

Uprooted: (Un)Natural Histories of Eucalyptus in California

Ciara Clarke

Professor Anna Tsing

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## INTRODUCTION

October 19th, 1991 dawned as a hot, dry day in Berkeley, California. The towering eucalyptus trees rustled in the arid northeasterly breeze, dispersed amongst the houses and in dense forests higher in the golden hills. A blue haze hung around the trees, the scent of their evaporating oils heavy in the air. By that evening, the gum trees and their scattered debris would be alight with flames and controversy, burning with them the people and houses and cars left behind on the steep hillsides and winding streets. Since that day, a war has raged in the Bay Area between pro-eucalyptus and anti-eucalyptus factions, battling over the species' fiery properties, its invasiveness, its past, and its future in the state.

California is dominated with plants introduced during the processes of European settler-colonialism, capitalism, and globalization. Among these dominant introduced plants are eucalyptus trees, a hardwood genus of many species indigenous to the fire-prone open forests of Australia and Tasmania. Eucalyptus has been planted for many purposes all over the world, including in Italy, Spain, Israel, South Africa, India, Brazil, and Chile (Bennett 2010, 27). Some support wood pulp industries, others feed honey production or provide firewood, but many have never been harvested, abandoned by their human establishers along with their visions of eucalyptus-fueled colonial futures.

Today in the Golden State gum trees can be found scattered everywhere along streets and suburbs, standing solitary in parks, bunched into single file windbreaks along the iconic endless highways, almost all planted as seedlings just over a century ago (Farmer 2014). The Tasmanian blue gum *Eucalyptus globulus* makes up the vast majority of eucalyptus trees in the state, particularly within the wild eucalyptus forests of the San Francisco Bay Area. There, thick eucalyptus plantations feed on the fog belts of the region, the only ecological zone where

eucalyptus trees have naturalized themselves, managing to reproduce and escape their original boundaries (Yost et al, 2021). Many of the hills of the San Francisco Bay Area are now densely covered with tall, shaggy eucalyptus trees, feral forests escaped from human control, haunted by colonial pasts and reappropriated into political futures.

California and the Bay Area are perhaps regions already predisposed to strong opinions on trees, but eucalyptus is particularly divisive. Many people consider them to be invasive plants, trees that escaped from their intended spaces and spread where they wished, disrupting local landscapes and proving hard to remove. Known as high fire risks after the Berkeley Fire Storm, they are often regarded with as much suspicion as admiration. The state has now removed many trees and given permission to remove more, but attempts to deal with some of the overgrown eucalyptus forests, even citing fire danger and ecological ruin, have been met with fierce accusations of nativism and “plant racism” from radical pro-tree groups.

Many species were intentionally and unintentionally brought along by European colonists in projects of landscape domination, plantation-making, and extraction of resources and profit, the central tasks of settler colonialism. This is not the first time great attention has been paid to eucalyptus: Since its arrival it has ignited the minds of settler colonists for its unique properties. Through the examination of these qualities and the ways that they intentionally and unintentionally affected settler colonist environments, this paper argues that the eucalyptus of California cannot be understood alone, a single imported plant independent from histories of human involvement. Instead, the establishment of eucalyptus in California was a part of a larger program of biological importation, in what can be seen as a deliberate imperialist and settler-colonist project to transform landscapes. The diverse debris of such projects, many decades after their establishment and discardment, continues to act in ways that are hard to

predict but possible to trace. Imported eucalyptus trees shape California landscapes not only by displacing native multispecies arrangements of plants, animals, and humans; they also linger as ruinous biophysical and semiotic agents, attracting and creating landscape-shaping phenomena from insects to diseases to fires to parasites to human dreams about nature. Feral eucalyptus forests and their various proliferations are continuing reminders of the ongoing colonial disruption of California landscapes.

This paper in its analysis draws upon the writings and theories of several richly interconnected fields of scholarly work. These works regard colonialism and post-colonialism, multispecies relationships, the construction of landscapes, and the Anthropocene, examining the parts and processes and results of the recent destructive re-making of the world. Within their topics of study they write about physical and nonphysical worlds filled with overlapping, intertwined humans and nonhumans, ideas and realities, tangled histories and speculative futures.

How was eucalyptus enlisted into the colonization of California? Historian Alfred Crosby in his book *Ecological Imperialism: The Biological Expansion of Europe* introduces the concept of a multi-species “invasion army” that disrupts and resettles land in order to create Neo-Europes, colonized regions where indigenous species networks are replaced with replicated European landscapes intended to be highly productive. Crosby argues that European settler colonists consciously transformed the New World into Neo-Europes using imported species from the Old World or other colonies. Imported species were worked to both displace native species and replace them with potentially productive crops (Crosby 1986, 491). These plants and animals had in common several traits that made them valuable to human settler colonists and that gave them the ability to survive their new alien environments. Species that were fast-growing, low-maintenance, exploitative of natural resources and potentially profitable were particularly

capable of succeeding in colonized environments; qualities evolved to help plants thrive in disturbed ecologies, their selection gives clues to the disrupted worlds they faced. (Crosby 2004, 292).

This disruption had to come from somewhere, and the continual spread of plant species evolved for disrupted environments indicates that it has not stopped since European arrival. Anthropologists Tomaz Mastnak, Julia Elyachar and Tom Boellstorff argue in their essay “Botanical Decolonization: Rethinking Native Plants” that though many species were used in the project of imperialism, the spread of non-native plants within America relies on the active human disruption and unbalancing of native ecosystems. The belief that non-native plants and people spread through California and other colonial landscapes without contest hides the reality of European destruction of landscapes and active displacement of indigenous plants, animals and people by pretending that they were never there, or that they were naturally inferior and melted away in front of the oncoming European biotic invasion. In reality they were uprooted and often violently displaced, a process of erasure and extinction that continues (and continues to be occluded) today (Mastnak, Elyachar and Boellstorff 2014, 373). What is more, the proliferation of plants that managed to succeed here was often no accident; certain qualities were actively sought after in species being introduced to new colonies, and considerable effort was invested by colonists in order to identify, propagate, and establish these species for maximum profit.

The layered legacies of settler colonialism consist of both the physical and psychic remains of projects and their various reappropriations. Anthropologist Ann Laura Stoler in her book *Duress: Imperial Durabilities in Our Times* imagines imperial ruins as active agents that continue to affect regions long after the disappearance or transformation of empire. These complex histories are often occluded through their reappropriated use as political tools, as part of

the process of colonization and the processes of decay (Stoler 2016, 378-379). By tracing the histories of imperial ruins we can look beyond assumptions of what we believe the aftermath of settler colonialism looks like, to see how they may appear in our landscapes and our mindscapes. Also contributing to work on multispecies landscapes is anthropologist Anna Tsing, a scholar of the Anthropocene, the time of geomorphic human disruption. Tsing writes about feral ecologies haunted by ghosts of their pasts and monsters of their making, the self-destructive simplifications of plantations that lead to strange proliferations of life and death (Tsing 2015, 5-6). Both Stoler and Tsing emphasize the importance of visiting landscapes to learn from them, to decode their pasts and speculate on their futures.

What tools do I take from each of these scholars, to apply to the case of eucalyptus? Crosby's theories of multispecies biological invasion in *Ecological Imperialism* and those of Mastnak, Elyachar and Boellstorff on human disruption's role in this process in "Botanical Decolonization" help to understand what drove the arrival of the tree, and its role in the beginning of California's major ecological transformation. The authors of both works have a deep emphasis on the interconnected importance of biological species traits and human selection, which can be applied to the relationship between the traits of eucalyptus and their widespread planting by settler colonists. Tsing's theories of scalable plantation logics shine light on the alienated monocrop ecologies of the eucalyptus groves and their abandonment, as well as the unexpected consequences that can proliferate from these places. Stoler helps to see what remains through her work on imperial ruins and power, through which we can see the reconfiguration of eucalyptus groves and their various debris into current political conversations that are in themselves reactions to imperialism. Both Tsing and Stoler speak of the importance of going to these places and paying attention to particularity, which helped me in my site visits and in

research. Though this broadly delineates where I will cite each scholar, the application of the theories of these scholars is not restricted to any bounded-off parts of this story; indeed I found that their ideas overlap, converse with each other, and often appear in unexpected places.

Eucalyptus was established as part of a multispecies settler colonist project to transform landscapes and make them profitable. They both benefit from and encourage the disruption of native ecosystems. As plants that have evolved to thrive in recently disturbed environments, they have many traits that made them appealing to settler colonists in California, most notably their speed of growth and ability to acquire water in dry environments. However, the widespread establishment of the eucalyptus could not have been accomplished without the European settler's initial disruption of the native environment, and their enormous widespread efforts at cultivation. Eucalyptus forests in California are both ruins of imperialism and its active agents in the world, affecting their ecological and political environments in a multitude of interconnected ways.

The rest of this paper is divided into two parts. Part I covers the establishment of eucalyptus across California, focusing on the Bay Area and nearby regions. In order to track the attempted makings of empire this paper traces patterns in the planting of the species by settler colonists, describing the purposes the trees were intended to serve. This section will track the origins of the multi-species relationship between settler colonists and their imported trees, and how they and others worked together towards and against imperialist goals. Part II will examine several particular eucalyptus sites out of those I visited as imperial ruins, reading and researching them to discover some of the ways they have played active roles in their surrounding ecological and political environments since they were planted and deserted.

## PART I

In order to understand the history of eucalyptus in California it is necessary to have a broader understanding of the social and ecological world it met upon its arrival. It took Europeans fifty years to reach the Pacific coast of North America after the arrival of Christopher Columbus in 1492, and four hundred more to fully colonize it. First claimed by the Spanish, the territory of California passed into the control of the United States after the Mexican-American war, and became the 31st state in 1850. Lush with resources and situated advantageously for Pacific trade routes, California and the Bay Area rapidly attracted new settlers, particularly after gold was discovered in the Sierras. These settlers included many humans and other animals, as well as plants, insects, and viruses all brought along on the mission of empire. A small percentage of these immigrants proliferated in their new surroundings, particularly species ecologically adapted to the Mediterranean climates of the Central Coast and Central Valley (Crosby 1986, 281-282).

These new arrivals were not taking up previously unoccupied space. When Europeans began colonizing the Americas in the 15th century, much of the old growth forests of Europe had already been cut down, and the new settler-colonialists wasted little time in harvesting their newly acquired resources (Cooper 1876, 10). The first Spanish arrivals in the Bay Area documented their initial encounters with the vast open oak forests and grasslands that covered the region, but by 1900 most of those trees were gone. Though plenty was harvested, many oak forests were also burned down to clear the land for cattle grazing and agriculture, before the perceived value of the timber increased. Once California's population boomed during the Gold Rush, forests were cut down nearly overnight to construct the towns and cities to accommodate the new arrivals and build facilities for resource extraction (Groenendaal 1983, 1-2). With the

increased population came the livestock they fed on, and cattle and sheep made short work of native grasses not evolved for heavy grazing. The local species were largely replaced by European plants adapted to the hooves and hungry mouths of domesticated animals, fast-growing species evolved to take advantage of their disturbance (Mastnak, Elyachar & Boellstorff 2014, 368).

For many years the rampant success of imported biota within America was attributed to alleged inherent superiority over native populations, but as many have now argued, the answer is far more complex (and less prejudiced). In order for these non-native species to gain a foothold, they relied on human settler colonists to first disrupt local ecosystems to points where native landscapes could no longer be regenerated. Mastnak, Elyachar, and Boellstorff state in *Botanical Decolonization* that “California Indians were devastated by a colonization that was never directed at humans alone but went hand in hand with mining, deforestation, overgrazing, the sowing of exotic grasses, new kinds of agriculture, and altering waterways—in all, the devastation of ‘native’ ecosystems” (Mastnak, Elyachar & Boellstorff 2014, 368). As mentioned in the introduction, the devastation they describe intentionally displaced both native people and plants, transforming landscapes, waterways, and foodways. Crosby traces what he calls the “Europeanization” of California’s native grasslands, connecting their severe overgrazing to feed the booming population with the devastating floods and droughts that soon followed, and the subsequent takeover from fast-growing introduced plants (Crosby 1986, 485). The gold mining, the introduction of eucalyptus and other foreign plants, the overgrazing and overharvesting and overhunting and resulting devastation of ecosystems were all part of the same colonial displacement for the same imperial goals.

Through this onslaught of widespread disruption, the ability of native species networks to regenerate themselves as they had previously done was abruptly cut off. Anthropologist Anna Tsing argues in “A Threat to Holocene Resurgence Is a Threat to Livability” for the importance of resurgence, the ability of diverse multi-species assemblages to remake themselves in various successions as they are continually disturbed; an ability that is dependent upon reserves of refugia, concentrated patches of ecological life and interconnection. These patches shift over time in their forms and locations, in the shapes and connections of their contributing members, who continuously engage in the work of life-making together. They enable broader landscapes to weather and even sustain themselves from mild disturbance, but their unsustainable elimination results in increasing breakdowns and simplifications of landscapes and species relationships. It is at this point that Tsing marks the boundary between Holocene and Anthropocene, and it was at this point in California’s history that eucalyptus arrived (Tsing 2017, 52).

It is unclear who brought the first eucalyptus seeds to California, but the names of several plant nursery owners in the Bay Area appear repeatedly across historical texts. The possibilities include William C. Walker of Golden Gate Nursery in San Francisco and Stephen Nolan of Oakland, among many others (Butterfield 1935, 153). In any case, the species began appearing in store catalogs by 1854, selling first for the price of \$5-10 per sapling, and later for 10 cents per plant as supply of seeds rapidly increased (Butterfield 1935, 152). In the 1850s and early 1860s the trees were mainly sold as ornamental plants for gardens. Once these trees had been witnessed growing at extraordinary rates over the next fifteen years, their popularity exploded.

Colonists took with them across oceans and continents more than seeds and other physical detritus. They also brought stories, messages, ideas, and the eternal accompaniment to human war; propaganda. Advertisements of and published praise for eucalyptus and its traits can

be found in California dating back to the 1850s, all encouraging colonists to choose eucalyptus to plant and transform their landscapes. Through these messages, eucalyptus was painted as a tree of civilization, of profit, beauty, and health. Following Crosby's metaphor of an interspecies invasion army, these materials praising the colonial attributes of eucalyptus trees and providing for their further establishment seem somewhat akin to war propaganda. Through the examination of the material generated and distributed regarding eucalyptus it is possible to not just trace the physical realities of the trees in California but also their fluctuating political value in the work of empire.

Eucalyptus was not selected arbitrarily to be the signature tree of empire in California, and the qualities for which they were selected are informative of the priorities and goals of the people who planted them. Eucalyptus trees are extraordinarily rapid growers in their early stages, particularly considering the aridity of many of the landscapes in which they can succeed (Fork 2015, 2316). Their native Australian habitats vary from arid scrubland to misty rainforests, many of which contain hundreds of varieties of eucalyptus. *Eucalyptus globulus*, or blue gum eucalyptus, is from Tasmania, a dry and wildfire-prone landscape that forced the tree to excel at fire survival strategies. The trees funnel the large amounts of sunlight and groundwater they absorb into their rapid early growth. Eucalyptus are unlikely to survive any fires as seedlings; their best bet is to reach maturity as fast as possible. When brought to California, many blue gum eucalyptus found in greater abundance the resources that they had specialized so fiercely to acquire in their homeland, allowing them to grow at even more accelerated rates (Clar 1959). Once a eucalyptus tree is chopped down, it will regrow from the stump even faster than the first growth, providing a seemingly infinite supply of fuel and lumber.

These traits were prized by colonists, and eucalyptus became an important tree for rapidly producing fuel and changing environments. Eucalyptus wood was burned to warm colonists, and feed them and their new machines. It was also planted to shade homes from the hot sun that new arrivals were unused to, and to slow coastal winds that would otherwise flatten crops (Farmer 2013, 189; 212). Its planting intentionally changed the airways of California in order to enable agriculture that would further assimilate diverse landscapes into scalable projects of profit.

The abilities to provide fuel, lumber, and windblocks are possessed by many tree species, even in the hot sun and lower soil quality of California; but eucalyptus beats every one of them in speed of growth, and it was primarily this quality that convinced so many people to plant them in such numbers. Historian Ruth A. Morgan focuses on this temporal aspect of the relationship between eucalyptus trees and settler colonists in Southern India, where eucalyptus was also grown for fuel. In *Fueling the Colonial Future*, Morgan states that such a perspective on eucalyptus “embraces both the material or biological nature of the blue gum, as well as the political ambitions that its proponents hoped these material characteristics would serve. By their very nature, species transfers proceeded according to both the “biochronologies” of the plants in transit, and the human expectations for them” (Morgan 2021, 192). The temporal cycles of the tree growth aligned with the temporal goals of the colonists, bringing together the physical and nonphysical, the biological and political, the realized and the potential, into a single tree species.

Mastnak, Elyachar, and Boellstorff quote Sir Francis Bacon in his advice for colonists to “import plants that “grow speedily”, do not “aske too much Labour”, and “are nutritious.” (Mastnak, Elyachar & Boellstorff 2014, 365). These qualities are named “weedy qualities” by Crosby in his study of European species in Neo-European states, where he argues that European species particularly adjusted to disrupted ecological conditions were more able to establish

themselves in the aftermath of colonialism than native species. Mastnak, Elyachar and Boellstorff show that such species did not only have innate evolved advantages but were specifically selected for and intentionally raised and spread by colonists. It was the interspecies connections between the priorities of colonists and those of their imported plants that gave eucalyptus much of its advantage in land occupation; a relationship that would continue to evolve and affect California landscapes for many years to come.

Soon another quality of eucalyptus came into focus for Californian settler colonists. At the time malaria was becoming a major issue for those settling the region, particularly further inland within the Central Valley. The cause of malaria being mosquitos carrying the virus and transmitting it through their bite was not to be discovered until 1900; until then colonists in California and the rest of the world believed the cause to be “miasma” or bad air produced by rotting organic matter. Many indistinguishable illnesses were thus attributed to miasma, their common symptoms being deadly fevers. Certain landscapes and regions became characterized by their miasmatic qualities, considered to be inherently healthy or unhealthy for colonists.

In the 1870s, it was noticed that malarial cases would decline in areas planted with eucalyptus trees. Colonists concluded that it was the strong smell of the oil in the eucalyptus trees that purified the unhealthy air, and the tree began to be marketed as a preventative cure and planted in greater numbers around homes and homesteads in order to protect the inhabitants from disease. The tree did likely lead to a reduction in cases of malaria, but not for the reasons that the colonists believed. Eucalyptus trees, having evolved in the dry regions of Australia and Tasmania, are remarkably efficient at absorbing groundwater; it is this ability that in part fuels their previously mentioned rapid growth. By planting these trees colonists effectively dried out the land around them, eradicating groundwater pools where mosquitoes carrying malaria blood

parasites previously laid their eggs. For these transformative properties eucalyptus was nicknamed the “fever tree” and the “miracle tree” and praised for its ability to make the environment more habitable for settler colonists (Thompson 2015). More regions previously plagued with malaria were deemed healthier by adding eucalyptus, encouraging further settlement. Even after the discovery of the true cause of malaria in 1900, it was asserted that where eucalyptus grew, nobody died of the disease (McClatchie 1902, 126).

Theories of miasma in California and around the world conflated the moral standing of colonized regions with the health of their settlers. Through lowering rates of malaria, eucalyptus not only increased its own social value but also worked to further moralize the difference between settled and unsettled areas in the minds of colonists. Settled areas planted with eucalyptus and populated by Europeans were clean, pure, virtuous, and healthy; unsettled regions populated with native people and plants were filthy cesspools of disease and savagery. Settlement became more than an economic prospect - it was a moral imperative.

Contrary to settler views, malaria was not inherent to the native landscape; the illness had in fact been carried there by the settlers and their portmanteau biotas. Though the *Anopheles* mosquitoes that became the primary host of the blood parasite were native, malaria arrived with fur trappers from the Hudson Bay Company in the 1830s and played a large role in the decimation of many native Californian tribes within the Sacramento and Central Valleys (Cook 1955, 308). Not unlike eucalyptus, the malaria parasites the fur trappers carried were members of the invading imperial army. Though many settlers also died of malarial fevers, their numbers could be replaced by more incoming immigrants, unlike the native people. Once their populations were decreased and destabilized, it would have been much less of a task to further take their land. Crosby states that the success of the multispecies army lay in the fact that “its

members did not function alone, but as a team” (Crosby 1986, 479). Here, we see Europeans, mosquitoes, malaria virus and eucalyptus unwittingly working together in a portmanteau biota to advance imperialism, achieving far more destruction together than any of them could have done alone.

Some important introductions of non-native species to America were unintentional, but the popular idea of escaped invasive species has obscured some of the intentional introduction of various species. Landscape historian Jared Farmer references the science of acclimatization, a “now-forgotten movement [that] emerged alongside European imperialism... Acclimatizers advertised their science as an alternative to accidental and haphazard introductions of species.” (Farmer 2013, 162). Self-declared acclimatizers were typically also self-taught and self-funded “men of science”, but the University of California’s and state forestry departments were essentially doing the same work through their wide planting and recording of various non-native plants, simply with the added authority of State and Science. A relatively small quantity of species that arrive in a new region will be able to adapt to and succeed in their new environment; yet California is now dominated by non-native “naturalized” species and grows many others commercially with high success rates. To increase the odds of intentionally introduced species being profitable, it was beneficial for the state to fast-track the processes of natural selection, identifying by observation what traits would likely be successful. Those participating in the search included the University of California, the California Department of Agriculture, and many others invested in the material or agricultural uses of such a tree.

By the end of the 19th century, concerns were beginning to grow about the perceived incoming shortage of wood as the local forests vanished (Cooper 1876, 76). The search began for a suitable replacement for America’s ancient forests, a hardwood tree species that could grow

straighter than the oaks, faster than the hickory, and without the diseases of the chestnut. In order to identify such a tree many species were planted and data recorded on their development.

Eucalyptus was first planted at UC Berkeley in 1882, surrounding a running track. It is now also growing at several other campuses, including UC Davis, UC Santa Barbara, UC San Francisco, and UC Santa Cruz, which has in its Arboretum the largest collection of eucalyptus tree species outside Australia (Stephens 2007). Farmer describes the role of the University of California in the dispersal of eucalyptus in the late 1800s. “When the State Board of Forestry dissolved in 1893, the University of California superseded it as a eucalyptus authority and assumed control of the state nurseries in Santa Monica and Chico. Extension agents from the College of Agriculture subsequently gave away millions of seedlings in the name of research and experimentation” (Farmer 2013, 175). These seedlings were distributed for free to many landowners across California; all the University asked in return was information on their groves, data about the size of the trees, their rate of growth, and relative health and suitability for lumber. In order to best afforest the state, as was the goal of the UC and government, trees needed to be selected that were most suitable for their environment and could generate the highest return rate. The speed at which eucalyptus grew, even in the dry, hot, nutrient-poor conditions of much of California, brought official attention to the species. The many acclimatizers of California participated in the process of using and abusing the scientific method to self-justify imperialist logics, a constant imperial project. The data from this process of was used to motivate the further disruption of ecosystems and introduction of new species, even though realistically much of the information was shoddily collected, often relying on self-reporting and the honor system rather than close and careful observation (Farmer 2013, 196). The webs of interspecies relations that build ecosystems are dense and complex far beyond what can be easily noticed by humans. What’s

more, the potential long term consequences of introduction of new species may not manifest for many years after their arrival and are difficult to predict. The state's mission of eucalyptus afforestation, like many other such imperial endeavors, justified itself with misinformation and the cloak of authority. Without the ability and motivation of the state to attempt to fully exploit the real and potential arboreal resources of America, eucalyptus may have never been given this state approval and distribution, which played a large role in its establishment in the years to come.

The history of American forestry is long and complex, fueled as much by variable human politics as by the widespread consumption of trees. From arrival old growth forests were cut, often at unsustainable rates, in the East, Midwest, and the West, fueling the rapid construction of new settlements in temperate regions. Many of the groves of massive redwood trees and open oak forests of California were harvested in this era of initial colonization, deeply disrupting landscapes and ecosystems. San Francisco Bay since the 1850s was often used as a shipping port through which this lumber would be taken from the Pacific Coast and sold off to new destinations, so the infrastructure for a forestry and lumber industry and a well-trained population were already in place for a new crop of trees. The state, concerned with the dearth of wood that had followed California's Gold Rush population boom, encouraged reforestation and afforestation in the 1870s by passing laws that decreased property taxes on forested land and issuing financial prizes for individuals who planted large numbers of trees (Groenendal 1983, 6). Many wealthy landowners in the Bay Area used eucalyptus to convert their extensive properties to forests and cash in on the rewards. One such landowner was Adolf Sutro, former mayor of San Francisco, who covered the west side of the city in eucalyptus trees in 1886; another was Frank C. Havens, who planted his seedlings in the Berkeley and Oakland hills (Farmer 2013, 185; 198).

Elsewhere in colonized America, the forests that had once seemed endless resources were running out. The nation's principal source of hardwood had been forests in the Ohio River Valley and across the northern Midwest, but these were rapidly being exhausted. In 1907 Gifford Pinchot, head of the newly-minted Forest Service that had recently replaced the federal Bureau of Forestry, identified a “fifteen year supply” of trees in the Appalachian mountains as the last place that could feed the prodigious hardwood demand. Historian Steven Pyne argues that this fifteen year limit was what incited the “eucalyptus bubble”, a short period of establishment of expansive eucalyptus plantations (Farmer 2013, 191-192). The only tree that could mature that fast was eucalyptus, and the only place in America that it could do so was in California.

Fueled by fear of a shortage of wood, literature of eucalyptus's success, and the government's tax cuts on forested land, enterprising businessmen known as “eucalyptus boosters” began to sell plots of eucalyptus plantations to investors, who could buy in when the saplings were planted and cash out upon their harvesting (Metcalf 1924, 5). Historian Jared Farmer states that “euc boosters” in their marketing strategies “connected the fall of empires with the felling of forests”, where they stated that “In the wake of timber exhaustion, invariably will be found decaying civilization, race disintegration, national corruption and dissolution” (Farmer 2013, 178). Euc boosters presented investing in their eucalyptus as not just a business opportunity but an act of national service. The investors they marketed to often never even saw their plots of land and eucalyptus trees, buying them by mail order from anywhere in the nation or potentially the world. Neither the euc boosters nor their investors had forestry experience; for the most part they were capitalist opportunists with multiple businesses in different emerging markets. This eucalyptus “bubble” as it is now known lasted only from 1907 to 1913, but in that period plantations of millions of trees were established, permanently transforming California. In

*Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*, Anna Tsing along with co editors Nils Bubandt, Elaine Gan, and Heather Anne Swanson write of the “imagined futures” that drive human destruction of landscape in favor of progress and profit (Tsing etc 2017, 2). Such a dynamic exploded into being when colonists dreamed of a future society devoid of wood; for some a nightmare that needed remedy, for others a fantasy of potential profit.

The widespread planting of eucalyptus was intended to replace trees that had previously been there - specifically Californian oak species that fulfill a similar ecological niche and are adapted to similar conditions. But they were also planted to replace trees from other locations - in this example, the hardwood forests of the Midwest and the Appalachian regions. RA Morgan mentions Gregory Cushman’s proposal of a theory of neo-ecological imperialism, where ecologies far distant from each other are brought into play with each other in chains of cause and effect by human economics and politics. In this system, as Morgan states, “nutrients and energy are extracted from distant ecosystems to sustain colonial systems that cannot support themselves within their own ecological limits” (Morgan 2021, 203). Morgan finds an interpretation of this in how eucalyptus tree species had to be imported from other ecosystems to be planted and sustain British colonies in India. This argument can be made for the arrival of eucalyptus in California as well, but neo-ecological imperialism could in this case also be interpreted as the planting of trees in one region to replace the diminishing supply of another, through chains of supply and demand. Colonial systems in various regions of America did not establish sustainable relationships with the forests, and thus soon exhausted their ecological limits. The emergence of eucalyptus forests in the Bay and Central Valley was tied to the settler-colonist destruction of the Midwestern forests, and connected through global value networks to the fates of landscapes around the world.

Though these eucalyptus forests were broadly tied to distant landscapes, they lacked the diverse connection with their immediate environments, both because of their nature and their nurture; or their biological qualities and the human methods of their planting. The fragrant oil of eucalyptus trees and their nutrient-poor leaves evolved for specific Australian ecologies alienated the newly arrived tree from Californian species. Blue gum eucalyptus trees secrete a distinctive-smelling oil in their wood, bark, and leaves. This oil, which consists of terpenes including cineol, pinene, and limonene, acts as a natural allelopathic fungicide and insect repellent, preventing most species not adapted to it from predated on the tree (Graça 2002, 1175). This eucalyptus oil does not remain on the tree; it is dropped to the ground through the leaves and bark of the tree, and is also dispersed by rain and fog drip, driving away competitors (del Moral and Muller 1969). Their allelopathy extends beyond such biological traits; the close formations that they were planted in by non-expert entrepreneurs left little space for other species to survive, squeezing out diverse systems in exchange for scalable monocrop arrangements more translatable into profit. These strategies were not new to colonists; scalable plantation logics had been utilized for their exploitative potential for many years in agriculture. Tsing writes in *The Mushroom at the End of the World* of these logics, and how they function in other examples. Cash crop species such as sugarcane, brought from overseas by the Portuguese, were isolated and insulated from their landscapes compared to native species networks. It was thus possible to abstractify and standardize them, along with the similarly alienated labor of enslaved humans also imported to the plantations. No longer did attention have to be paid to individual landscapes in order to access their resources; indeed the “dream of alienation” (Tsing 2015, 5) banishes these particularities, reducing them to weeds, pests, and disease interfering with the crop. By

treating plants and people as capable of standing alone, “as if the entanglements of living did not matter,” (Tsing 2015, 5) colonists invested in dream worlds unencumbered by multispecies connection, where particularities of individual living arrangements were flattened into expandable abstract units of value. Eucalyptus trees were also treated as such, transported from across the world and thus immune to many of the pests and particularities of California and free of those from Australia, they grew even faster than their recent ancestors in their home country. The demands of profit ensuring their close planting, simplification and alienation were built into the structure and nature of the monocrop eucalyptus plantations. Instead of learning new environments, colonists transformed them into simplified factories of abstract value. But these factories, unlike living entanglements, cannot support themselves, and once they fail or are no longer valued, they will be deserted. This failure is built into their success. Constructed on the falsehood that any living thing can exist alone, the more that plantations succeed in wiping out multispecies connection, the faster they fall; schemes of proliferation collapsing in on themselves, unable to support their own weight.

Though many had known the truth of eucalyptus lumber for decades, it wasn't until 1913 that the eucalyptus bubble finally burst, with the arrival of an industrial trade publication's report written by Harry Donald Tiemann of the USDA's Forest Products Laboratory (Farmer 2013, 206). This publication systematically debunked the theories of eucalyptus's suitability for lumber, and declared the tree borderline useless for anything more than fence posts. There were ways to treat the wood and avoid these failures, but these methods were expensive and time consuming, and the facilities for them did not exist at anywhere near the necessary scale to make profit. The plantations of Frank C. Havens, Adolph Sutro and many more were completely devalued overnight, and many of them instantly abandoned. The causes of this sudden lack of

use for eucalyptus were multiple, and many of them were directly connected to factors that originally drove their widespread establishment.

Eucalyptus seedlings grow tall and fast, putting their energy into raising their flammable crowns away from the ground before fires can catch them. Particularly in close-planted groves, where eucalyptus cannot spread its branches horizontally to catch as much sunlight as possible, this growth tactic results in tall, straight, top-heavy trees. Humans encouraged this behavior, hoping to get long planks and poles from the trees. But in order to hold this top-heavy physiology, eucalyptus developed what Farmer calls high-tension wood (Farmer 2013, 192). This wood was particularly strong, dense, and full of sap and water, but it was also more brittle than the lumber of slower-growing or lower-growing trees. Releasing this tension by felling the trees often caused the wood to check and break internally. The slow release of the liquid content of the wood over time also caused anything made out of the wood to twist and warp in unpredictable ways, making it useless for most purposes. The same qualities that fueled the colonist support of the tree, its maximum exploitation of surrounding resources and consequential rapid growth, led to the ultimate failure of the massive project. Colonists selected eucalyptus trees for traits they idealized and planted them in patterns they found profitable, but in the case of the eucalyptus groves and the ongoing imperial endeavor, there were and are long term, self destructive consequences for the respective systems and their landscapes.

Another contributor to both the establishment of eucalyptus plantations and their downfall was the various human materials and ideas surrounding the tree. People, corporations, and states wanted the eucalyptus trees planted for profit, for afforestation, for health, and many other reasons; each came accompanied with advertisements and scientific reassurances claiming authority and certainty of success. Certainly efforts were made to record the trees, to understand

them and thus gain mastery over them, but many were hardly reliable sources. Indeed, many created fraudulent reports of tree growth and claims of wildly successful and profitable groves, and were aided by organizations such as the Forestry Society of America (FSA) who contributed exaggerated “professional” estimates. The FSA consisted of barely 100 people, over half of whom were invested in eucalyptus themselves - as were other prominent authorities such as the State Foresters GB Lull and George Homans (Metcalf 1924, 5; Clar 1959, 304). It was these forces that kept people ignorant of the uselessness of eucalyptus lumber, despite the fact that the tree had already been present in California for over fifty years. The investors that fueled the eucalyptus boom were not farmers and arborists operating from their own knowledge, but rather urban and suburban opportunists going by word of mouth. Through lack of attention, lack of knowledge, and purposeful misinformation for personal profit, humanocentric beliefs that men and science could master nature were disseminated through writing and deeply affected the world.

In summary of Part I; we see the arrival of eucalyptus and its broad establishment as parts of imperial agendas of profit, replacing previous diverse native species networks disrupted by settler colonialism and shaping new landscapes. Ideas become affiliated with eucalyptus trees through these processes, both intentionally and unintentionally, and they begin to be worked to complete various physical and ideological projects. These ideas, often attached to the distinctive and recognizable physical traits of the eucalyptus tree, incorporated eucalyptus trees into the settler colonist mission of building landscapes that to their eyes were civilized, clean, profitable, and productive. In the making of such landscapes according to plantation logics of alienation, failure was sowed along with the eucalyptus seedlings, leading to the eventual discarding of the plantations.

This is a very brief history of eucalyptus in California, compared with the multitude of diverse stories of each tree and person and corporation and piece of land involved. The closer I try to draw to a specific topic's history, the deeper and more complex the worlds surrounding it inevitably become, impossible to fully express in a single paper. In pointing out processes of universalization that take place in the world, I think it is important to point out where I also generalize many distinct stories and pieces of information into broad arguments. The process is unfortunate in its reduction of detail, networks, and individual worlds, but obligatory in order to see and tell larger patterns of world-making. In part to combat this academic generalization, in part two I visit particular sites and tell their individual stories, and the importance of their details and specificity in figuring out possible futures with eucalyptus.

## PART II

Today, a century after people broadly stopped planting eucalyptus trees, they still appear in many different forms across various California landscapes. Solitary eucalyptus trees remain across the state, but their impacts upon surrounding ecologies are minimal compared to those of plantations, and at the end of their lifespans they will not be replaced. Nowhere outside of the *Eucalyptus globulus* plantations in the Bay Area fog belts has any species of the genus managed to truly naturalize themselves, to sustain and increase their populations (Yost et al, 2021). Part II examines several of these sites of complex overlap between people, trees, and place, where eucalyptus has managed to multiply and dominate landscapes. Through visiting the plantation forests and exploring these landscapes and their particular histories, this section investigates how these ruins of imperial pursuits are still active agents entangled in the ecological and political making of the world.

Some of the effects of these sites upon their human and nonhuman surroundings come to mind quickly, most particularly the charred aftermaths of forest-urban interface fires and the vanishing of native species from within their groves. But there are more details, physical and otherwise, that only appear with a closer look. Stoler writes about the various legal, social, and political ideas that cling to ruins, and how these associated things and ideas-of-things can be “mobilized for different projects; they have ‘polyvalent’ signatures, their potentialities undecided and unfixed, yielding different agendas and possibilities”. These expressions, as Stoler calls them, can be and are used by both those who celebrate ruins and their colonialist histories and those who condemn them (Stoler 2016, 20). Part I showed how human ideas of colonialism first became fixed upon eucalyptus trees; Part II shows how these ideas stuck to eucalyptus for many years afterwards, reinterpreted into various new narratives and fueling more remaking of human-eucalyptus landscapes.

In order to confront these “occluded histories” of the relationship between the imperial ruins of eucalyptus plantations and their ongoing impacts, this paper calls upon the visiting strategies recommended by anthropologists Ann Laura Stoler and Anna Tsing. Stoler argues in *Duress: Imperial Durabilities in Our Times* that our preconceptions of imperial debris, existing ideas of how colonies, legacies, and other “vestiges of colonialism” (Stoler 2016, 18) appear and behave, hide the true depth and diversity of the debris in all its forms. Even our modern concepts of what imperial debris looks like are shaped by colonialism’s history and rationales of abstraction. In order to move past our own preconceptions, it is necessary to perceive them, to pay attention not just to the world but to our own noticing of the world. “Sensory regimes”, says Stoler, “might be called upon to do the work that concepts cannot” (Stoler 2016, 339). Concepts are uniform, while landscapes and debris are patchy, uneven and particular, qualities that can

only be noticed by paying attention rather than assuming uniformity. This patchiness is also brought into noticing strategies by Tsing in her investigations of plantation aftermath in *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* and *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*. Despite the human devaluation of places deeply disrupted by simplification and alienation for the goals of asset production, these ruins can hold and create unexpected and interconnected multispecies life (Tsing 2015, 6). Eschewing the human-ascribed false logics of self containment, life forms, ideas, and other debris are constantly changed and contaminated by each other and by their unique surroundings in constant transformative encounters. Noticing is unnecessary in worlds where all individuals are standardized, and can be organized through logic and mathematics rather than natural history and ethnography (Tsing 2015, 28); to see more complex and difficult realities other strategies are necessary. To understand how the dead and living ghosts, monsters, and ideas and beings assemble within and shape the same spaces it is necessary to wander through their real, historical, biological and semiotic landscapes, taking notice of both the “strange and wonderful as well as the terrible and terrifying” (Tsing et al 2017, 7). As more and more of the world becomes wrapped up in these simplifying logics and ruins, no longer will plantation logics be capable of sustaining us in a world they have deemed used up, in an era of Anthropogenic planetary catastrophe. It becomes more and more vital to instead develop such habits as going visiting, and the skills of seeing life within ruins.

## MOUNT SUTRO

In 1886 a grand publicity event marking the first Arbor Day took place, wherein San Francisco Mayor Adolph Sutro led schoolchildren in planting 11,000 acres of eucalyptus seedlings atop Mount Sutro, then named Mount Parnassus, and across other sites in the city

(Sussman 2016; Thompson 2015). German by birth, Sutro was a silver mining magnate who spent millions of his investors dollars and many thousands of Sierran pines digging a tunnel to the Nevada Comstock Lode. With the money he made Sutro moved West in 1880 and bought up valuable San Francisco real estate, at one point owning up to ten percent of the city, and played an influential and independent role in the development of the city's landscape. The trees he planted were not intended to only be beautifying ornaments to the city park; established along with the eucalyptus on Mount Sutro was a lumber mill intended to turn the space into a profitable industrial area (Stewart 1962; Thompson 2015). But these dreams were abandoned when the difficulties of the wood were discovered, and since then the trees have been mostly ignored, soon spreading out of their plantations and covering the park. Mount Sutro Open Space Reserve is now owned by the University of California San Francisco, and several trails run through the dense eucalyptus forest, one of which I visited and climbed.

Mount Sutro and its leggy communication towers and eucalyptus trees loom above the center of the San Francisco peninsula, a dark peak to a colorful mountain of expensive houses and apartments. It was a warm sunny day when I visited, but upon following the trail up high into the trees the air became cool, the lights dimmed and the noise of the outside world muted, the complex smells of San Francisco replaced by that of eucalyptus. All was not well in this forest. The dense Tasmanian blue gum trees, which grow tall and narrow in the canyons and slopes of the mountain, were covered from root to canopy in English ivy and other parasitic plants. Epicormic leaves, a tree's last-ditch attempt to access needed sunlight, erupted from the trunks of many of the trees, while others stood leafless and sickly. The ground was carpeted in thick layers of bark, shed eucalyptus leaves, dead trees, and ground-covering invasive plants. No birds sang that I could hear, and I saw no animals but humans and pet dogs walking together.

Mount Sutro is not alone in this sickness. Severe dieback of eucalyptus and other tree species in the Bay Area has been documented, with the main culprits being California's recent droughts and an overloading of trees as compared to available resources (Dowd, 2021). These regions would have been burned frequently to retain open spaces before colonization, very similarly to eucalyptus in its native habitats and indigenous practices. With fire suppression mandated in the urban park, the trees already planted too densely for their health were not getting the sunlight they needed. Also impacting the health of the blue gums was the relatively recent arrival of some of their predator species from Australia, psyllids and other insects that evolved alongside the trees and whose bitemarks can now be seen on gum trees across the state (Paine et al 2006). Initially the disconnection from eucalyptus and their predators advantaged their growth and reproduction, but now that the trees are established so close to each other the insects can rip through their monocultural populations like disease or wildfire. Such effects are what Tsing calls "monsters" of the Anthropocene, unexpected repercussive effects of plantations. Initially alienated from surrounding environments and never exposed to usual ills, proliferations of identical eucalyptus trees are later far more capable of rapidly spreading such infectious things between them, as they all have precisely the same weaknesses. Fires and diseases that would otherwise burn out quickly instead gorge themselves on excesses of fuel, spreading far further than would be possible in an interconnected and diverse landscape. The dream of alienation simplified this landscape for profit, and continues to haunt its ruins. The success of infectious and destructive fires, diseases, and pests in eucalyptus forests are some of the legacies of imperialism that continue to hold power long after their origins are forgotten.

Some of the eucalyptus trees had been cut down around the zig-zagging trail on the side of a hill I climbed, their stumps, roots, and burly lignotubers exposed to the sunlight that broke

through the patchy canopy of crescent leaves. Through the open space the city below me and the blue bay beyond were finally visible. But already the gap was closing; thick clusters of new shoots were springing up from the stumps, many of them already taller than my waist. Older stumps sprouted new limbs and trunks so broad as to be nearly indistinguishable from an unharvested tree to my untrained eyes. This ability to resprout with great speed, once so valued by colonists, had become another hated aspect of eucalyptus trees. Eucalyptus are particularly difficult to permanently remove. Their roots, which grow as fast and as broadly downwards as the trunk and branches grow up, make it nearly impossible to pull established stumps from the ground. (These roots are also notorious for invading underground sewer systems in search of moisture, a deep inconvenience to local governments.) Eucalyptus trunks must be manually ground down, a time-consuming and expensive process. Additionally, it is usually necessary to apply tree-killing chemicals (the most popular option being Roundup) to the stump in order to prevent regrowth, a deeply unpopular prospect to many particularly in the well-traveled parks of expensive San Francisco neighborhoods. On top of these costs to nature and tax-payers pockets are the costs of disposing of the often large and heavy trees, which due to their density and lack of local associated fungi and insects are superbly slow decomposers. Often in tree removal projects the lumber is sold to make up at least the cost of the removal, but basically no market exists for eucalyptus lumber in California. Regarding this topic I interviewed federal employee Erica Harris, a Conservation Project Manager at the San Mateo Resource Conservation District's Forest Health and Resiliency Program, who specializes in eucalyptus management. Harris holds a degree from UCSC in Environmental Studies, and has experience working for the Forest Service as a wildland firefighter on hotshot, engine, and helicopter crews. Much of Harris's job within the program is to help San Mateo residents understand the trees around them and what is

necessary to do to manage them. Some of what the program does is assist the public in identifying trees that can or should be removed, drawing up plans for removal, and facilitating the removal process. Discussing the state removal process with Erica showed the extreme contrast between the valuation of the tree today and in the past. The wood once called “blue gold” now is difficult to dispose of; Harris told me that up to 20% of the cost of eucalyptus removal would often go into finding a way to dispose of a huge amount of wood that nobody wants. The trees are often turned into wood chips for power plants or pulp for paper, but studies have shown that such a process often still results in net financial loss, particularly when only singular trees are being removed rather than large groves (Hartsough, 1990). Harris mentioned that a new method of disposing of the trees was becoming available; through pyrolysis they can be turned into biochar, a profitable substance that can lock carbon into the ground and has a multitude of environmentally friendly uses. However, the only facility currently able to handle the amount of biomass that eucalyptus trees create is in Stockton, an unsustainable distance away, and does not have the capacity to process the amount of trees that are currently being removed. Many of them, unable to naturally decompose because of their allelopathic traits, instead end up sitting in landfills amongst other human debris. Even once the trees are successfully removed more work is required to rehabilitate their former sites; the allelopathic nature of the oil that soaks from eucalyptus leaves into the ground discourages native plants and their many accompanying species of decomposers from taking root.

Planting seedlings is easy, but such actions, given time, grow into widespread and unexpected consequences that are hard to undo. Companion species have their own agencies and quirks that we with our human brains and limited knowledge cannot understand, and particularly not when imagining landscapes with settler colonist thinking that refuses to acknowledge them.

The difficulty of fixing these past mistakes was realized by the National Park Service in their management and rehabilitation of Angel Island in 1996, when California state prison inmates cut down and removed thousands of eucalyptus trees. Once forested by oaks and inhabited by indigenous Miwok tribes, the island had been cleared for cattle grazing by the Spanish, and then used as a military fort and immigration station for many years by the Federal government before eventually being made into a California state park. The blue gum trees were initially planted in groves by the island's military bases to provide windbreaks and help with erosion control, but in the foggy and unmanaged region eventually spread to cover the entire land mass (Farmer 234). The park removed the majority of the trees, leaving some of the historically significant original groves at the bases and individual eucalyptus trees along the roads. The process of removal was very expensive and not an initial success; native species planted to replace the eucalyptus failed to thrive, and many burned in recurring wildfires years later, often being replaced by more aggressive and disturbance-friendly non-native weeds. A small but extremely vocal group of Bay Area residents still point to this fire and the original mixed success of reintroduced native plants as reasons to not repeat the process on Mount Sutro, arguing that the ability of eucalyptus to harness fog drip in fact brings more moisture to regions, supposedly reducing risk of wildfire. Serious progress of the likes of Angel Island's restoration have been slowed by poor funding and blocked at almost every turn by local pro-tree activists, calling themselves the "Mt Sutro Stewards", who repeatedly sue in order to block the removal of the trees, arguing that they are safer and more beautiful than native greenery, and that their being removed because of their non-indigeneity is nativist prejudice (Thompson 2015, Marris 2016). Pro-eucalyptus pushback can be seen outside of San Francisco, too; groups like the Hills Conservation Network in the Berkeley hills have followed the same strategy of suing for the trees, though they have been met

with slightly less success than the self-named Stewards (Metcalf 1924). These arguments regarding nativity are addressed by Mastnak, Elyachar and Boellstorff in their analysis of colonialist legacies in environmental rhetoric, where they argue that only by forgetting histories of violent and intentional planting and displacing can non-native species be regarded as embattled immigrants rather than participants in colonial destruction. The line dividing “native” species from new arrivals is not an arbitrary one, and attempts to reduce it to such are as much a legacy of colonialism as the abandoned trees themselves. The Stewards keep the trees alive without seeing or solving their deteriorating conditions, or even acknowledging their disconnection from their environments. Such an action banks upon the false “assumption of a “pristine pre-Columbian state of nature”, where forests and other natural places maintain themselves alone, uninfluenced by human culture - a dynamic supposedly to be replicated for the future health of forests (Mastnak, Elyachar and Boellstorff 2014, 375).

Though eucalyptus lovers are outspoken and committed, their numbers are relatively small. Many more people consider the plant invasive - a term that like “weedy” is rather ambiguous and perhaps relates more to the plant’s relationship with people than any inherent quality. Both are unwanted, or at least unintentional. Invasive plants have become representative of the negative effects of humans upon environments, embodying such legacies in the eyes of populations becoming more cognizant of such processes. Eucalyptus is particularly recognizable in size and appearance, and so draws plenty of this negative attention. Both people who love and hate eucalyptus trees paint them with ideals of colonialism connected to its known or unknown history, only with different contexts, perspectives, and opinions. Stoler speaks of “imperial formations [that] prodigiously produce specialized lexicons of legal, social, and political terms, concepts, and enduring vocabularies that both innocuously and tenaciously cling to people,

places, and things” (Stoler 2016, 20). These lexicons, like their physical formations, can be applied in multiple directions, into various “reappropriations, strategic neglect, and active positioning within the politics of the present” (Stoler 2016, 350). Many eucalyptus trees are flattened and mobilized into people’s existing environmental rhetorics rather than observed, evaluated, and managed individually. Often supported with common materials and human knowledge of biology and science, both the decisions to remove eucalyptus and the decisions to not remove them are engagements with the broader imperial legacies of physical and ideological landscapes.

#### ANGEL ISLAND

Officials have responded to the pro-eucalyptus protestor claims by pointing to the current state of Angel island, which is healthy and diverse in native species. When I walked around the island I saw that the native plant areas seemed to support a functional ecosystem. While there I saw and heard many bird species in the oak forests, and also spotted a coyote and a young stag, both of which looked (to my non-expert eyes) to be in good health. The remaining eucalyptus trees, spaced out in groves or planted alone along the path, looked free of drought symptoms as they lacked epicormic sprouting. Though there was some buildup of bark, leaves, and tree detritus on the ground beneath them, most of the ground around them was cleared - presumably by the National Park Service, which currently manages the island. Oak and bay trees and other local plants cover most of the island, though some of the imported biological features considered important to the historical past of the site remain. Though the short-term effects of the eucalyptus removal seemed dire, and many were unhappy with the deforestation, in the long run the action led to a more functional and complete landscape. Only about thirty people live full time on the island, all of whom work closely with the environment they inhabit. I spoke to one

groundskeeper who told me about the complex layers of natural and social histories on Angel Island that had to be preserved and balanced against the present health of the island's ecosystems. He described to me the specific plants on the island that held significance in his mind; the flowering agave plants brought from the south, the dead stumps of some of the trees burned in the Angel Island fire, and the non-native green grassy lawn in front of the dock, which could not be pulled up and replaced with buffalo grass because a Native American burial site had been found barely two feet below it. The good health of the island seemed to be a direct product of the close knowledge and careful management of its inhabitants. This space being similar to Mount Sutro in its native ecologies, dense human history and relative isolation, Angel Island being surrounded by water and Mount Sutro by the city of San Francisco, city officials hope to accomplish the same goals in the inland park, and fear the worst if they cannot. To find that worst case scenario we must look to the past, at the Tunnel Fire of 1991 mentioned in the introduction. Berkeley, just across the Bay from Mount Sutro, has many similarities in both ecology and history. It was planted with eucalyptus trees during roughly the same time period, also by an entrepreneurial public figure with an eye for real estate. Frank C. Havens, who also owned the Claremont Hotel and the San Francisco Bay Ferry, planted 3,000 acres of seedlings in the hills he owned above Berkeley and Oakland (Farmer 2013, 206). There, too, the trees and houses and people soon proliferated under fire suppression. But the fog belt proved to be fallible, and under the right dry, hot, windy conditions, everything burned. From the 1920s to the 1990s, many fires burned through the wildland-urban interface in the Berkeley and Oakland hills. These fires took out plants and structures indiscriminately, fueled by intermittent droughts and by the tens of thousands of eucalyptus trees still remaining from groves that had never been harvested, or that had grown back from stumps. Eucalyptus, though still firmly entrenched in the

California image, began losing its PR status as a wonder plant, instead earning the nickname of the “gasoline tree”.

On October 19th of 1991, a small grass fire by the Caldecott tunnel between Oakland and the Berkeley hills escaped firefighters and ran into an old grove of eucalyptus trees. It had been a hot, dry year, and the trees quickly ignited, forming ladders of flame from piles of bark and leaves on the ground up the tree and into the canopy. Once eucalyptus fires reach the canopy layer, they are almost impossible to stop, igniting the oily leaves into “explosions” of flame and raining sparks and burning debris onto the ground below. The lightweight leaves and peels of bark often float away, particularly in windy conditions, forming the firebrands that can cross fire lines and rapidly advance the borders of the fire. By the end of October 23rd, the 1991 fire was extinguished, but it had already covered 1,520 acres, burned down over 3,000 structures, and killed 25 people in northern Oakland and southeastern Berkeley. At the time the fire, also known as the Tunnel Fire, the Berkeley-Oakland fire, or the Oakland Firestorm, was the most destructive and expensive blaze in California history (Simon, 2017). Some regard it as the first of the mega-fires that now annually run through California’s urban-rural interfaces; in any case it marked another change in public perception of the tree as people began to recognize the danger they could present. As human-caused climate change, another product of the Anthropocene, increases temperatures and intensifies droughts, fires become more common and more severe in California, and trees more vulnerable to them. These fires and the destruction they wreak, like the forests and houses they consume, are part of the consequences of our actions and non-actions in California, monstrous proliferations of disruptive colonial legacy. Only by recognizing them as such and connecting them to their origins can we hope to begin to work against them. The

next site visit explores the recent aftermath of another such fire, and the different ways in which people and eucalyptus responded.

## PIE RANCH

My first site visit was to Pie Ranch, a small farm perched above Highway 1 roughly halfway between Santa Cruz and Half Moon Bay. Signs advertising pies and produce greeted me; pulling off the highway I was directed by a volunteer past the wooden storefront and up a dirt road into the valley. Two fields of produce extended out in front of me, outlined by rows of eucalyptus trees that extended up into the hills.

First established in 1863, Pie Ranch introduced many new plant species into the sunny hills and valleys that pre-colonization were covered with many species of native grasses that were managed and burned by local people. Among the newly introduced plants were eucalyptus seedlings, laid in long rows along the edges of the fields, intended to protect their fellow settler-colonist plant enlistees from the fierce Pacific winds that had kept previous ecologies flat and low to the ground. The trees and other recently introduced plant species also served to secure the valuable arable soil from erosion once the native grasses that had previously held it in place were ousted.

A year before my visit, the trees of Pie Ranch had burned during the CZU Lightning Complex fire along with over 86,000 acres in the hills and mountains of San Mateo and Santa Cruz. The farm also lost its historic 157 year old farmhouse to drifting embers igniting the wooden structure. Many trees died during the burn, and fell to the ground or remained standing as blackened skeletons; but not the eucalyptus trees, though they had suffered a blow. Evolved for fire ecologies, the eucalyptus were better able to survive the fires than the other trees, though

they now showed signs of severe stress, such as advanced epicormic sprouting indicating the death of the outer branches.

Several traits go into the ability of eucalyptus trees to survive fires in their adulthood. Some seem illogical, such as their oily and highly flammable bark and leaves, which easily catch and spread fire, capable of detaching from trees and drifting alight for miles. But the speed at which they catch fire increases also the speed at which the fire burns through them and is extinguished, preventing longer and hotter burns. The high water content of the tree bodies not only aids their speed of growth but also increases the resistance of the tree trunks and limbs to heat and flame. These particular trees had in fact achieved more than survival, bursting not into fire but into life; covering the ground below the dead and living trees were thousands upon thousands of eucalyptus seedlings, a knee high carpet of blue-gray coin-shaped leaves, shifting softly over each other in the breeze. Another example of their fire-adaptedness; eucalyptus trees use thick seed pods to protect their genetic offspring from the brief fires they periodically encounter and propagate. Once the fire is over, the pods crack open and deposit their contents onto the nutrient-thick ash. Immediately after the burn, when resource competition is at its lowest and the chances of another fire occurring are negligible, is the best time for new seedlings to establish themselves; they thus survive on the disruption of fire. The burned trees and farmhouse were not the only ruins to be found at Pie Ranch; the freshly-sprouted seedlings were also imperial debris, new life echoing the past and stretching into the future, fed on and feeding the disruption of colonial legacy.

A couple dozen people had also showed up at Pie Ranch that day; our task would be to pull up all of the thousands of seedlings by hand. It was the farm's first "euc-a-thon", organized by the owners of the nonprofit educational farm in collaboration with representatives of the

Amah Mutsun Tribal Band and the San Mateo Resource Conservation District. We first listened to these organizers speak about their history and connection with the land, and were blessed with white sage smoke before we started our labor. The Amah Mutsun are descendants of a larger group of people called the Ohlone, who occupied and managed regions south of the Bay for thousands of years before European arrival. Their practices of burning and other forms of land management have been deeply disrupted, which they believe has caused the severe fires and degradation of landscapes. But despite their violent marginalization, the Amah Mutsun representative told us they still believe it is their duty to take part in and rebalance the environment for their connected health, and the health of future generations.

In teams we worked our way along the hillsides surrounding the small valley, yanking seedling after seedling. Most of the new seedlings were easy to pull up with one hand, or even several at a time; a few older ones had already sunk roots too deep to be tugged out when we clung on several people to a branch. Even with the garden gloves the farm had provided us the sharp scent of the crushed young leaves soon stuck to our clothes and skin, along with the charcoal of the downed trees we climbed to reach new pockets of seedlings, and the dry dust that lay in soft drifts along the roadside, soil released from the hold of charred vegetation.

Where is the boundary between the colonial and the postcolonial world, in time and in space? Mastnak, Elyachar and Boellstorff argue that we still live in the throes of colonialism; that the reality and legacy of botanical colonization shape our physical and political worlds (Mastnak, Elyachar and Boellstorff 2014, 370). There is no way of undoing this, of fully restoring precolonial environments, of returning all of Pandora's companion species to their respective continental jars, sealed away by vast oceans. We must learn how to live with them and their environmental consequences, both those intended by settler-colonists and otherwise.

Acknowledged or not, eucalyptus has its own agendas and effects upon the landscape. By working to understand the trees and become involved with them, it is possible to shape these mutual landscapes into diverse and sustainable futures. Moving forwards with eucalyptus is necessary; they are here, there is no moving forward without them. Author and Anthropocene scholar Donna Haraway writes of such more-than-human relationships in her *Companion Species Manifesto*, stating that such a “relationship is multiform, at stake, unfinished, consequential” (Haraway 2003, 30). Multispecies relationships and mutual cultivation are constants, even when unacknowledged or denied by humans, as in the case of the Mount Sutro Stewards. Human cultivation of landscapes is not inherently negative; it has been happening in balanced and sustainable ways for millennia before the Anthropocene, as the burning of California landscapes by indigenous people shows. But approach matters.

In another work named *Staying with the Trouble*, Haraway writes of a project intended to ramify the proliferation of another colonist companion species; a pigeon loft in which the eggs the feral birds lay are removed and replaced with fakes, preventing their reproduction. This scheme, like the plans to remove eucalyptus trees and seedlings, is not a “prolife project” (Haraway 2016, 28). Being “for life” is an easy statement but destructive in its simplification and lack of responsibility. What kinds of life does such an approach build, without nuance or response to environment? On Mount Sutro it has created a forest choking on itself. Pro eucalyptus activists choose disconnection over interaction with landscape, and do not take up real responsibilities with the trees. To argue for the blanket preservation of these trees is not only an act that contributes to simplification but an act that relies on it, that relies on not looking at the details, not paying attention to present states and to histories. Processes of landscape simplification require our forgetting the complexities of land; to combat this we must take notice

and take up action again. The solution of the Anthropocene is not in removing human influence from the world, an impossible task and one that would hardly solve the many Anthropocenic issues already rooted in human disconnection from environment. The pigeon loft and the eucalyptus removal projects take on responsibility with the companion species, new “possible thread[s] in a pattern for ongoing, noninnocent, interrogative, multispecies getting on together.” (Haraway 2016, 28). Taking part in landscapes means taking part in the living and dying of other species; doing so in anti-colonial ways means taking part collectively, with care and attention.

Examples of this can be found at Pie Ranch, where community projects seek to deepen and complicate the relationships between people and their landscapes. Through the development of foodways, landscapes, and knowledge, people become more closely tied to their ecologies, taking up new responsibility with them. Community removal of the fire-born seedlings is only the first stage in Pie Ranch’s plan. Next will be the removal of many of the adult eucalyptus trees on the property, and their replacement with native species. The farm has partnered with the Amah Mutsun Tribal band in this endeavor, several members of which have lived at the site to work on projects of land rehabilitation. Pie Ranch is a nonprofit educational organization as well as an organic farm; much of their work is teaching people about the land and the restoration of healthy foodways. The goal is to heal both people and landscapes, actively acknowledging the connection between the two. Pie Ranch is entangled in its local communities in other productive ways, too. At the beginning of the COVID-19 pandemic they switched from their education programs to a food distribution program in order to help local communities that had food access and food insecurity issues worsened by the pandemic. At the height of this program Pie Ranch sent out 800 produce boxes per week to families in Pescadero and the Bay Area. Some of the food was grown at Pie Ranch, the rest brought from other local farms in a group coordination.

Now Pie Ranch is still working on buying organic produce from farms affected by the pandemic, particularly small farms owned by women and people of color, and redistributing the food on a smaller scale, while also launching more education programs and continuing to sell their own organic produce.<sup>1</sup> Globalized disease, patchy and unbalanced concentrations of wealth and poverty, and ignorance of landscape (the crux upon which the rest depends) can all be understood also as imperial debris. In the colonial projects of transforming landscapes into plantations, land and imaginations of land are made uniform together, creating networks of global value transmissibility by alienating local relationships of knowledge and interaction. Diseases travel easily through broadly interconnected worlds, fueled by homogenous populations of monocrop plantations. In such a world, humans blinded by belief systems and forced disremembering become dependent upon these networks rather than their environments, forced into the same systems of standardized labor and existence. In their work to feed local people with local food, to support small farmers and teach the public about the specifics of their living landscapes, the Pie Ranch programs are active engagements of the ruins we live amongst. These programs are led with learning and knowledge, not profit or dominion, rehabilitating the same land they live and labor on.

## CONCLUSION

We can see from the already described history of eucalyptus in California that settler colonists and eucalyptus have, since the day of the first gum's planting, participated in world-making together, deeply affecting landscapes with their combined interdependent actions and reactions. But this worldmaking has been both thoughtless and careless. Settler colonists intended to impose schemes of simplification and replication across landscapes to extract profit, and wreaked havoc upon ecosystems in their widespread displacement of native species.

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<sup>1</sup> Pie ranch food program

Eucalyptus trees were established by people who often never set eyes on the land they were planting on, on the things they were planting over. In the prioritization of exploitative short-term profits, in the ease of lack of responsibility and knowledge that arises from disconnection, and in the broad and impersonal reach of remote control of land, were the keys to the ability of plantations to spread across California and the world. But self destruction is intrinsic to these schemes. Eucalyptus plantations failed because they grew too fast, disrupting capitalist intentions for the wood. Their disconnection from California's evolutionary history helped them thrive, escaping their Australian predators and driving off potential Californian ones, but eventually contributed to their overcrowding and degradation of life. And they did not only affect themselves, crowding out native species, soaking the ground with oil, and burning down human landscapes. Though some may pretend otherwise, we also live in and are connected to these landscapes of our own ruin, and our ultimate fates, as climate change shows, are tied.

In order to heal people and landscapes, it is necessary to turn against these things. We must relearn to value the long term over the short, and see tangible and intangible wealth outside of money. We must relearn our landscapes, their tangles of interspecies relationships making and remaking up the world. Sustainability, argues Tsing, is "a multispecies affair" (Tsing 2017, 62). If multispecies worldmaking is the only way to create a truly sustainable future, we must look at these relations and pay attention to their multi-ness, to their diversity of being, and tend to the worlds and futures we want, taking up responsibility with them. This cannot be accomplished by the same oligarchic individuals, corporations and state governments that broadly enacted the schemes of plantation in accordance with narrow views; it must be done by the diverse people living within them. The first step in reconnection is recognition.

Throughout this paper I have attempted to trace the diverse proliferations that emerge from deteriorating eucalyptus plantations, as the active legacy and ruins of settler-colonist projects. This debris includes the firestorm that consumed Berkeley in 1991, and the one that burned down Pie Ranch last year; the psyllids and malarial parasites, the new fire-born seedlings, and the many ideas attached to the trees, both positive and negative. Such imperial ruins hold power, even when their origins are forgotten. Also included in such debris are the books and articles I read in my research, the photographs and advertisements, and this paper itself in its attempts to engage with such legacies.

These lessons of legacy are not only applicable to eucalyptus; we can apply them and practices of noticing to other biological and semiotic ecologies, to diversify our knowledge and bind ourselves tighter to the world around us. We live always amongst the ruins of the past. Disremembering such histories and our connections with them does not sever our responsibility or influence over imperial debris, nor does it free us from their consequences. A more balanced approach is to take up responsibility with care, knowledge, and attention to detail, to work against Anthropocenic forces of abstractification and simplification.

I can make guesses on the futures of eucalyptus in California, but to proclaim any universality on it in the state or even in the Bay Area would be antithetical to the intentions of this paper. Such universality was among the goals of settler colonists in the establishment of eucalyptus forests; in their creation was the intentional and unintentional destruction of particular and unknown variables, members, and relationships of landscapes foreign to them. And in part they succeeded; Bay Area landscapes became and still remain disrupted, and eucalyptus in fog drip regions worked to establish simplification and universality where it was planted. These projects, like many of the Anthropocene, were less profitable than originally dreamed and

eventually integrally autodestructive, sabotaging themselves through their effect on their environments. In this way and others we remain in a settler colonist state; a state feeding on and sickened by the disruption and exploitation of landscapes. But something must come after this. As recovering ecologies rebuild, reconnect, and diversify themselves in the aftermath of fires, we must work to do the same after the disruption of colonization, to wander through the unknown ruinous landscapes of our own making, and make them anew.

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