, and interpretive. My model and research intend to provide the reader with a better understanding of the Galapagos through a historical and socio-ecological lens.

I. Demystifying the History of the Galapagos

"You have to know the past to understand the present."

— Carl Sagan

The Galapagos Islands are undeniably unique. With over 97% of the land protected as a national park, these islands are regarded as some of the most pristine in the world—a natural laboratory. Currently the Galapagos is made up of more than 40 islets and 19 islands, four of which are inhabited: San Cristobal, Santa Cruz, Floreana, and Isabela. The islands are about 1,000 km off the Ecuadorian coast in the Pacific Ocean. Despite what is presented to visitors, the islands are far from untouched. Their history, often left untold, reveals the socio-ecological story that shapes the islands today. To understand the powers impacting the Galapagos in the present, we must first understand the history of the islands and the ways in which their history has been told.

The socio-ecological history of the Galapagos is only five centuries long and can be separated into four major historical episodes. González et al. name these “extractive exploitation,” “colonization,” “wilderness conservation,” and “conservation-development balance”.³ In the periods established, the Galapagos was subject to extensive human influence and extraction. The episodes are defined by human action. For this reason, I have opted to add a “pre-discovery” period to our discussion to expand upon the geological and organic origins as well. The “pristine”

³ José González et al., “Rethinking the Galapagos Islands as a Complex Social-Ecological System: Implications for Conservation and Management,” *Ecology and Society* 13, no. 2 (September 5, 2008), <https://doi.org/10.5751/ES-02557-130213>.

habitat that we venerate today is a product of human interaction despite what the current literature and media may portray. Through primary sources and archaeobotanical analyses of wood charcoal, phytoliths⁴ and plant remains, we can better understand the complex history of the Galapagos.⁵ The trope we rely on in understanding the Galapagos is not uncommon for islands. In fact, Elizabeth DeLoughrey suggests that the view of islands as isolated, untouched, and separate from global happenings is prevalent and paradoxical. In reality, islands often fulfill a central role in trade and global interconnectedness. The Galapagos archipelago is no exception.

To unpack the myth of the pristine Galapagos, we must start with the history of the Galapagos—before even the arrival and influence of humans. More than three million years ago, the Galapagos islands were formed. Volcanic islands rose through the tectonic plates created the archipelago. The Nazca plate, where the islands reside, runs along the west coast of South America. Its movement has created iconic South American landscape we recognize today. This iconic plate is constantly edging itself beneath the South American continental plate, creating a subduction zone, and forming the Andes mountain range. The Galapagos, on the other hand, was formed by a hot spot in the Nazca crust. A stationary plume of magma rose from deep within the earth, created a hole in the tectonic plate, and volcanoes emerged. These volcanoes became the islands. In geological history, this happened rather recently. The more recent islands

⁴ Phytoliths are minute fossilized minerals particles found inside plants

⁵ Fernando Javier Astudillo, "Environmental and Historical Archaeology of the Galápagos Islands: Archaeobotany of Hacienda El Progreso, 1870–1920," *Vegetation History and Archaeobotany* 27, no. 5 (September 2018): 737–51, <https://doi.org/10.1007/s00334-018-0668-9>.

like Fernandina originated only 60,000 to 300,000 years ago compared to the first islands, which are over 3.5 million years old.⁶

Because of its unique inception, the Galapagos has never been in contact with the mainland; however, it has a number of endemic species due to the air and ocean currents acting on the islands. Of the ocean currents, the Humboldt Current surges from the south, the Panama Current from the north, and the South Equatorial Current from the west. These all meet at the Galapagos and produce its uniquely dry ecosystem. These currents, combined with trade winds, are responsible for the species in the Galapagos. These species are often referred to as native, but due to the islands' formation, the species on the islands are all by definition non-native. The solitary genesis of the Galapagos is the foundation of the "pristine natural lab" myth.⁷ As we will explore, the Galapagos has repeatedly been impacted by human intervention since its formation.

The first human recorded to visit the Galapagos was Spaniard Fray Thomas de Berlanga in 1535—it is assumed, but not known, that the archipelago was not inhabited by humans until the arrival of the Europeans. It is worth noting here that there is disputable evidence suggesting that coastal Peruvian and Ecuadorian pre-Columbian peoples visited the Galapagos.⁸ For this reason, we start with the first *documented* visit to the Galapagos.⁹ Fray Thomas de Berlanga served as

⁶ Daniel Kelley et al., *In the Footsteps of Darwin: Geoheritage, Geotourism and Conservation in the Galapagos Islands* (Springer, 2019).

⁷ Diego Quiroga, "Crafting Nature: The Galapagos and the Making and Unmaking of a "Natural Laboratory," in *Universidad San Francisco de Quito-GAIAS, Ecuador*, n.d., 123–36.

⁸ Astudillo, "Environmental and Historical Archaeology of the Galápagos Islands."

⁹ Anderson, Atholl, Karen Stothert, Helene Martinsson-Wallin, Paul Wallin, Iona Flett, Simon Haberle, Henk Heijnis and Edward Rhodes, "Latin American Antiquity," in *Reconsidering Precolumbian Human Colonization in the Galápagos Islands, Republic of Ecuador | UVA Library | Virgo*, vol. 27, 2 vols., 2016, 169, <https://search.lib.virginia.edu/articles/article?id=edsjsr%3Aedsjsr.26337236>.

the Bishop of Panama during the era of Spanish exploration. Berlanga followed Magellan's path a few decades before Ferdinand Magellan completed the first circumnavigation of the earth. Berlanga, himself, was by no means an explorer.¹⁰ His voyage to South America started with the intention of mediating the division of territory between Francisco Pizarro and Diego Almagro in Peru.

His ship was blown off course and taken by currents to the Galapagos by chance. He arrived on the islands on March 10, 1535 and reported his accidental finding to Charles V. Berlanga. He was not impressed. He wrote that the islands were "dross, worthless, because it has not the power of raising a little grass, but only some thistles."¹¹ He added that the composition of the islands made it look as if "God had showered stones" across the landscape.¹² His crew could not find water in the dry lower altitudes of the islands, and many of his men and horses died. He described the wildlife on the island, most notably naming the giant tortoises "Galapagos" tortoises. Their name alludes to the shape of their shell which resembled the shape of a saddle. The islands from this point on became known as the Galapagos Islands. The first record of this label is on Ortelius's 1570 world map where they are noted in Latin as "Insulae de los Galapagos."¹³ Berlanga's experience and record of the islands is lackluster. It does not evoke

¹⁰ Cornell Engineering, Earth and Atmospheric Sciences, "Galapagos History," accessed April 11, 2020, <http://www.geo.cornell.edu/geology/GalapagosWWW/Discovery.html>.

¹¹ Cornell Engineering, Earth and Atmospheric Sciences.

¹² Elizabeth Hennessy and Amy L. McCleary, "Island Studies Journal," in *Nature's Eden? The Production and Effects of "Pristine" Nature in the Galápagos Islands*, vol. 6, 2 vols., 131–56, accessed March 11, 2020, <https://search.lib.virginia.edu/articles/article?id=a9h%3A69720845>.

¹³ Cornell Engineering, Earth and Atmospheric Sciences, "Galapagos History."

the wonder that we would expect from the first written account of islands so romanticized today. The trend of unimpressed visitors continued in the early history of the islands.

The visitors soon after Berlanga did not recognize the ecological significance of the islands, but they did recognize its strategic potential. The period of “extractive exploitation” continued with arguably the most exciting of seafarers, pirates. The English buccaneers dominated the following period of use in the Galapagos. Threatened by Spanish expansion in the New World in the 17th century, the English permitted privateering to attack the Spanish around their territories like the newly conquered Incan Empire. The English permitted the practice because the privateers’ attacks on the Spanish were low cost to the English and the crown got a percentage of the profit.¹⁴ Ambrose Cowley took advantage of the English pro-pirate stance and joined the wave of buccaneers. The Galapagos became a strategic location for buccaneers to base their operations against the Spanish. Cowley was the first person known to create a map of the Galapagos; he named each of the islands in 1684. They have since been renamed in Spanish. As is common throughout the history of the Galapagos, he thought he was the first to witness the islands and noted on his map that they were “Discovered and Described by Captain Cowley.”¹⁵ This anecdote speaks to another trend in the history of the Galapagos: the reoccurring claiming and renaming of the Galapagos. Because many claimed to have discovered

¹⁴ William Hasty, “Piracy and the Production of Knowledge in the Travels of William Dampier, c.1679–1688,” *Journal of Historical Geography* 37, no. 1 (January 1, 2011): 40–54, <https://doi.org/10.1016/j.jhg.2010.08.017>.

¹⁵ Hasty.

the Galapagos, renaming it each time, the records present an incongruous tale. The inconsistency contributes further to the mythology of the islands.

The pirates had a unique extractivist relationship with the islands—they depended on the both convenient location of the islands and the resources they offered. The sailors found consistent sources of fresh water in the highlands of the islands, the Scalesia zone, and found multiple uses for the tortoises as well. The Galapagos tortoises that are so revered and protected today were a highly valuable resource to sailors. The sailors used them for their meat, oil, and water. Because of the tortoise's slow metabolism, they could survive for long periods of time without sustenance. The sailors captured hundreds at a time from the Galapagos and stored them on their boats for up to six or eight months.¹⁶ William Dampier (1651-1715) was a well-known buccaneer who also methodically documented the Galapagos. He is still known today because he “leveraged his experiences during three circumnavigations to write popular accounts that combined the adventures of privateering with entirely new natural-historical and geographical observations.”¹⁷ Unlike many of his contemporary buccaneers, he was a refined pirate knowledgeable in natural sciences and followed a narrative in which a “private savage” became a “man of science.”¹⁸ His writing illustrated the many uses for the tortoises, describing them as “extraordinarily large and fat; and so sweet.” He elaborates, noting that they provided

¹⁶ Henry Nicholls, *The Galapagos: A Natural History* (Boulder, UNITED STATES: Basic Books, 2014), <http://ebookcentral.proquest.com/lib/uva/detail.action?docID=1634817>.

¹⁷ Katherine Parker, “Pepys Island as a Pacific Stepping Stone: The Struggle to Capture Islands on Early Modern Maps,” *The British Journal for the History of Science* 51, no. 4 (December 2018): 659–77, <https://doi.org/10.1017/S000708741800078X>.

¹⁸ Hasty, “Piracy and the Production of Knowledge in the Travels of William Dampier, c.1679–1688.”

“oil in superior in taste to that of the olive” as well as gallons of water in a sack on their neck.¹⁹

The buccaneers took hundreds of thousands of Galapagos tortoises in a short amount of time, and they did more than take from the island, they brought new species as well. During this time, there were other animals joining the tortoises: “early visitors also introduced goats and pigs to several islands, which reproduced abundantly and served as additional food sources for future voyages.”²⁰ The species on the islands started to blend—those brought by the currents and those brought by humans began to share the islands.

Whalers were the next wave of early visitors. They continued to threaten the tortoise population and decimated the whale population as well. The extractivist mindset of the era knew no limits—it governed every industry in the new world and had immense effects on the ecosystems we see today. The narrative of the Galapagos islands up to this point was unfavorable, as described by Fray Berlanga, and utilitarian, for the many who plundered the islands for resources. The early history of the islands was characterized by European overuse and abuse. The Galapagos was not yet a pristine biological exemplar or a natural laboratory.

Charles Darwin is credited for writing the narrative of the Galapagos; however, when he arrived, the islands had already been discovered and shaped by human intervention. Evolution was not waiting for the Beagle to arrive and bring with it someone fit to theorize it; in fact, there was an established settlement on the islands when Darwin arrived. The first human known to permanently inhabit the islands was Patrick Watkins. He was an Irishman marooned on Floreana

¹⁹ Nicholls, *The Galapagos*.

²⁰ Hennessy and McCleary, “Island Studies Journal.”

in 1806. He was the first to suggest that the islands could and should be settled. When Darwin arrived, Watkins was no longer inhabiting the islands, but in his place were a few hundred settlers.²¹ The first settlers after Watkins were mostly political prisoners from Ecuador sent by the government. The islands were treated like Alcatraz—as an undesirable, isolated place for those unwanted in proper society.²² In 1832, Ecuador claimed the Galapagos as its territory citing its proximity to the Ecuadorian coast. After claiming it, the country permitted Jose Villamil, a Frenchman who had just escaped Louisiana after its purchase by the United States, to lead the establishment of the first proper settlement on Floreana.²³ When Charles Darwin and Robert Fitzroy arrived in 1835, the settlement was thriving; Fitzroy writes, “Surrounded by tropical vegetation, by bananas, sugar canes, Indian corn, and sweet potatoes, all luxuriantly flourishing, it was hard to believe that any extent of sterile and apparently useless country could be close to land so fertile.”²⁴ In this quote, we can see the changing sentiment surrounding the islands. Their impression of the land is still based on assumptions of barrenness and disinterest, but these assumptions are followed by surprise. What was previously seen as an uninhabitable resource was reframed as a place to claim, settle, and exploit.

Diego Quiroga, a Galapagos historian, argues that the turning point in the perception of the Galapagos came with the descriptions of Darwin. His approach to understanding the animals of the islands was the first to come out of the Galapagos with a scientific and educated public

²¹ Nicholls, *The Galapagos*.

²² Hennessy and McCleary, “Island Studies Journal.”

²³ Cornell Engineering, Earth and Atmospheric Sciences, “Galapagos History.”

²⁴ Hennessy and McCleary, “Island Studies Journal.”

audience. His connection to the Western perspective and established credibility and privilege facilitated the widespread popularity of his writing. Quiroga argues that “Darwin's reflections and conclusions guided the emergence of the Galapagos as an icon for Western imagery and topography and are a fundamental part of our modern secular cosmology.”²⁵ I agree with his claim that our current modern view is shaped by Darwin’s reflections and conclusions, but immediately after his visit this was not the case. After Darwin’s visit, the Galapagos was not seen as the natural laboratory that it is today. A series of extractivist business ventures manifested in the years after Darwin’s arrival. A company dedicated to Orchilla, a plant used to create valuable purple dye, was established in 1858 and sugar mills were erected soon after.²⁶ The crops continued—coffee and tobacco were introduced and grasslands were used for livestock. El Progreso, a settlement on San Cristobal, continued to grow with the aid of the “Ley de Regimen de Galapagos” approved in 1885 which gave colonizers a range of benefits. While these were later repealed, they further illustrate the extent to which humans have continuously affected the Galapagos islands for hundreds of years.

The more recent uses were by no means all Ecuadorian either. During World War II, the U.S. established a military base on the island Baltra with 200 buildings and 3,000 men. In a history resource presented from a tourism company, *Galapagos Safari Camp*, the organization presents the U.S. occupation of the island as a mutually beneficial deal. In their depiction, Franklin Roosevelt visits, the U.S. and Ecuador come to an agreement, and the deal is settled.

²⁵ Quiroga, “Crafting Nature: The Galapagos and the Making and Unmaking of a “Natural Laboratory.”

²⁶ Astudillo, “Environmental and Historical Archaeology of the Galápagos Islands.”

The tourism company ensures that the reader knows that “Food, water, fuel, and basic facilities had to be secured locally; giving the islands economy a much-needed boost.”²⁷ Conversely, an article with a focus on climate, habitat, and species analysis since Darwin’s visit took a different position. The authors noted that the U.S. occupation of Baltra led to the disappearance of an entire iguana species on the island. Since then, the species has been reintroduced using iguanas from a neighboring island.²⁸ The U.S. was not the only country to settle in the islands in the 19th and 20th centuries; Europeans came to the Galapagos for an isolated island retreat, joining the already established plantations and colonies.²⁹ Scientists followed the wave of tourists, further contributing to the extractivism in the Galapagos. The California Academy of Sciences collected and removed 75,000 specimens in 1905 with the justification that they needed to be studied “before it proved too late.”³⁰ The discrepancy between the accounts presented to visitors and to foreign viewpoints demonstrates the ways in which a limited narrative has reduced the Galapagos to the one dimensional “living laboratory” expectations.

The investigation into the history of the Galapagos is necessary to demystify the legends surrounding the islands. By better understanding the ways in which the islands have historically been subject to extraction and exploitation by a wide array of agents, we can better approach the current issues facing the islands today.

²⁷ “The Baltra Military Base in The Galapagos Islands,” *Galapagos Safari Camp* (blog), August 3, 2017, <https://www.galapagossafaricamp.com/galapagos-history/baltra-military-base/>.

²⁸ “The Galápagos Islands Today -- 174 Years After Darwin | UVA Library | Virgo,” accessed April 12, 2020, <https://search.lib.virginia.edu/articles/article?id=a9h%3A44452939>.

²⁹ Hennessy and McCleary, “Island Studies Journal.”

³⁰ Nicholls, *The Galapagos*.

II. Contextualizing Darwin's Modern "Living Laboratory"

The current view of the Galapagos is shaped by its past. Early visitors presented the islands as uninhabitable, useless, arid, and isolated. Soon after, the islands were seen as convenient and strategic resources. As Diego Quiroga puts it, "The pivotal point for such accounts came with Charles Darwin's descriptions of his visit to the islands and the way that the animals, particularly the mockingbird, the tortoise, and later the finches, inspired his reflection on the mutability of species early on in his career."³¹ Today, we rely on Charles Darwin's records to inform our understanding of the Galapagos and create a modern secular myth. We imagine him a rugged scientist on the verge of great discovery, scrambling across an otherworldly landscape of volcanic rock, and dutifully documenting every single creature he passes. Eventually, after some time on the islands, the epiphany strikes: the theory of evolution comes to him in a moment of scientific genius.

Darwin's journey, visit, and theorizing were by no means this romantic. He arrived to the Galapagos in 1835 and stayed for a mere five weeks, taking notes for only nine days of his stay. The locations in which he stayed and visited had already been discovered, identified, and recorded. On his journey to the Santiago highlands, he did not even collect a single tortoise for taxonomic analysis, a practice that would have been accepted as the expectation for viable science at the time. He did not identify the finches, the tortoises, or the iguanas as "the most striking feature of the Archipelago," but instead the geological sandstone tuft cones.³² As

³¹ Quiroga, "Crafting Nature: The Galapagos and the Making and Unmaking of a "Natural Laboratory."

³² Frank J. Sulloway, "Tantalizing Tortoises and the Darwin-Galápagos Legend," *Journal of the History of Biology* 42, no. 1 (February 2009): 3–31, <https://doi.org/10.1007/s10739-008-9173-9>.

previously discussed, Darwin arrived at a settlement close to Buccaneer Cove. His first tour around the island was led by a Spaniard. Additionally, Darwin, often credited with bringing the giant tortoises their universal recognition, ate the tortoises too, even noting that “the young tortoises make excellent soup.”³³ The myths associated with Darwin’s visit range in their importance. Many are not accurate and rely on Darwin’s subjective and brief records. It is notable that this is true even of the distances he reported; he reported his first walk as a quite difficult eight-mile hike, but it was more likely two to four miles long.

Our perception of Charles Darwin’s visit to the Galapagos is clouded by legend. In fact, so are our perceptions of his discoveries themselves. The scientific context at the time was overwhelmingly creationist as we are led to believe. In his studies, Darwin was exposed to theories of pre-evolution ideas. For example, French philosopher Benôit de Maillet (1656–1738) suggested that sea creatures could transform into landforms with time. Because of these influences, evolution was actually less original an idea than it seems. The scientific concept of “*transformism*” can be seen as a precursor to evolution and a stepping stone to new conceptions of matter.³⁴ Darwin had support outside of the academic world as well. In many ways, he was led toward the theory of evolution. Most notably, the vice-governor of the islands, Nicholas E. Lawson, in fact, “alerted [Darwin] to the island-to-island differences among the tortoises.”³⁵ Additionally, the iconic assumption of the finch discovery is not completely true— the

³³ Sulloway.

³⁴ Phillip Sloan, “Evolutionary Thought Before Darwin,” in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta, Winter 2019 (Metaphysics Research Lab, Stanford University, 2019), <https://plato.stanford.edu/archives/win2019/entries/evolution-before-darwin/>.

³⁵ Sulloway, “Tantalizing Tortoises and the Darwin-Galápagos Legend.”

mockingbirds on the islands first sparked Darwin's question of evolution. Interestingly, it is not Darwin who denies the credit of others in any way, instead it is fused into the narratives that we build around Darwin as an iconic symbol of discovery to justify our views today.

The contextualization of Darwin is important because we rely on Darwin as a central figure in the modern cosmology of the Galapagos. At the time, Darwin was not as well recognized as he is today. He and Alfred Wallace published their papers on evolution at the same time, but it wasn't until Darwin's *Origin of the Species* publication that his ideas categorically took hold. Even in the narrative of the Galapagos, they weren't established at that time. It was not until the second half of the 20th century that the islands incorporated his research and perspective into the identity of the Galapagos. At this point, the acceptance of the Galapagos as the "natural laboratory" began. Scientists flocked to the islands to either attempt to prove or attempt to disprove Darwin's findings. Creationists like Louis Agassiz sailed to the islands to attempt to discredit Darwinism and evolution. Tens of thousands of specimens were extricated from the Galapagos in the following years. The general sentiment of science at the time was collect, preserve, and study.³⁶ The extractivist sentiment was replaced in the early 1930s and 1940s with one of conservation and preservation.

The conservation movement transformed the Galapagos into the "little world within itself" that it is seen as today.³⁷ There were many important stages that led to the changing perspective

³⁶ Diego Quiroga, "Changing Views of the Galapagos," in *Science and Conservation in the Galapagos Islands: Frameworks & Perspectives*, ed. Stephen J. Walsh and Carlos F. Mena, Social and Ecological Interactions in the Galapagos Islands (New York, NY: Springer, 2013), 23–48, https://doi.org/10.1007/978-1-4614-5794-7_2.

³⁷ Hennessy and McCleary, "Island Studies Journal."

of the Galapagos. Julian Huxley, influential science leader and known eugenicist, was passionate about Darwinism and had a personal interest in conserving the Galapagos islands. As the first UNESCO director, he led the organization in choosing the Galapagos as a conservation site. Concurrently, the Charles Darwin Foundation was established and *The Origin of the Species* was re-released for its centennial publication. The foundation convinced the Ecuadorian government to found a national park in the Galapagos and coerced them into sharing power. All of these movements sought to “return” the islands to the state that Darwin saw when he visited. As we know, what Darwin saw was nothing like what these movements envisioned. Hennessy and McCleary describe the changes that led to the physical state of the islands today:

“As Edward Larson recounts in his history of science on the islands, during the 1950s an international group of scientists came together to advocate some kind of permanent base on the islands from which to conduct research and to enforce protection measures. We argue that it was at this point that discourses of the Galápagos as a site of ‘pristine’ nature gained international currency. Although scientists had worked to protect the islands for decades, ideas about their value as ‘pristine’ nature did not become hegemonic until they were applied to conservation management in the mid-20th century.”³⁸

As the authors articulate, it was these scientists who established the image of the Galapagos as a “natural laboratory” as the most valid. After gaining support from the Ecuadorian government, the cosmology of the unspoiled Galapagos was accepted as the international expectation. Because the area was now deemed untouched and reborn, it had to be protected thoroughly. Threats were identified: “the tuna fishery, poaching by local residents, and foreign

³⁸ Hennessy and McCleary.

species including goats, pigs and dogs introduced by recent settlers as well as by early sailors,” among others.³⁹ The most blamed of these threats were humans, and more specifically, the humans that live on the islands.

The new image was detrimental to residents. As the Galapagos became more well-known through media, the islands had to keep up. The local people were identified as a harmful force and the experience in the Galapagos had to reflect what foreign tourists, scientists, and visitors were expecting. The image portrayed to the rest of the world was a landscape devoid of people. The people living there had to disappear. This conflict became harmful to the residents of the Galapagos in many ways, one of the most impactful manifestations of this harm is tourism.

There are two versions of a place: the tourist’s imagination of the destination and the reality for the community that resides there. The community is pressured to lessen the dissonance between the two for the benefit of the tourist and the economic benefit of the community. We will look at a case study from an Ecuadorian indigenous population in the Amazon to understand the extractivist impact of tourism. In the case of the Huaorani, they are expected to be “living as their ancestors did.” In Aleksandra Wierucka’s paper titled “Living with strangers: Huaorani and tourism industry in the 21st century,” she calls this view the “conveniently anachronistic Indians.”⁴⁰ She uses irony to expose the absurdity in expecting culture to act the same way they did hundreds of years ago when we don’t expect that of ourselves or other non-indigenous

³⁹ Hennessy and McCleary.

⁴⁰ Aleksandra Wierucka, “Living with Strangers: Huaorani and Tourism Industry in the 21st Century,” *Anthropological Notebooks*, 2018, 14.

cultures. Weirucka notes that the “Local people are supposed to act and look a certain way that does not undermine tourists’ expectations—to some extent people living in the forest became, as John Urry stated, part of the landscape itself.”⁴¹ The author collected interviews with one of the Huaorani settlements over ten years to observe their attitude toward tourists and the cultural changes as a result of tourism. She noted that in Ecuador’s marketing for tourists, Huaorani are pictured naked with spears in the middle of the rainforest, ready to hunt. This is what the tourists are taught to expect of the Huaorani community. Rather than offering luxurious “jungle-lodges,” some Huaorani communities seek to provide the “authentic” experience and present tourists with the authenticity they expect. For example, although the Huaorani currently use guns to hunt, they take tourists out to hunt with blowguns. This is just one of many ways in which the Huaorani recreate an “authentic” experience for tourists. The external pressure forces the Huaorani to reject their real experience and become a landscape for the tourist’s imagination.⁴²

The underlying force driving tourism is the western exceptionalism mindset—the belief that the Global North, and those of the global north, know more than those in developing countries of the Global South. Just the *imagination* of the Global North affects the *reality* of the Global South. Because the Galapagos is enshrouded in the expectation of its role as a natural laboratory, those who occupy it have to act in a way that fulfills the role. This restrictive cosmology is built upon the western exceptionalism, and it is woven into the belief system.

⁴¹ Wierucka.

⁴² Wierucka.

Devine discusses the tourism power dynamic in her article “Violence and Dispossession in Tourism Development: A Critical Geographical Approach.” She explains that tourism depends on the power hierarchy between “First” and “Third” worlds.⁴³ The author directly addresses tourism in this context, noting that tourism is an extractive industry. Tourism creates spatially segregated areas—areas that are defined by the tourist’s imagination. The result of the segregation is the fetishized idea of a place and the erasure of the local experience. Remarkably, niche programs like eco-tourism and voluntourism advertise themselves as ways to get out of these enclaves. These popular programs promise that instead of spending your vacation in an out-of-touch resort experience, you will get in touch by seeing “real” nature or serving the environment. The result is not the lack of spatial fetishism, but instead just a different, less self-aware fetishism. Ultimately, Devine argues the violence as a result of tourism is a series of negative takings: “enclosure and extraction, erasure and commodification, destructive creation and (neo)colonialism.”⁴⁴

Tourism further contributes to the first-world and third-world power dynamic by commodifying experiences. Devine argues that even alternative forms of tourism, like ecotourism or volunteer tourism, participate in the violence of the host-visitor power dynamic. Specifically, she suggests that tourism leads to “violent practices of land privatization and dispossession, extracts natural and cultural resources, erases existing histories and peoples from

⁴³ Jennifer Devine and Diana Ojeda, “Violence and Dispossession in Tourism Development: A Critical Geographical Approach,” accessed April 12, 2020, <https://www.tandfonline.com/doi/full/10.1080/09669582.2017.1293401>.

⁴⁴ Devine and Ojeda.

the landscape,” and “destructively creates new socio-natures, identities and commodities based on partial and power-laden growing interest in tourist imaginaries.”⁴⁵ These socio-natures manifest in the Huaorani performing their culture or in the erasure of communities in the Galapagos. The tourist imaginary is not harmless; it can determine the reality of a community. Devine calls this creation of tourist realities “spatial fetishism”—the commodification of a place or an experience for the benefit of the observer. This experience or space can be beaches, indigenous cultures, or perhaps, a unique nature experience where you get to see “true nature.”⁴⁶ The inference is that nature can be controlled and untouched, removed entirely from its anthropomorphic history. Ultimately, the commodification consists of community members merged with experiences and landscapes, stripping them of their humanity and agency.

Tourism in the Galapagos convinces visitors that the islands are everything that they have been promised: pristine, untouched, rare nature. The reality is clearly less attractive. The practice is founded on false narratives proliferated on a global scale that rely on western colonial values. They promote a tourist-host power dynamic that reduces the host to part of the landscape. As tourism practices evolve, we must take into consideration the underlying factors motivating the form of tourism and the holistic impact it has on the community and the environment. Tourism is one manifestation of the destructive “pristine nature” narrative. It promotes two ideas: one, the idea that developing countries are in need of help and governance in their relationship with the environment; and two, the idea that only westerners and western

⁴⁵ Devine and Ojeda.

⁴⁶ Devine and Ojeda.

thinking can save them. This mentality is the underlying motivation driving the tourism industry in the Galapagos.

The fear of humans is central to protecting the “natural laboratory” of the Galapagos. This idea governs the actions of the tourism industry, the local and federal government, international conservation players, and history textbooks. Humans are blamed for the impurity and imperfection. Through a strictly scientific lens, this limited perspective is understandable. We have been conditioned to separate humans from the environment and understand them in isolation. To understand these complex relationships, we must investigate the relationship between the two: the social and the ecological.

III. Reimagining the Galapagos Through a Socio-Ecological Lens

The first step to reimagining the Galapagos through a contextualized socio-ecological lens is to question the unmarked perspective—the perspectives we adopt without realizing. In the article, “Darwinian Emergence, Conservation, and Restoration. Novel Ecosystems and Hybrid Environments,” the authors do just that. They question the idea of “pristine nature” and what we perceive as threats to it. They focus on the ways in which introduced species are seen as threatening order. There is a tendency toward pristine environments and stability. The emergent and Darwinian processes violate the tendency and raise socio-ecological challenges.⁴⁷ Interestingly, the authors discuss invasive species through the socio-ecological lens. Instead of talking about endemic and threatened species, they explore the role of species that are introduced into the Galapagos. They ask questions to get at the central issue: At which point does the species become invasive? Are we as humans an invasive species? Quiroga and Gonzales explore how we should treat invasive species in the Galapagos—specifically, they ask if they should be removed to recreate our historical understanding of the ecosystems of the “pristine” past or if we should accept some invasive species to protect the current ecosystem from imbalance and more invasive species.

Invasive species play a unique role in the human-nature relationship in the Galapagos. The conflict serves as a poignant illustration of a threat to purity. There is a clear good and evil.

⁴⁷ Quiroga and Rivas-Torres, “Darwinian Emergence, Conservation, and Restoration. Novel Ecosystems and Hybrid Environments.”

The invasive species are unnatural and are capable of poisoning the purity of the species allowed to call the islands home. Again, there is an element of deceit. Of the plant species in the Galapagos, more species are introduced than native and of the introduced species, over a third grow freely without human intervention—they are neither agriculture nor human dependent. Additionally, many invasive species that were introduced to the island pre-1950s cover thousands of acres of the islands affecting the ecosystem. Of animal invasive species, pigs and rats continue to be an issue as well. The Ecuadorian government has spent millions of dollars on failed eradication campaigns to combat the fabricated issue. These expensive campaigns are usually unsuccessful. The authors cite that one project eradicated only four plant species of the 34 targeted.⁴⁸ These attempts illustrate the inevitable futility of trying to recreate an imagined landscape. Instead of attacking invasive species, the conversation must be reframed to explore the local experience and interdependence of species.

The Darwinian myth has a powerful impact on conservation. Quiroga and Rivas-Torres identify the actors currently shaping the Galapagos and propose an alternative conservation approach in response to species. They illustrate the ways in which the Galapagos has been treated by scientists and compare to how it should be addressed. The change requires a shift in thinking and challenges the dissonance between the two perspectives. Invasive species do change ecosystems; there is a transformation in which the “historic recipient native ecosystems” evolves into a new “novel ecosystem.” The new novel ecosystem is made up of the exotic and

⁴⁸ Quiroga and Rivas-Torres.

introduced organisms. The question then arises, should we remove the introduced species to recreate our understanding of past ecosystems? This is where the myths we have discussed become important. We would expect the answer in the Galapagos to be “yes”—the introduced species do not belong in the historic ecosystem; however, the historic ecosystem is founded on a false understanding of history in which the “natural laboratory” existed at some time in the past.

We can also explore this conflict from a common western perspective. We expect there to be two processes at play: “natural processes” and “human processes.” The idea of human processes is subjective. It may refer to the continued human intervention starting in 1535; however, it is more likely that “human processes” is understood to start in 1835 with the arrival of Charles Darwin. The latter is the popular shared imagination of the islands. The impact of this mode of thinking is counter-productive. The intention in separating “human” and “natural” processes is to reduce human impact and distill the Galapagos into the perfect image of nature. In following the perfect nature narrative, paradoxically, more people “unnaturally” visit the islands. More tourists flood to the islands every year—over 220,000 every year. The tourists each represent a contribution to the “human process.” There is a constant conflict between the conservation and visitors. The conservation is fueled by a desire to create what visitors want to see, but every visitor threatens that vision. This irony reveals a socio-ecological flaw: “pristine nature” for visitors cannot exist with visitors. Therefore, the conservation model needs to be readjusted to remove the gap between “human processes” and “natural processes.”

From this analysis, we arrive at the central limiting beliefs: we understand there to be a difference between “human processes” and “natural processes.” In reality, this distinction is a product of the western tradition. It is possible to understand these as intertwined realities

instead of separate opposing concepts. For example, applied to invasive species, it reframes the central questions. Previously, our understanding of an invasive species was anthropocentric—what made it invasive was usually its carrier: a human as opposed to a bird from another island or a “natural” means of dispersal. If we intertwine these concepts, we lose the concept of an invasive species. This erasure may seem like a bad thing; however, it provides space for a more holistic approach to understanding the ecosystem. By eliminating the arbitrary distinction of natural and unnatural— which simply mean non-human-caused and human-caused— we can view humans as another species acting in the ecosystem. The current system assigns a god-like power to humans. We assume that we are separate from the ecosystem and capable of deciding what should and should not be a part of it. As we have seen, this separation has detrimental impacts on local populations deemed “unnatural.” For this reason, the intentional socio-ecological shift can start to reframe and solve the complex issues discussed.

Terms like “natural” and “unnatural” have profound impacts that we are unable to see without stepping out of our limiting cosmology. The Society for Conservation Biology addresses this complex socio-ecological issue in a text titled, “Clarifying Values, Risk Perceptions, and Attitudes to Resolve or Avoid Social Conflicts in Invasive Species Management: Confronting Invasive Species Conflicts.”⁴⁹ In conservation, and in invasive species management more specifically, there is a severe lack of attention to the social dimensions of these issues. The authors discuss the social conflicts that arise in conservation of species using social and

⁴⁹ Estévez et al., “Clarifying Values, Risk Perceptions, and Attitudes to Resolve or Avoid Social Conflicts in Invasive Species Management.”

ecological terms. They begin by discussing terms “native, exotic, and invasive” and the contexts in which they are used. These terms are not definitive, but constructed by science and culture. The arbitrary nature of these labels introduces conflict: “For example, numerous exotic species that are considered invasive by some social sectors are simultaneously recognized by others as providing valuable ecosystem services or cultural benefits or as having intrinsic worth.”⁵⁰ The idea of “invasive species” has a global history and humans have brought species from their original ecosystem in the past and will continue to do so in the future. The authors cite intentional species introductions like diverse Egyptian gardens and the Roman importation of exotic animals as examples of pre-invasive labeled species that would be labeled invasive today. Human introduced species will continue to grow as global markets become more interconnected, making it more important that we modernize our terminology to incorporate a socio-ecological lens.

A socio-ecological lens also requires an investigation into trust: personal and institutional trust. The complex relationship in the Galapagos and in Ecuador between locals and officials is tenuous because of the history of corruption in government. The previous president, Rafael Correa, established a precedent of distrust among the Ecuadorian people. As leader of the country, he made covert deals regarding the Yasuni ITT initiative, among others. In the Galapagos, mistrust of government agencies is especially pervasive. Often decisions regarding inhabitable land, fishing practices, or business regulations are made without input from the

⁵⁰ Estévez et al.

community. Esteves et al. note that “trust acquired particular relevance when management initiatives necessitated” suggesting that Ecuador’s current mode of operation regarding government relations is threatening their ability to successfully work toward conservation.

In the Galapagos, the lack of trust threatens the well-being of the community directly. The threat to fishermen presents one case study of the pattern. There is a constant power struggle between the government— which favors tourism and conservation and the community— which depends on subsistence fishing. In fact, since the 1990s, the artisanal fishing sector in the Galapagos has been fighting to reclaim their full rights to fish in the Marine Reserve in a sustainable manner. The fishermen outlined their concerns in an open letter posted on June 29th, 2019 addressed to Dr. Norman Wray Reyes, the President of the Galapagos Special Regime. They provided background information followed by an in-depth description of the issues and a list of requests. The laws and enforcement of the 2008 Constitution and LOREG are central to their concerns. LOREG is the Organic Law for the Special Regimen for the Conservation and Sustainable Development of Galapagos. The law establishes the Galapagos as a marine reserve and implements policy to reduce migration to the islands, prevent expansion of towns, and limit fishing for local inhabitants. The purpose of the law is to protect the islands, but it has challenging implications as well. The artisanal fishermen must be registered with the park to fish in the Galapagos Marine Reserve.⁵¹

⁵¹ Judith Denkinger, Diego Quiroga, and Juan Carlos Murillo Posada, “Chapter 13 Assessing Human–Wildlife Conflicts and Benefits of Galapagos Sea Lions on San Cristobal Island, Galapagos,” n.d., accessed March 24, 2020.

The laws of the Galapagos are strict regarding permitted zones for various stakeholders, both in LOREG and the 2008 Ecuadorian Constitution.⁵² For instance, permits and quotas are not allowed to be combined, and replacement boats cannot exceed the length of the retired ones. The artisanal fishermen are not subject to the same treatment as other boaters. Tourist groups, both locally run and internationally run, break these laws without penalty. While fishermen lose permitted fishing areas, tourist groups and conservation organizations gain access to new ones. In their letter, the artisanal fishermen argue that their impact on the marine reserve is less than that of the tourist groups and industrial fishing sector. For this reason, they sought reconciliation with the current administration to reconcile the unequal treatment.

In an interview with Alexandra Ramon, she explained that the artisanal fishing sector faces a few problems.⁵³ Alexandra Ramon is a community activist in Puerto Bauterizo on San Cristobal Island. She describes herself on Twitter as a “Madre, hija y activista defensora de los derechos de cada Galapagueño,” meaning “Mother, daughter, activist, and protector of the rights of every Galapagueño. I interviewed her in the summer of 2019 on her activism and the issues facing her community. She shared her unique perspective as a multigenerational Galapagos local. She explained the fisherman’s struggle from their viewpoint. Although the law supposedly protects the rights of the artisanal fishermen, in reality, the industrial fishing sector and tourism industry still come out on top every time. One issue is zoning. The government created zones in which the artisanal fishermen are allowed to fish in the Marine Reserve, but the

⁵² Norman Wray Reyes, “Letter from Galapagos Fishermen to Local Government,” June 26, 2019.

⁵³ Alexandra Ramon, Government and Fishing Sector Relationship, July 16, 2019.

zones they gave to the fishermen do not have fish. This means that fishermen are investing money in their boat, staff, equipment and more and then going into debt when they cannot find fish in the zones in which they are allowed fish. Additionally, enforcement of the law is inconsistent and ineffective. Ramon explained that there is a power difference between the industrial fishermen and the central issue is enforcement. There are only around 200 fishermen on San Cristóbal who make a living from artisanal fishing; they are forced to fight against the industrial fishing sector which has connections, resources, and the government on their side. The voices of local fishermen are not heard because the industrial fishing and tourism sectors maintain power. Ultimately, Ramon endorsed the letter and the requests of the fishermen. She notes that the list includes requests that they have been asking for since the inception of the Marine Reserve in 1998.

One potential approach to challenges like this one in Puerto Bauterizo on San Cristobal Island is what Esteves et al. name *structure decision making*. This process can be used for value-based conflicts as seen in the government/fishermen conflict. The process is collaborative and participatory, using both analytical and scientific tools as well as theoretical frameworks.⁵⁴ Each party in the conflict is able to identify their needs and articulate them in an environment where they are equally valued. In an ideal world, this sounds like a great method. I expect that in Ecuador it would be challenging with the extensive corruption. However, because the method focuses on including a diversity of world views, it is possible that the method could be used at

⁵⁴ Estévez et al., "Clarifying Values, Risk Perceptions, and Attitudes to Resolve or Avoid Social Conflicts in Invasive Species Management."

the community level to build support and make change from the ground up. Esteves et al. note that the biggest barrier in trust building is often not the ends, but the means—the parties usually have the same end desire, but use opposing methods to get there. For the fishermen, the government puts conservation as a top priority for tourism. The fishermen are inclined to conserve species to have a sustainable food source. The governing powers use the LOREG regulations and favor commercial fishing and tourism and bypass the need for community engagement. By creating an established decision-making process that includes the community throughout, the Galapagos locals and the government could arrive at a consensual lasting solution.

Conclusion

These are just a few solutions to extremely complex problems. The problems are rooted in a mythicized history presented as a reality. The true history of extractivism by Spain, England, France, and the U.S. characterizes the first uses of the islands. Today, however, the local Ecuadorian people and the Ecuadorian government are held responsible for threatening the “pristine natural laboratory.” The myths around the Galapagos and the continued external influence suggest that the ownership, responsibility, and right to act is global; however, with this assumption of responsibility, we must reject the western tendency to assert superiority and manipulate actors of the Global South. At the local level, we have discussed the ways in which there is room for change. In the decision-making, the process needs to be clear and inclusive, so decisions made for the community are made *with* the community. At the theoretical level, we need to investigate the terms that we use to define communities and species and the impact they have.

With these ideas in mind, there is immense potential for growth. To create an accountability measure, we can institute policies to establish trusting relationships between government and community. These policies must include public access to information to combat the expectation of corruption in Ecuador. Additionally, global powers must take responsibility for their role in corruption. Because of Ecuador’s small size and exclusive resources, it is uniquely poised to be victimized. The responsibility to lead the empowerment movement for Ecuador lies in global leaders and in local leaders like Alexandra Ramon.

To address these complex issues, I used a process of exploration that is by nature historical, qualitative, theoretical, and interpretive. My model and research intend to provide the reader with a better understanding of the Galapagos through a historical and socio-ecological lens. It is important to note that the results at which we arrived are limited by the nature of literature-based research. Though limited, this paper addresses important questions and provides a holistic history and contemporary understanding of the intricate systems challenges facing the Galapagos islands. This analysis suggests ways in which changes in perspective can foster effective and innovative policy. Furthermore, the analysis presented permits opportunities for further exploration and use of a socio-ecological lens to address environmental and social issues.

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