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## The Impact of Over-Tourism On Hawaiian Ecosystems and Everyday Life

### **Introduction**

For decades, Hawai'i has been marketed as the dream island vacation for many tourists. Every year, the islands are frequented by visitors in search of an all-inclusive resort and an eternal summer on the beach. Throughout most of my life, my family and I have made it a tradition to visit Hawaii every year to reconnect with our family members scattered across the islands. Visiting the islands annually instead of residing there long-term has served as an advantage in understanding the impact of tourism on Hawai'i first-hand. The periodic visits have emphasized the drastic changes in the land and economy in the between years— similar to checkpoints along its progression. Throughout my time on the islands, I've witnessed breathtaking views of mountain tops become obstructed by skyscraping resorts, and shopping centers replace the land where lush greenery used to thrive. I've watched the homeless population increase exponentially upon each return as homeless camps crowd along the streets like vines on a wall. During family gatherings, the dinner tables are filled with stories of the nostalgic past and the original Hawai'i that is "no more". Throughout my childhood, an uncle of mine would emphasize a particular Hawaiian proverb that has since been

permanently embedded in my mind: “He ali’i ka ‘āina, he kauwā ke kanaka”, meaning “the land is a chief, man is its servant”. As it is a chief’s responsibility to provide security and to tend to the needs of the people, it communicates the idea that we as people, are ultimately dependent on the land for sustenance. In turn, it is the community’s responsibility to treat the land with care so that it can continue to provide for the generations to come. The power within these words always moves me as the land is recognized as an entity rather than a commodity or a barren expanse. Throughout my upbringing, the principle of “mālama ‘āina”-- or to honor and care for the land-- has been emphasized by my family for generations, and has subsequently become the foundation for the way I choose to live my life.

### **Impact of Over-Tourism on the Environment: Coral Reefs**

The intimate spiritual connection between the Hawaiian people and the land and ocean has long stood as the core of Hawaiian culture and way of life. To Native Hawaiians, nature is sacred and all living beings are interconnected. Their responsibility to protect and safeguard the land and sea began the day they were born. Amidst the rich tapestry of nature, where a myriad of consecrated organisms thrive, lies one of the most significant – the coral reef. According to the Department of Land and Natural Resources, “The coral polyp was the first creature introduced in the Kumulipo– the Hawaiian account of creation” (Department of Land and Natural Resources). In this way, it’s emblematic of the origin of life and the ancestors of all living things. It is even believed to be an akua– a Hawaiian deity– with the power to “provide birth and death to both the people and the islands”(Gregg et al.).

In addition to the spiritual value, the reefs also provide physical protection to the land. As revealed by the Department of Natural Resources, "Reefs protect [the] shoreline from dangerous waves and storm surges. Without coral reefs we would not have our beautiful white sandy beaches, since most of our sand comes from the reef" (Department of Land and Natural Resources 2). The coral reef holds great significance to the Hawaiian people as it guards the shores and land from natural damage. Without the presence of the reefs, the state would remain vulnerable to flooding and rapid erosion. If such occurrences are to persist and take place over prolonged periods, it's highly possible that the Hawaiian islands could disappear from the world map. However, with the constant influx of tourists visiting and moving to Hawai'i, this hypothesis may soon become a foreseeable reality.

The coral reefs are being destroyed by the same tourists who visit them for their beauty. The annual inundation of tourists to the islands is accompanied by an increase of ocean pollution. This linear association is what exacerbates and accelerates the damage to the coral reefs. Hanauma Bay, located in East Honolulu on the island of O'ahu, is a prime example of these human-inflicted impacts. As the bay is encircled and guarded by volcanic walls, this particular attribute has attracted countless visitors, but has posed as a double-edged sword. The non-reef-safe sunscreen often worn by beachgoers is broken down into oxybenzone, which is a toxin that greatly deteriorates and damages coral reefs. According to the National Centers For Coastal Ocean Science, although the enclosed bay provides a safe environment for children and inexperienced swimmers to explore and enjoy, "oceanographic models determined that sunscreen pollution from a single day's contamination can be retained in the bay for

more than two days (up to 50 hours)” (NCCOS). Moreover, the bay has received “peaks between 10,000 and 13,000 visitors per day” (NCCOS), insinuating that there has not been a day when the bay’s waters weren’t saturated with such toxins. This continuous exposure only exacerbates the damage to the reefs. While 63 ng/L is considered the concentration at which the chemicals pose a significant threat to the coral, Hanauma Bay has experienced levels of oxybenzone ranging from 30 ng/L to 27,880 ng/L (Levine 2). The incessant accumulation of toxicants are grounds for the increasingly rapid destruction of the coral reefs.

Beyond Hanauma Bay, the consequences of non-reef-safe sunscreen use have damaged the reefs all across the Hawaiian Islands. Observed among all the islands, levels of oxybenzone have become high enough to “damage coral DNA, cause deformities in juvenile corals, increase susceptibility to viral infections, and make corals more susceptible to bleaching” (Levine 2). In a study conducted in Kahalu’u Bay on the big island of Hawai’i in 2019 by the U.S. Environmental Protection Agency, the concentrations of oxybenzone were measured to be 262 times greater than levels considered hazardous or high-risk (Levine 2). With high tourist rates, the coral along with other marine life are being destroyed by the uncontrollable saturation of harmful toxins originating from their sunscreen. If such conditions persist, this may catalyze the elimination of countless coral species.

Another significant contributor to the destruction of the coral reefs is the ever-growing intensity of climate change. In 2020, the release of the 2019 Hawai’i Visitor Statistics stated that “a total of 10,424,995 visitors came to Hawai’i in 2019, an increase of 5.4 percent from the 9,888,845 visitors in 2018” (Khan). With these

increasing numbers of tourists flocking to Hawai'i every year, the demands for rental vehicles, flights, and cruise ships have spiked as well. This surge in transportation activity contributes to the state's increasing consumption of fossil fuels. As revealed by the research conducted by Tawn Keeney, "it follows that, with 10 million visitors in 2019, the 'average' visitor's emissions burden [was] 1.8 tons CO<sub>2</sub>(e) from his round trip flight"(Keeny 3). The inflow of rental car usage to the already densely-populated state along with the rise of more flights and cruise trips is the reason behind the large amounts of burned fossil fuels. The burning of fossil fuels results in the emissions of a particular greenhouse gas, commonly known as carbon dioxide. Greenhouse gases, located in the Earth's atmosphere, are responsible for trapping heat. The linear correlation between the rise in carbon dioxide emissions and the warming of the atmosphere is what persists in deteriorating the coral reefs. In 2017, the biggest tourist market from just the western U.S. documented up to 3.8 million visits and "the carbon footprint of their round trip air travel [was] roughly like driving a car around the equator – 225,000 times[...].Flights to and from Hawai'i from all over the world, produced approximately 6.3 million tons [of carbon]" (Yerton). For a comparison, these amounts are "equivalent of the CO<sub>2</sub> produced by generating electricity for almost 1.1 million homes in a year"(Yerton). As the atmosphere gets increasingly warmer due to the abundance of carbon dioxide emissions, the ocean absorbs the atmospheric heat, thus increasing its water temperatures. As a result, "rising water temperatures can harm the algae that live inside corals. Because algae provide food for coral, a loss of algae weakens corals and can eventually kill them" (United States Environmental Protection Agency 1). While water temperatures increase, the algae which the coral solely depend

on for survival are weakened and often die off leaving the coral to eventually follow the same fate.

Climate change and global warming can influence the pH levels of the ocean water, resulting in the degradation of marine life as well. With the substantial amounts of carbon confined within the atmosphere, the “carbon dioxide reacts with [ocean] water to form carbonic acid, so the oceans are becoming more acidic” (United States Environmental Protection Agency 1). As more carbon dioxide is absorbed into the ocean water, carbonic acid is the product of the reaction and diffuses throughout the ocean, thus decreasing its pH levels and heightening its acidity. Ocean acidification hinders the corals’ skeletal growth, leaving them vulnerable and brittle. In these times, the State of Hawai’i’s Division of Aquatic Resources states that “up to 50% of the reef [in Hawai’i] died in some locations, due to temperature effects from climate change” (State of Hawai’i Division of Aquatic Resources). Under such conditions, bioerosion will only proceed to destroy and shrink the coral reefs. However, this issue transcends far beyond the destruction of the coral. The reefs are an integral part of the ecosystem as “millions of marine species depend on the coral reefs to feed, reproduce, shelter larvae, and take refuge from predators in their vast three dimensional networks” (OCEANA). All the organisms that rely on the reefs as a resource for their survival face mass endangerment. The fewer viable reefs accessible to the marine species that live off of them, the more susceptible these reef-dependent organisms are to endangerment and perhaps, extinction.

### **Impact of Over-Tourism on Environment: Deforestation and Wildlife**

In addition to the pollution imposed on marine life by over-tourism, the increasing urbanization of Hawai'i has resulted in the obstruction and deforestation of the natural environment. To support the high population of tourists, the islands are "forced to build infrastructure to house them, which means damaging the natural environment and wildlife"(Clayton). With the incoming of countless visitors and transplants, Hawai'i has had to resort to deforestation to create space and housing for the overflowing population. Infrastructures and non-local corporations have overcrowded the area, thus reducing the regions of natural landscape. However, the impact of deforestation does not end at the loss of native greenery. The native forests and verdure are home to more than 10,000 species, many exclusive to the Hawaiian lands (The Nature Conservancy of Hawai'i 154). With the extensive loss of native forests and natural ecosystems, many species are facing the loss of their habitat, source of food, and space for reproduction. Under such limitations, numerous species have either become extinct or are on the verge of extinction. Of all the flora and fauna extinctions within the United States, 75% of them have occurred in Hawai'i alone, becoming the state with the highest amount of threatened and endangered species in the country (The Nature Conservancy of Hawaii 158). The Hawaiian islands currently house about 317 taxa of both plants and animals, all of which have been declared endangered or threatened by the U.S. Fish and Wildlife Service (Clayton). Moreover, 44% of all the endangered plants within the U.S. are inhabitants of Hawai'i (Kunze). These statistics are only growing as restaurants, hotel resorts, and shopping centers are replacing the space where the lush greenery once

grew. The substantial decline in species has thus led to Hawai'i being referred to as the "extinction capital of the world".

### **Impact of Over-Tourism on Native Hawaiians/Locals: Costs of Living**

As the numbers of tourists and transplants in Hawai'i have exceeded a sustainable capacity, this inrush of outsiders has resulted in the unaffordability and inaccessibility of housing for the residents, especially the Native Hawaiian community. Overpopulation has led to extreme inflation of housing prices and subsequently, the displacement of numerous Native Hawaiians and residents. At the moment, the tourists outnumber locals by 6:1, and Native Hawaiians by 30:1 (Clayton). While the islands already hold limited space for housing, with outsiders constantly occupying homes, apartments, and condos, the people of Hawai'i are finding it difficult to compete against the newcomers for affordable housing. The demand for housing is skyrocketing as outsiders are crowding the islands. This shortage of housing and subsequent increase in demand, has become grounds for the rise of home prices enabling only the affluent to be able to afford housing. As affluent outsiders or additional hotels and resorts proceed to occupy acres of land, less space becomes available for the construction of homes, contributing to the scarcity of housing and increase in housing prices. A prime example of this is apparent with Facebook founder, Mark Zuckerberg. In 2014, Zuckerberg spent \$100 million to purchase 750 acres of land on the island of Kaua'i. Through years of purchasing additional acres of land, Zuckerberg has now accumulated up to 1,500 acres of land (Romaine). By occupying millions of dollars worth of property, Zuckerberg exacerbated the demand for housing, consequently increasing the cost of housing as



well. Hawai'i residents lost 1,500 acres of land that could have been used to house the many locals who struggle to find housing, let alone affordable housing.

A common aspect of tourism that is partly responsible for the aggravation of house affordability in Hawai'i is the vacation rental unit industry (VRU). In simple terms, vacation rental units are properties occupied by parties temporarily visiting for up to 30 days or less. However, as VRUs are typically owned by nonresidents, this decreases the housing availability for the local people. In regards to the island of Maui, "52% of the homes are sold to nonresidents, and 60% of condos and apartments have gone to investors and second homeowners" (Magbual 2). As for Kaua'i, 45% of the homes were sold to out-of-state residents (Crystal). Since the majority of properties are sold to outsiders, the locals are left with very few affordable housing options. Customarily, VRUs are occupied for the majority of the year leaving a need of about 64,700 to 66,000 affordable homes to accommodate the increasing demand for housing (Magbual 2). Moreover, as VRUs are frequently occupied, they are oftentimes withdrawn from the residential market, thus contributing to the increase in housing scarcity and costs (Magbual 2). Many people from the U.S. mainland, as well as foreign investors, come to the islands in search of properties to rent out to tourists for profit. By providing alternate modes of lodging for tourists, they transform homes into businesses, when local families could have used that property as a long-term residence instead of facing homelessness. This scarcity of affordable housing opportunities is a leading cause of the overwhelming homeless population throughout the islands.

While Hawai'i sits as second highest in the nation with rates of homelessness per 10,000 people, out of the approximate 4,448 homeless individuals on O'ahu, about 51%

are Native Hawaiian or of another Pacific Islander heritage (Magbual 1). Though Hawaiians are the primary inhabitants of the islands, they struggle to survive in their own home due to the inundation of tourists and transplants. What used to be a simple community centered around a sense of community and spiritual connection to nature, has now become a complex society overrun by industry and avarice. As any homeless population is susceptible to illnesses, such as communicable diseases or malnutrition, the influx of outsiders to Hawai'i has forced many of the original occupants into poor and unsanitary living conditions, thus decreasing their health. On the island of O'ahu, 24% of the homeless are also suffering from chronic mental or physical medical conditions (Magbual 1). Although 24% may not seem like much, of the approximate 4,448 individuals facing homelessness in O'ahu, 24% are simultaneously dealing with debilitating illnesses making it about 1,067 individuals throughout Hawai'i who are both homeless and disabled. Overcrowding of the Hawaiian islands has resulted in the cost of housing sitting at "149% above the national average, with a cost of living index that is 65.7% higher than the rest of the nation" (Magbual 2). Hawai'i sits high above the standard housing costs in the U.S. making it nearly impossible for even the middle class on the mainland to afford the housing costs. At this current rate, only the richer upper-class can afford to buy a decent property.

According to Sage Crystal, a former resident of Hawai'i, while Hawai'i owns one of the highest costs of living in the U.S., the average income for Hawai'i residents is approximately \$40,824, which is about \$2,219 lower than the national average (Crystal). Hawai'i residents are paid less than a sustainable wage and such wages cannot measure up to housing costs when the median home price on O'ahu for a single-family

home stands at over a million dollars (Bacilio). A majority of those who can afford to live on the islands are affluent outsiders from the mainland or foreign countries. The average income of Hawai'i residents can't keep up with the average costs of a simple home. On account of the unaffordability, many Native Hawaiians have run out of options and had to move out of the land which their ancestors have created the foundation for through centuries of hard and laborious work. In *Olelo Hawai'i*, the Native Hawaiian language, the ancestors and elders are referred to as *kūpuna*, and are highly idolized and honored by their descendants because of their wisdom gained through great life experiences. To Hawaiians, the *kūpuna* are the source of their existence and are credited as the central figures who made their achievements a possibility. Given that the land is the bridge between the Hawaiians and their ancestry, it's difficult for them to abandon the land to which they feel deeply indebted and connected to.

While the inflation of housing prices and lack of housing availability displaces the Hawaiian community, the progress of their ancestors has been lost to neo-colonialism. Currently, the displacement of the Hawaiian people has resulted in Native Hawaiians amounting to only about 21.8% of Hawai'i's total population (Office of Hawaiian Affairs). While the Hawaiian people's culture and sense of purpose are rooted in their connection to the land, forcing them to move out of their island is comparable to stripping them of the very essence of what makes them Hawaiian.

To ameliorate this issue of unaffordable housing and displaced Hawaiians, the U.S. Congress enacted the Hawaiian Homes Commission Act in 1921, also known as the Hawaiian Homestead Act, to create a land trust to "rehabilitate displaced Native Hawaiian people by enabling them to lease residential, agriculture, or pastoral,

homestead land from the trust for one dollar per year” (The Senate). With this, more than 200,000 acres of land were set aside to build affordable housing for Native Hawaiians. Although theoretically, this concept seems like a viable solution, through time, some flaws within this act arose. One limitation is that to qualify for the benefits of this act, an individual must possess and prove a blood quantum of at least 50% Native Hawaiian blood. However, when the U.S. annexed the Hawaiian islands, many foreign laborers were brought to Hawai'i to work the plantations. As a result, the number of pureblood Native Hawaiians reduced. With Japanese, Chinese, Korean, Filipino, and Portuguese workers flooding the islands, they became a large portion of Hawai'i's population. In 1853, Native Hawaiians constituted 97% of the island's population, but by 1923, the number of Native Hawaiians in Hawai'i decreased substantially to making up 16% of the population (Hawaii: Life in a Plantation Society). In this way, very few Native Hawaiians can reap the benefits of the Hawaiian Homestead Act as a large majority of the Native Hawaiian population is no longer pureblood Hawaiian. As much time has passed, most Hawaiians are now mixed with some percentage of Hawaiian, Filipino, Korean, Japanese, Chinese, or Portuguese making them ineligible to benefit from the statute.

Another issue with this act is how underfunded the Department of Hawaiian Home Lands is. On account of the lack of financial support, more than 29,000 beneficiaries are on the waitlist for the limited homestead lands and many have remained on the waitlist for decades (McLaurin). While there are fewer amounts of Native Hawaiians with 50% or more indigenous blood quantum, there are still numerous individuals accumulating on the waitlist awaiting a vacancy on the homestead lands.

According to the senate of Hawai'i, "more than two thousand Native Hawaiian beneficiaries have died while on the Hawaiian homes waiting list for a home land lease, and twenty-eight thousand beneficiaries currently remain on the list, half of which are over the age of sixty" (The Senate). While many Native Hawaiians have remained on the waitlist for decades, many are unable to experience life on the homestead land within their lifetime. People have passed away as they spent the majority of their lives, hopefully and patiently waiting for their opportunity of homestead housing to come. This conflicts with the Hawaiian Homestead Act's objective of making more affordable and available housing for Hawaiians when the waiting time substantially exceeds the average human lifespan.

### **Impact of Over-Tourism on Native Hawaiians/Locals: Occupying Resources**

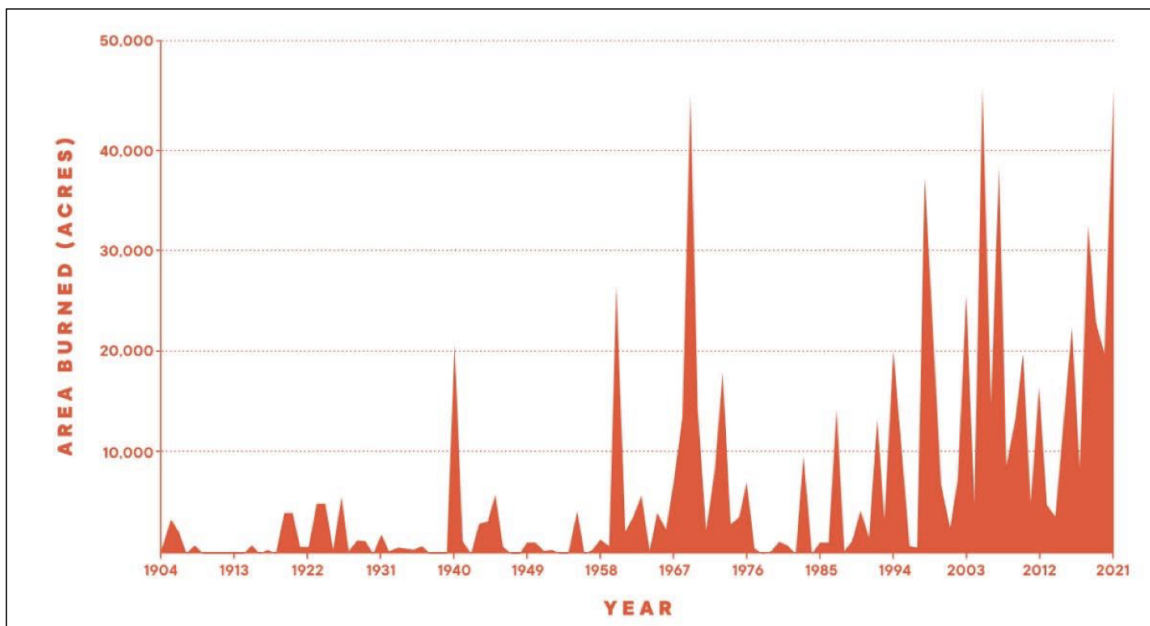
Brought on by the surge of tourists to the Hawaiian islands, residents are finding themselves competing with outsiders for the limited resources available. One resource that significantly increased in scarcity upon the arrival of outsiders was the water supply. As Hawai'i is a tropical archipelago enveloped in humidity, frequented by rainfall, and surrounded by water, this land is one of the last places anyone would think would suffer from a drought. However, the overwhelming levels of tourism received by Hawai'i through the decades have finally begun to take its toll on the abundance of natural resources. At the moment, tourism alone makes up approximately 44.7% of total water consumption on the islands (Dethlefsen). With nearly half of the water occupied by non-residents, the locals are left with insufficient amounts of water supply to go about their daily lives. Hawaiians have had to live their lives frugally and cognizant of their

water usage to accommodate the numerous visitors coming to *their* land and consuming *their* water. In this way, they are left with insufficient amounts of water to support their families. Throughout the pandemic, the arrival of tourists resulted in a scarcity of vacant hotel rooms and rental cars to the extent that tourists had to employ the use of U-Hauls and camp on the beaches. Consequently, the locals were ordered to minimize their water consumption to provide more water supply for the hotels, resorts, and tourists (Dethlefsen). Many Hawaiians were forced to halt or reduce their water usage to save the supply for tourists due to the increasing scarcity of water. This interrupted their daily life as they could no longer freely use water for simple household activities or hygienic routines such as drinking, bathing, washing clothes and dishes, and even flushing toilets.

This rapid depletion of water supply has led to a deficiency in moisture and has become grounds for many wildfires. From the Lahaina fires on the island of Maui, over 2,000 structures including homes, apartment buildings, structures, and historical sites, were destroyed (The Associated Press). As revealed by the Pacific Fire Exchange, “over the last decade, Hawaii has experienced an annual average of over 1,000 ignitions burning more than 20,000 acres each year on the main inhabited islands” (Rowan et al.). As the drought has worsened over time, this has allowed for the frequency and susceptibility of wildfires in the islands to increase as well. Countless families have suffered great losses due to these recurring wildfires. Below is a visual representation of the increase in wildfire damage in acres through time, ranging from the years 1904 to 2021. As soon as Hawai’i became an official state within the U.S. in 1959, a spike in tourism levels followed soon after throughout the 1960’s (Bacilio).

Depicted by the graph, the first significant peak in acres destroyed by wildfires is seen to have occurred a little after 1967. This uncanny timing of events demonstrates the likelihood of a linear association between the increase in wildfire damage and the increase in tourism. From 1904 to about 1959, the wildfires that occurred generally resulted in much less than 10,000 acres being destroyed— besides an outlying peak that occurred around 1940. However, by around 1967, an abrupt— yet consistent— trend of wildfire damages reaching about 30,000 acres and higher can be seen taking place throughout the following years up until 2021.

**Figure 2. Hawaii Wildfires: Acres Burned, 1904 to 2021**



**Source:** Clay Trauernicht, Department of Natural Resources and Environmental Management, University of Hawaii at Manoa.

### **Impact of Over-Tourism on Native Hawaiians/Locals: The Culture**

As Hawaiian culture is deeply rooted in traditional customs and numerous cultural ceremonies, high tourism rates have greatly disrupted their ability to participate

in these cultural practices. All Hawaiian practices take place outside— in the presence of nature— as they honor their spiritual connection to the land and sea. However, many tourist attractions have established infrastructure on the land which Hawaiians use to honor their ancestors. The desecration of the land has included the destruction of traditional burial sites and “heiau” (sacred temples). With less space to practice their culture, many Hawaiians are finding no choice, but to suppress parts of their traditional lifestyles, with the concern that there may be a time when they can no longer keep their culture alive (Clayton).

### **Conclusion**

The Hawaiian islands and its people have long suffered on account of many's pursuits for an “island getaway”. From the immensely degraded ecosystems to the unavailability of cardinal resources, these issues have become enshrouded by the idea of gentrification. Toxins dispersed throughout the atmosphere and ocean by the actions of tourists have resulted in the mass elimination of marine organisms. Island tourism has displaced numerous Hawaiians and led to the rapid scarcity of housing and resources.

Many argue that abruptly terminating Hawai'i tourism would be detrimental to its economy as tourism constitutes about a quarter of Hawai'i's economy. This statement stands correct. As tourism has been a prominent portion of Hawai'i culture for decades, it has deeply embedded its influence into the Hawaiian economy. It would not be feasible to resolve all these issues by terminating tourism; but by promoting, educating, and enforcing respectful tourism, visitors can better recognize the results of their actions



and therefore, visit Hawai'i in an eco-friendly manner. The consequences of tourism persist due to visitors' lack of knowledge concerning the environmental and economic impacts of their actions.

Ecotourism refers to the promotion of ecologically sustainable tourism and offers a type of tourism that can take place harmoniously alongside the local population. This type of tourism helps uphold support for the local inhabitants and promotes cognizance towards the protection of natural ecosystems— both the ocean and forestry. Cultural tourism promotes an approach to tourism that prioritizes visitors' education and respect for the indigenous culture. Moving forward, eco-tourism and cultural tourism are both viable alternatives to proceed with tourism. By altering the current tourism culture in Hawai'i, we can improve the environmental and economic issues and allow for the preservation and perpetuation of the Hawaiian culture and life of the land.

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