



# Abandoned Agriculture in 2019 is Hawai'i's Fire Problem



communicating fire knowledge across the Pacific

**In Hawai'i, the land area in active agriculture has declined by 60% since the 1960s** causing vegetation buildup.<sup>1</sup> Every wildfire incident is part of a larger pattern and is an opportunity to gain experience and insight for wildfire management. Three main factors contribute to wildfire risk:

**Vegetation** - Wildfires burn plant material, known as fuels. The spread of non-native grasses and declines in agriculture have dramatically increased fire risk in Hawaii.

**Climate** - Wildfire risk changes with rainfall. Large fires are most frequent during drought, but heavy rain prior to dry spells also increases risk by causing more plant (fuel) growth.

**Ignitions** - All wildfires are ignited by something or someone. Nearly all fires in Hawai'i are caused by people and about 75% of these are accidental, and therefore preventable.

**Significant fires** are based on satellite mapping of large fires 100 acres or bigger. In the past one hundred years, the 22,000 acres which burned across Hawai'i in 2019 ranked in the top 10 biggest fire years on record. Over 19,300 acres burned on Maui alone across 14 incidents. Nearly all occurred in abandoned agriculture fields of central Maui (Figure 1). This was due to a very wet 2018/2019 winter creating lots of fuel, followed by summertime drought and days of record-breaking heat. These conditions fueled the 8,000 acre Waiko Road Fire on 7/12/2019, Maui's largest wildfire on record. On Kaua'i, over 300 acres burned in Poipu and 2,200 acres burned above Waimea. On O'ahu, more than 800 acres burned in both the Wai'anae and Ko'olau mountains.



Figure 1. Perimeters of significant fires, central Maui <sup>3</sup>

Table 1. Four Significant Fires in Hawai'i, 2019 <sup>3,4</sup>

Locale	Date & Duration	Size (acres)	Environmental Conditions	Threatened Resources	Cause
Waimea & Kekaha, Kaua'i	June 16 2 days	2,200	More than 70% of Kauai County was under drought at the time.	Waimea Canyon, campers evacuated, electricity was de-energized. Kokee Road & Waimea Canyon Drive closures	unknown
Central & South Maui Waikapu	July 11 4 days	8,000	Record-breaking heat day at Kahului combined with severe drought and 20 mph winds	State of emergency declared by governor as fire swept across highway, power outages, road closures, airline flight diversions & power plant evacuated. No injuries or major property damage.	arson
Lower Pukalani, Maui	Aug 1 4 days	3,800	Hot & dry weather with a wind advisory in effect & gusts of more than 20 mph.	Damage confined to fallow sugar cane fields, Maui Electric power lines & Mahi Pono irrigation equipment	accidental farm equipment ignition
Ma'alaea, Maui	Oct 22 5 days	4,100	Dry conditions & steady winds fueled the fast-moving blaze.	Honoapi'ilani Highway closure, Kahana Ridge, Ala Hoku homes & Kapalua airport evacuated.	unknown

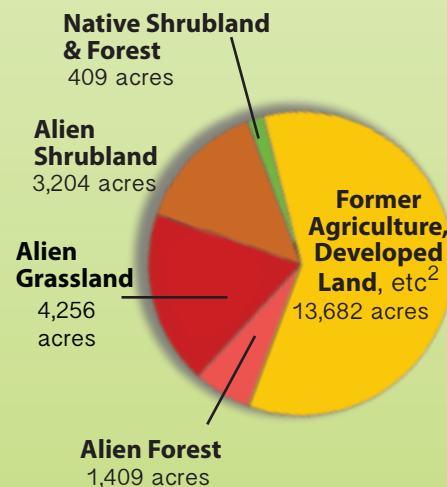


Figure 2. 2019 Acreage of Large Burned Areas Across Hawai'i<sup>3</sup>

**Notations & Acknowledgements** <sup>1</sup> Trauernicht, C., Pickett, E., Giardina, C.P., Litton, C.M., Cordell, S. and Beavers, A., 2015. The Contemporary Scale and Context of Wildfire in Hawai'i. *Pacific Science*, 69(4), pp. 427-444. <sup>2</sup> includes water. <sup>3</sup> University of Hawai'i's Wildland Fire Program used satellite images to map the vegetation types burned by the largest fires in 2019. <sup>4</sup> Fire Incident Data: West Hawai'i Today (7-2-2009); The Garden Island (6-18-2019 & 7-2-2019); Star Advertiser (8-1-2019); Maui Now (8-1-19) The Maui News (12-16-2019). Analysis: UH Wildland Fire Program.