https://doi.org/10.15302/J-LAF-1-050050

The Tree at the Center of Collapse: ʻŌhiʻa Lehua and Hawaii's Future

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ABSTRACT

Hawaii is on the threshold of collapse. Over a century of American colonization and exploitation of the islands and their people has resulted in the island chain facing critical environmental and cultural catastrophe. This article examines the emergence of Rapid ʻŌhiʻa Death as a critical aeolian pathogen capable of wiping out the most culturally and ecologically significant species representing over 50% of Hawaii's forests. Plantation histories are unpacked as foundational tools which directly led to deep alteration to the cultural fabric and landscape of the islands, accelerating the complex issues faced by Hawaii and Hawaiians today. This crisis offers landscape architects and the design professions grounds for a new methodology to approach both ecological and cultural issues as one to tackle the issues stemming from ongoing climate change. Furthermore, the article underscores the need to rethink the American fetishization of the Hawaiian Islands and look instead to how land stewardship and landscape practices can facilitate a self-determinant, equitable, and resilient future.

KEYWORDS

Cultural Landscapes;
American Studies;
Forest Ecology;
Island Studies;
Environmental Studies;
Climate Change

RECEIVED DATE

2022-08-15

HIGHLIGHTS

- Introduces the Rapid ʻŌhiʻa Death and the complex cultural and ecological pressures for trees in Hawaii
- Unpacks how the plantation system brought environmental destruction, cultural desiccation, and climatic instability to Hawaii
- Proposes localized landscape practice of repair towards the opportunities arising from the issues faced by Hawaii and Hawaiian

EDITED BY
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1 Under Pressure

The forces of pressure take many forms on the islands of Hawaii. Atmospheric pressures and forces of wind blanket the islands in clouds of rain, oceanic currents cycle nutrients for vibrant marine ecosystems and fish communities; volcanic pressure releases abundant lava which continues to reshape the islands' footprint. Tourists flock to Hawaii in plane after plane to capture the perfect image or video they have seen on their phones thousands of miles away back on the mainland and beyond. In many ways, this is the pressure for Hawaii—and Hawaiians—to perform. This performance is rooted in its natural environment to serve many purposes from economic forces of farming to cultural productions and choreographies of luaus and hula performances. The outside

forces stemming from the mainland continue to expect obsequious obedience and, more so, control. Yet force continues to create pressure. Today, Hawaii faces increased pressures brought by the climate crisis. How then, can landscape architects and the design professions at large look make actionable progress in relieving these pressures?

One such focus of pressure itself is on trees. As an almost universal constant, trees are approachable and unproblematic. Trees shade us on a hot summer day, shelter us with their wood, create habitats for birds and other critters, and make sure we have air to breathe. And for Hawaii, trees are integral to the functionality and image of the islands we know today. However, trees have a contentious history here. For colonizers, the trees and the forests were great obstacles to overcome. The desire for agricultural production and economic expansion necessitated the vast deforestation around the islands and human shift towards industrialized capacity for output.

Today, the islands and their people continue to face additional pressures from a coterie of airborne pathogens. Unseen to the naked eye, Rapid ʻŌhiʻa Death① (ROD) is infecting the forests on the Big Island and killing off native ʻŌhiʻa Lehua (*Metrosideros polymorpha*) with great expedience[1]. What may seem like yet another chapter in tree species collapse parallel to Dutch Elm Disease, Sudden Oak Death, and American Chestnut Blight, to name a few, necessitates a more cautionary tale. This tree is more than just a species found interwoven throughout the forests; it is a critical cultural resource for Native Hawaiians. This tree is at the center of their cultural mythos, emerging from stories of the Goddess Pele. The tree's flowers and leaves are used in traditional headdresses, maintaining a deep human and cultural connection for generations. Furthermore, *Metrosideros polymorpha* is the first pioneer species after a lava flow[2]. Its seeds can withstand high levels of sulphur dioxide (SO_2) and help establish fertility of future soils and future forests. ROD now threatens this deep complexity. The potential collapse of this one species is yet another chapter in the cultural and ecological violence on the islands, but furthermore an omen for what the climate crisis may accelerate.

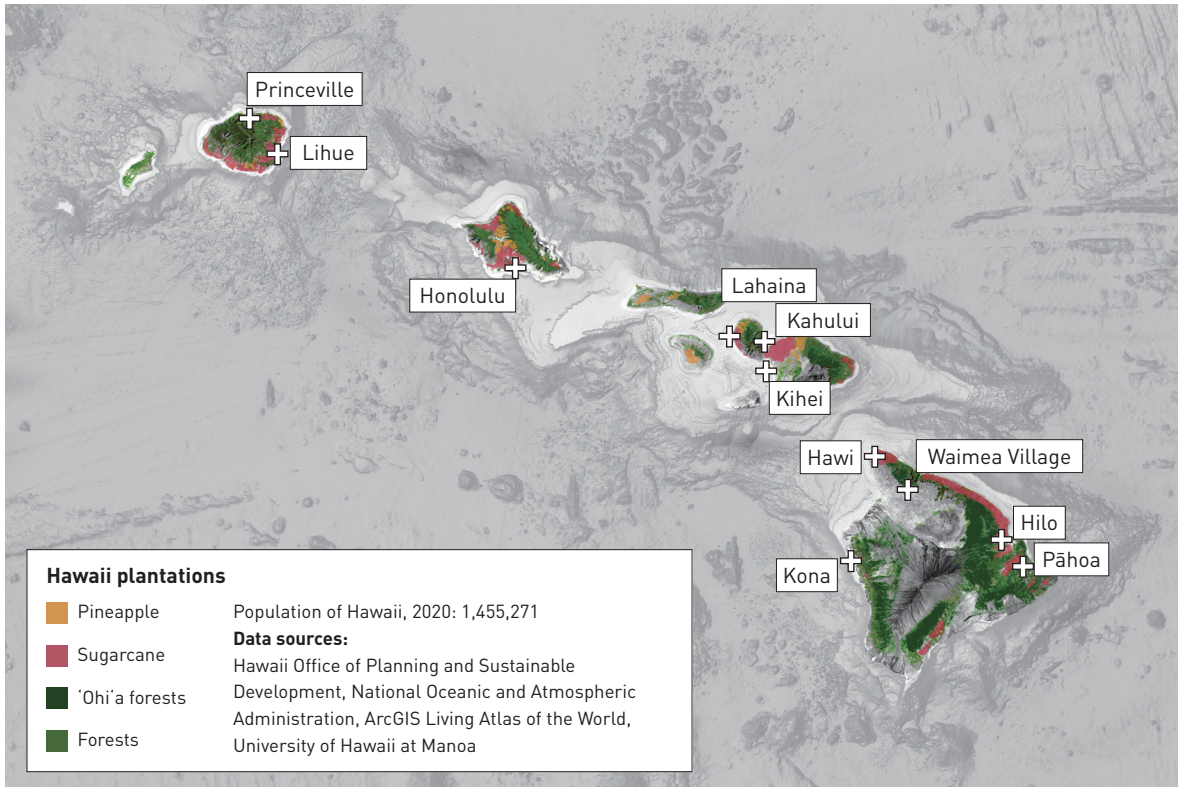
Pressure is growing. It is testing the limits of the ecosystem and cultural stability, and how and when solutions can address this. This article continues to unpack the value imbalance and pressures found within trees in Hawaii and how American colonization of the islands bears great responsibility for enacting repair before it is too late. Forces like the American colonization, plantation mechanics, and the emergent tourist economy are individually understood to weave together to argue for how imperative reparative action is for Hawaii.

2 Plantations, Periphery, and a Playground for Experimentation

It is hard to underestimate how the plantation system deeply altered the Hawaiian Islands. The constructed plantation and its aggregate system was not new when it was introduced to the islands in 1835 by William Hooper[3]. European powers and the United States had implemented a global plantation model by this point and were experts cognizant of this system's capacity for extraction, experimentation, and destruction. The Hawaiian Islands were made into yet another playground for boundless testing that was unique to oceanic islands and colonizing powers[4]. This playground was maintained on the periphery—as space far away from the political and cultural center of the authoritarian power and privileged class. The island as periphery was purposefully crafted to be far outside the minds and imagination of the zeitgeist to allow for the political center to maintain control and, in turn, create an "otherness" to which islands and the periphery were framed. As Marie Louise Anderson offers, "the periphery represents the space between exclusion and inclusion, discrimination and acceptance, the known and the unknown… [it is] the space between the past and the future, utopia and hell, reality and the imagination."[5] Creating this experiment and periphery was not easy, yet it was well-understood the effects this system enacts on land and its people. What is more, the legacy of the plantation across this archipelago is an important trace that follows the issues we see today with ROD and climate change.

Islands are complex lands, geographically surrounded by water on all sides and sometimes near the shore or far off in the ocean. This proximity to the mainland or land of authority made islands so appealing for colonizing powers and the plantation model. Typically, the islands were far away from centers of power, often permitting unmitigated experimentation and violence. Islands were also seen to contain sites to test limits of crops, of enslaved laborers, of Indigenous populations, and of European ideologies. This relationship of the plantations proliferating across Hawaii was not just limited to the land. Land and sea were two forces united in facilitating this economic process. As Liam Campling and Alejandro

① ROD is not caused by just one particular pathogen, but rather an observed phenomenon that is the result of three or more fungal pathogens with unknown origins to the islands.



1. Hawaiian plantation extents highlighting sugarcane and pineapple production
2. Scenes from a pineapple plantation

Colas argue, "the sea thus acted not just as a space that allowed faster and more intensive commercial transactions between distant lands and peoples, but also as a domain of innovation […] as well as opening new markets in goods and human labour."[6] Islands were relegated to experimental playgrounds where the tests and experiments were contained and seemingly controlled.

Hawaii was morphed into a plantation powerhouse by two key crops: pineapples and sugarcane (Fig. 1). Sugarcane production began in 1835 through William Hooper while industrial-scale pineapple production by James D. Dole in 1899[7] (Fig. 2). The insatiable appetite found back in the mainland accelerated the expansion of this constructed mechanic. Flat fringes around the perimeters of the islands were logged, cleared, and flattened to facilitate the mass cultivation of monoculture crops that was always serving the mainland. This operation not only began a permanent alteration to the islands themselves, but also relegated the islands to become subservient and reliant upon the center of power back on the mainland. Plantations themselves were the spatial and constructed environment that linked land, sea, and people together yet mutated and inverted power dynamics which accompanied the false capitulation of the Hawaiian monarchy and self-sovereignty.

What is important to note in Hawaii's exploitation through the plantation are the lingering effects almost 200 years later. These effects transcend scales from the composition of soil to the atmospheric in the form of storm intensity. But more so than just environmental and ecological change, the plantation system is also directly responsible for destabilizing the Native Hawaiian population. Foreign labor from the Caribbean, mainland of the United State, Philippines, Japan②, and other regions and countries all quickly recalibrated the ethnic composition of the islands, which created new cultural imbalances and dynamics that further stripped Native Hawaiians of their intimate stewardship and care for the land. This is not to say that Native Hawaiians were exclusively the only stewards to maintain a relationship with the land, but the influx of different cultures under the power and direction of the corporate plantation system helped accelerate the ongoing transformation of the islands' soils, plants, and humans. Furthermore, the ethnic hybridity also underscored how the non-white was the perpetuated subaltern within the greater United

② By the turn of the 20th century, corporate plantation models in the Caribbean were failing and developers in Hawaii brought them over to share knowledge and efficiency to speed up installation and production. By this time, the United States also occupied the Philippines, adding an additional and closer supply of non-citizen labor.

States. The corporate plantation reorganized the racial class structure which continuously de-legitimized Native Hawaiian authority and land-based care and practice[8].

Albeit a cursory examination of the plantation in Hawaii, what is critical to take away is how the plantation system was the key catalyst that is directly responsible for the long-term human and non-human changes on the islands that we can see today. The author further argues that the plantation domesticated and forcefully assimilated the Hawaiian Islands into a landscape that could operate within the ideology and vision of an American power state—forcefully assimilating Native Hawaiians into an acceptable American subaltern parallel to that of other non-whites, along with the Hawaiian landscape into an environment that caters to extraction and emergent capitalism and rebukes natural process and integrity (Fig. 3). The plantation system can be seen as the inception in a larger imperial project aimed towards assimilation into the growing American Empire. Here, the plantation is responsible for initiating an outsider connection to the islands while removing away any form of Indigenous—non-white—point of view or care. Through this economic framework in the early 20th century paired alongside growing military presence, the Hawaiian Islands became a tropical travel destination for the white ruling class back on the mainland.

3 Continued Assimilation: Post-World War II American Fetishization

After World War II, it can be argued that Hawaii was by and large domesticated. Over 50 years of plantation settlement, military development, and white expansion had crossed an opaque threshold which was deemed by a larger public as acceptable. The territory was now unlocked to the greater American public as a luxury playground; one of tropicality and rampant exoticism that was intoxicating in the public fervor after emerging victorious in the Pacific Theater.

What has continued since this tourist economy expansion is a continued fetishization of the islands and its people. A continued conquest based around a warped sense of ideals found in “liberty” (Fig. 4). Hawaii may be a state itself now, and its people holding all the rights and privileges that the mainlanders do, but it is still relegated as a peripheral paradise and playground for mainlanders to use, abuse, and destroy.

Today, Hawaii is witnessing the combined effects of environmental destruction, cultural desiccation, and climatic instability brought in part by the plantation system[1][9][10]. Together, the islands can be seen as one example of global colonial and imperial legacies③, and a key case study for the effects of early 20th century American imperialism. As Ulrich Brand et al. posit, “the ecological crisis must be recognized for what it is: a clear indication that the global North’s norms of production and consumption, which evolved with capitalism and have now become universal, can be maintained in their ecologically modernized form only at the cost of ever more violence, ecological destruction and human suffering, and, at that, in an ever-smaller part of the world.”[11] These forces are strong, fortified by deep bureaucratic red tape, millions of federal funds, and long-standing economic policies localized on the islands and its people. To understand and unpack what risk is within these multiple forces, the author chooses to direct attention towards the

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③ The Hawaiian Islands are just cases of plantation island territories in the United States. Puerto Rico, the US Virgin Islands, and Guam are also post-plantation island territories, but Hawaii is the only island territory turned state.

3. *Uncle Sam’s Picnic* (1898) illustrating America’s growth of adding young colonies from tropical locations
4. *Tree of Life* (1892) highlighting America’s values applied to a tree itself

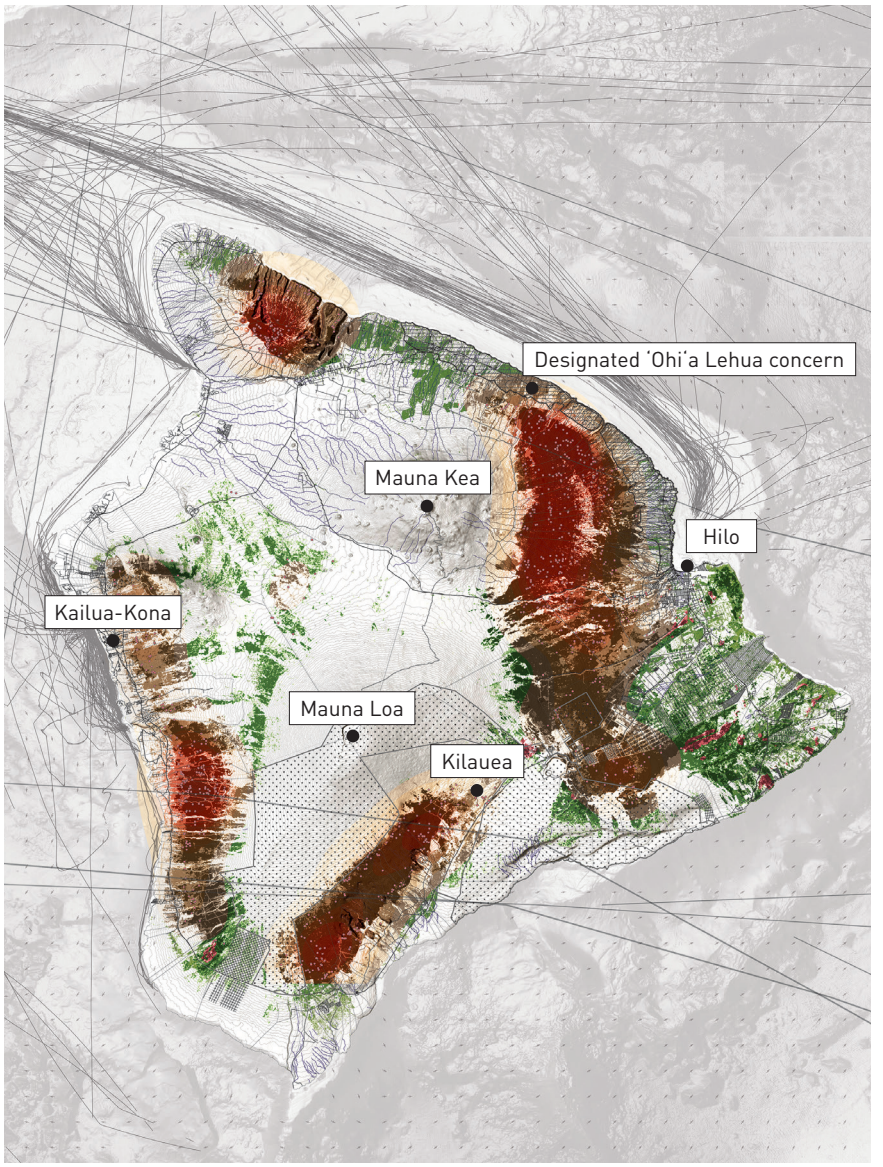
emergence of ROD on the Big Island of Hawaii and its direct threats to cultural-landscape ties and indigenous relationships and how a landscape practice of repair may offer a counter to centuries of exploits.

4 Synthetic Methods: Landscape Practice as Experimental Repair

Appearing almost out of thin air, ROD has quickly spread as a lethal threat to these forests. While difficult to tackle a pathogen invisible to the naked eye, the threat towards disaster and collapse provides a new opportunity for landscape practice to begin rethinking forest management and greater environmental management. With so much at stake, how can landscape architects and the design professions tackle an issue of this scale and complexity?

Within the complex landscape of the Hawaiian Islands and new pressures found in ROD, there is a new potential for landscape practice to work as a new form of continued experiment—on testing and working towards repair. Similar to the calls of Frederick Law Olmsted for landscape architects to work in America's forests at the turn of the 20th century, the climate crisis' pressure on these ʻOhiʻa forests is a parallel opportunity. However, this time it means working as a form of disease control, ROD emerged in around 2010 from an unknown source with formal discovery in 2014[12]. Currently, the pathogen is a combination of three fungal pathogens which disperse through the wind and infect trees through cuts in bark or broken branches. As a tree gets infected, its leaves brown within weeks to months, causing a race against time to monitor and address the issue[1]. The threat itself is unseen to the naked eye, yet its arboreal victims create a graveyard beyond the human scale, constantly metastasizing. Forecasted loss of 50% of an island's forests is hard to downplay (Fig. 5). Losing large swaths of these forests would result in significant environmental disruption to critical habitat, surface runoff and groundwater filtration, soil health, micro-climates, evapotranspiration rates, and more. What is more critical is how this loss would be felt at a cultural level, another chapter of loss and of violence on a deeply unimaginable level.

However, these grim forecasts do not have to be fully encapsulated in a moribund and hopeless inaction. In fact, we can look towards land practices ranging from the indigenous to the introduced as a pathway towards repair and evolution. Candace Fujikane's writing and research in Hawaii argues that climate change is a primary force in recentering the indigenous point of



5. Map of documented cases of ROD within the forest extents on the Big Island of Hawaii

view[13] along with Antonio Benitez-Rojo holding that culture itself is a transformative force that should not be overlooked in island and colonial contexts[14]. Expanding this argument further, the author would offer that the swift change and loss of ʻOhiʻa is an attempt to catalyze new thought and approach to land practice and management.

Land practices will be critical to the management of our natural and cultural resources as we face greater risks and disruptions from the climate crisis—ROD being one of many. Rosetta Elkin offers that, "landscape practices are put into sharp focus, as current traditions gain traction from a history of authoritative exercises that position the human outside 'design'."[15] However, for the Hawaiian Islands, the human is deeply tied with the tree itself. Native Hawaiians had practiced a land stewardship model known as Mālama ʻĀina (protect the land) for centuries before American assimilation. This landscape practice worked with the land, making sure to care for it to guarantee longevity and vitality at both human and non-human aspects, for generations. Native Hawaiians lived and worked in a careful relationship with the land and sea, taking what they need and nothing more out of respect for the land itself and the associated gods and goddesses. However, traditional methods may not be enough to combat the fungi. How can land practice evolve to meet the needs of an elusive pathogen?

Here the author would argue for a land practice centered on repair. A practice that looks towards the future as a place that try and heal wounds—past, present, and future. To try and take land and human culture back to a specific moment or period is reductive and frankly unobtainable. By understanding that care for the land and its management as a reparative practice, loss of *Metrosideros polymorpha* can be met with strategies that help repair the loss left behind each tree's corpse. Here, the islands as an isolate feature can champion care and repair. As Pier Vittorio Aureli and Maria Shéhérazade Giudici state, "the island can encourage an architecture of care because it is a space its inhabitants understand and read as a consistent body. In its finiteness, the inhabitant reads the island as his or her space, as the sphere where care begins to take material form and have material effects."[16] Additionally, this method of reparative land practice is also one that can champion liberty, an often enigmatic and elusive concept in the United States and especially for Native Hawaiians. Liberty can take the form of breaking cycles of imperial control and destruction and instead look towards localized, specific, and self-determined strategies that speak to and address the unique needs found on the islands.

This method towards repair is not a massive afforestation effort per se. Afforestation efforts typically take the form of political ideology and ambition. Rosetta Elkin posits that, "what emerges from continentally scaled afforestation is not an ecological mandate but something deliberately territorial, meaning it inscribes political agendas on local and often marginalized populations."[15] But working towards repairing the destruction caused by the pathogen may take a territorial effort. Each step towards addressing this loss can be one of localized knowledge that creates opportunity to amplify the voice of Native Hawaiians and ensure that Hawaii avoids collapse. This effort will not be easy, nor will the path be direct and easy. This is a process of repair that involves undoing, disrupting, and reimagining.

5 Practices of Repair, Practices of Liberty

ROD is both a threat that encapsulates the issues created and accelerated by American imperialism and the plantation system, alongside forecasted disruptions found in the climate crisis. The issues are human and non-human, singular and territorial, seen and unseen. Parallel to the arguments of scholars like Michael Murphy and Caitlin Schroering, tackling the threats posed by ROD identifies a new framework of landscape practice that begins to address and ameliorate deeply-felt physical legacies of the plantation system itself and its modern global capitalist form[10]. This framework of approach and methodology is also synthetic in how it can target a hierarchy pillared by cultural, economic, and political issues with direct and multi-scalar ramifications to human and non-human systems.

This opportunity can help continuously engage with American ideologies found in abstraction like that of liberty. It is within the country's prolific nature that both creates and procures what can be perceived as "liberty." A term founded purely on image and ambition. An image framed solely on white capitalist and expansionist ideals at the sake of the non-white and non-human. An image that is projected across the states and enforced as a distant wish in its peripheral territories. The United States is nothing without its image. Nothing without its projection. Nothing without the expansive imperialist ambition for which we perceive it to be, or better yet, to become in the future.

The danger posed by a phenomenon like ROD requires a multivalent approach which necessitates an act of repair. Methods of mitigation, preservation, and restoration are myopic and futile, resulting in mixed success which result in short lifespans of the solutions themselves. Pivoting towards a landscape practice of repair can facilitate exchange which counters rigid power dynamics and control in maintaining a particular status quo. Raj Patel and

Jason Moore offer that, "redistributing care, land, and work so that everyone has a chance to contribute to the improvement of their lives and to that of the ecology around them can undo the violence of abstraction that capitalism makes us perform every day."[17] Trees here are under immense pressure, with the *Metrosideros polymorpha* being a primary example. Repairing these ecosystems and their services towards cultural human community and settlement also helps break typical constructs within the profession of landscape architecture.

As we navigate the uncertainty and unpredictability of the future, territorial adaptation is both necessary and inherently flawed. The United States has before itself the opportunity to enact repair for its most at risk and historically disenfranchised. In fact, the time for action has already passed. As pressure continuously grows on natural and human systems in the Hawaiian Islands, so does the pressure to act too. Hawaii is on the threshold of collapse. Can we repair it?

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https://doi.org/10.15302/J-LAF-1-050050

中图分类号 | TU986, S719　　文献标识码 | B

处于崩溃中心的树木：多型铁心木与夏威夷的未来

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摘要

长期以来，除了大气环流与洋流、火山活动以及气候危机带来的环境压力之外，夏威夷群岛还面临来自于美国本土的压力：由于夏威夷群岛的自然环境与风土人情有着独特而鲜明的热带特征，其农作物及当地文化表演等也成为了重要的经济与文化产品，以满足美国本土的物质与精神消费需求。

19世纪初，夏威夷群岛便被用作试验与发展岛屿种植业的基地，岛上的原生植被被大量砍伐，美国本土也由此建立了对夏威夷群岛的支配地位；第二次世界大战结束后，美国本土开始以商品拜物教的形式对夏威夷群岛进行同化。如今，夏威夷虽然名义上已是美国辖州，但本质上仍是一处象征着消费、享乐与热带风情的边缘之地。

种植园体系使夏威夷的自然生态及文化稳定性都遭到了破坏，岛上历史悠久的树木种群也深受其害，“铁心木快速死亡”（ROD）就是其表现之一。这种树木疾病由三种以上来源未知的真菌造成，主要侵袭当地的特色植物物种——多型铁心木。多型铁心木是夏威夷群岛的先锋物种，也是当地森林的重要组成部分，能够吸收空气中的二氧化硫，增肥土壤；多型铁心木更是夏威夷当地文化的象征，在民间传说和传统服饰中都能看到它的身影。因此，ROD的蔓延不仅给夏威夷带来了自然生态危机，也使原住民与自然环境之间的纽带濒临断裂。

为此，本文呼吁以治理ROD为契机，采取修复性景观干预措施，通过面向未来的土地管理措施，保护夏威夷群岛的自然生态系统及原住民文化。这种土地管理方法旨在帮助原住民复兴传统知识、重拾对岛屿发展的话语权，使夏威夷群岛摆脱历史上从经济、文化、政治等多个层面形成的刻板印象，这也是对全球化资本主义的一种反抗。

关键词

文化景观；
美国研究；
森林生态学；
岛屿研究；
环境研究；
气候变化

收稿时间

2022-08-15

文章亮点

- 介绍了“铁心木快速死亡”疾病，以及夏威夷群岛的树木所经受的文化及生态压力
- 解读了种植园体系对夏威夷造成的环境破坏、文化枯竭及气候不稳定等问题
- 针对夏威夷及其原住民面临的复杂问题，提出以修复为核心的景观干预措施

编辑　王胤瑜，王颖，高雨婷