

Hawaii has a devastating wildfire problem.

While under-publicized nationally, the scale and scope of wildfires in Hawaii are extreme:

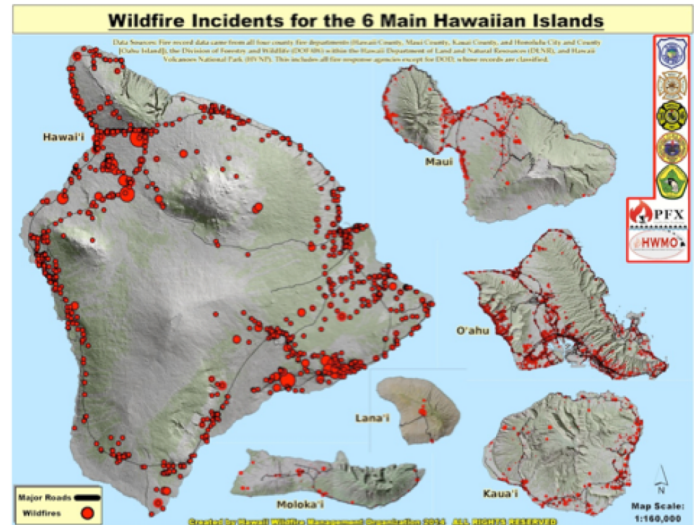
- Each year, about 0.5% of Hawaii's total land area burns, which is *equal to or greater than the proportion burned of any other state*.
- Over 98% of wildfires are human caused.
- Over 25% of the state has been invaded by nonnative, fire-prone grasses and shrubs. That percentage grows each time fire burns into native forest because the forest is then further invaded by fire prone exotic species. This means the *fire problem is growing with each new fire*.
- A warming, drying climate, as well as increased frequency and strengths of El Niño events have led to *drought conditions* that are greatly increasing the wildfire problem.
- Firefighting resources for wildfire are extremely limited. As of May 2016, the state's *wildfire suppression budget for the year was depleted before fire season even started*. Limited budgets barely cover the costs of firefighting each year. This minimizes the capacity across the state to be proactive through prevention and mitigation, such as public outreach, fuels management, and improving access and water infrastructure for firefighting.

Wildfire Occurrence in Hawaii:

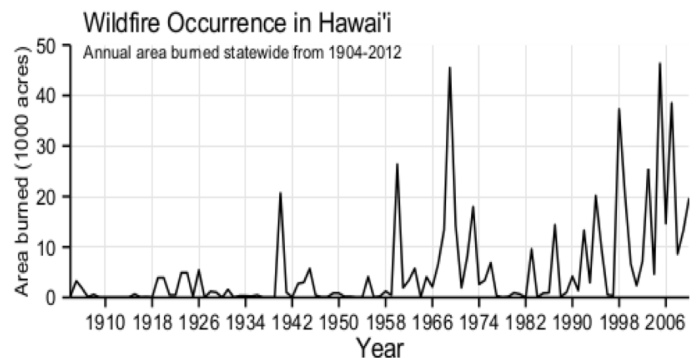
Hawaii Wildfire Management Organization and University of Hawaii CTAHR Cooperative Extension conducted a thorough compilation and analysis of statewide firefighting records, which revealed that *wildfires are increasing in frequency, size, and severity on all islands*, which threatens communities, agricultural lands, and natural resources. Yet wildfire is off the radar for many in Hawaii because, until recently, we were not able to completely articulate or communicate the scope of the fire issue nor its subtle but *irreversible effects*.

We now know that:

- Each year over the past decade almost 1,000 wildfires burned an average of 20,000 acres per year statewide, with *some years reaching closer to 45,000 acres*. On small islands, damages spread from summit to sea quickly, leading to *catastrophic impacts* to Hawaii's irreplaceable natural resources.
- Large fires (>1,000 acres) have occurred on all islands and happen multiple times each year across the state.
- Although Hawaii's largest wildfires tend to be overshadowed by large mainland wildfires, our fires cause significant long-term damage as well as immediate effects.



Hawaii Wildfire Ignitions Map (2002-2011). The majority of wildfires begin along roads and human-access areas and are accidentally or intentionally started by people. Note: the points are ignitions, not the full area burned by the fires. Wildfires range 1-35,000 acres, threatening lives, structures, and irreplaceable natural resources. Source: Hawaii Wildfire Management Organization 2014.



The area burned annually by wildfire in Hawaii is increasing. Prevention activities to reduce ignitions, mitigation activities to reduce fire spread and extreme fire behavior, and fire suppression capacity have not been supported to keep up with the increased fire hazard, exponentially increasing fire's negative impacts. Source: C. Trauernicht 2015.

Impacts of Wildfires in Hawaii are Irreversible and Detrimental:

Irreplaceable Natural Resources Are Destroyed:

- Wildfires destroy native forests and change soil, threatening native species and their habitats. *Hawaii's ecosystems are NOT fire adapted.* In many cases, once an area burns, it is replaced by fire prone exotics, *forever* changing the landscape. Hawaii is the endangered species capital of the world, and these areas are *critical habitat* for numerous threatened and endangered species. This can mean *extinction* for species limited to fire prone areas.
- Heavy rain events after fires *cause erosion that sloughs off topsoil* leaving some areas *completely denuded* and unable to support vegetation.
- Post fire erosion fills streams with sediment, depositing it in the ocean. This sedimentation *smothers coral reefs*, massively impacting water quality, fisheries, and long term coral health.

Lives, Homes, and Human Health Are Threatened:

- Many neighborhoods in Hawaii have *extreme fire hazard issues*, such as only one ingress/egress, narrow streets, few fire truck turnaround options, unmanaged/untended fire fuels interspersed within developed areas, and very limited firefighting access and water resources. These hazards make fire suppression challenging and promote fire spread, endangering communities.
- *Air quality is greatly reduced* from *smoke* during fires and for months to years after fire due to *high levels of wind-born dust* (also due to fire-caused changes to soil that leaves it hydrophobic/water-repellant and therefore easily lifted into the air in the state's frequent high winds).
- Nearshore *water quality is greatly reduced* due to *pollution* from post-fire erosion, impacting human health.

Economic and Municipal Infrastructure Are Damaged:

- Burned soil from wildfires decreases groundwater recharge, *affecting drinking water supplies.*
- Post-fire rain events cause erosion that damages nearshore resources (fishponds, coral reefs, fisheries) *impacting the state's main economic base* (coastal and marine-based tourism), as well as resident and visitor recreational areas.
- *Burned agricultural lands* reduce available land for livestock and production.
- *Traffic and road closures* during fire events and *post-fire flooding* block access to airports, keep people from their homes and work (many fire prone areas do not have alternative routes), and are costly to local governments.

Developed by: E. Pickett, Hawaii Wildfire Management Organization (HWMO). Based on analyses and informational resources produced by HWMO (hawaiiwildfire.org) and C. Trauernicht, University of Hawaii Cooperative Extension and Pacific Fire Exchange (pacificfireexchange.org).



Hawaii Wildfire Management Organization



Photo Credit: Hawaii DLNR-DOFAW
The 2006 Upper Waiohuli Fire on Maui destroyed 75% of the Forest Reserve.



Photo Credit: KHNO2: Hiilani McShane
The 2500 acre March 2016 Nanakuli Fire on Oahu extended from native forests on the ridge down to homes in the valley, destroying forests and threatening lives and property.



Photo Credit: County of Maui
Due to their proximity, wildfires in Hawaii have immediate and long lasting impacts on terrestrial and marine systems, as well as residential areas, ports, airports, and more.



Photo Credit: TNC: Ed Misaki
Post-fire erosion pollutes nearshore waters, and smothers coral reefs, greatly impacting everything from tourism and recreation to water quality and human health.

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