ADEPT Committee

From: Parker Trauernicht <trauerni@hawaii.edu>
Sent: Thursday, September 14, 2023 10:21 AM
To: ADEPT Committee
Subject: Presentation for today
Attachments: 2023_09_06_Hawaii Fire context - White House S&T.pptx

I will likely cut or skip through a few slides at the beginning for brevity

Clay

The 2023 Maui Fires and the Context for Improving Wildfire Safety in Hawai‘i

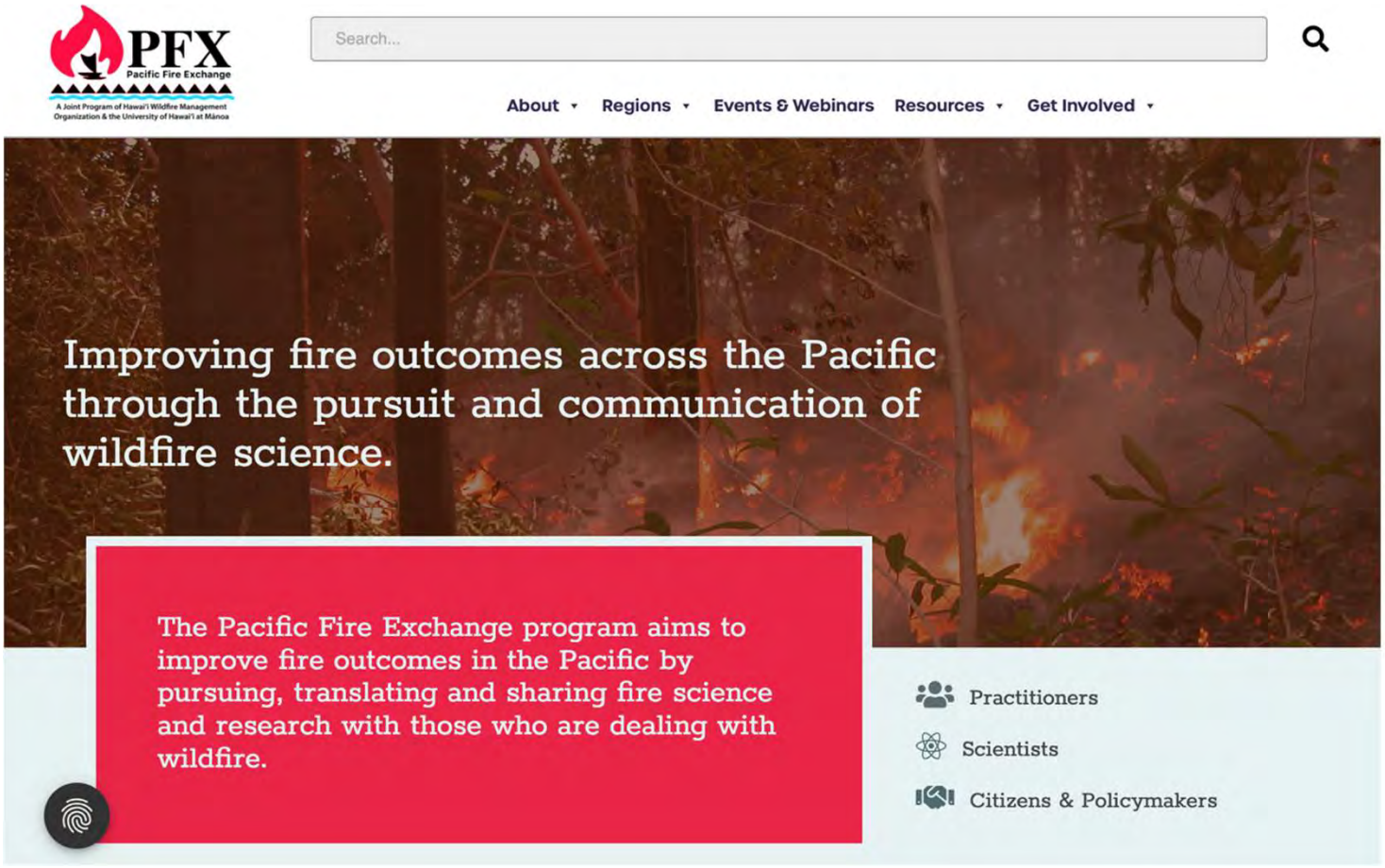
Clay Trauernicht, PhD University of Hawai‘i at Mānoa

COOPERATIVE EXTENSION
UNIVERSITY OF HAWAI'I AT MĀNOA
COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

PFX Pacific Fire Exchange

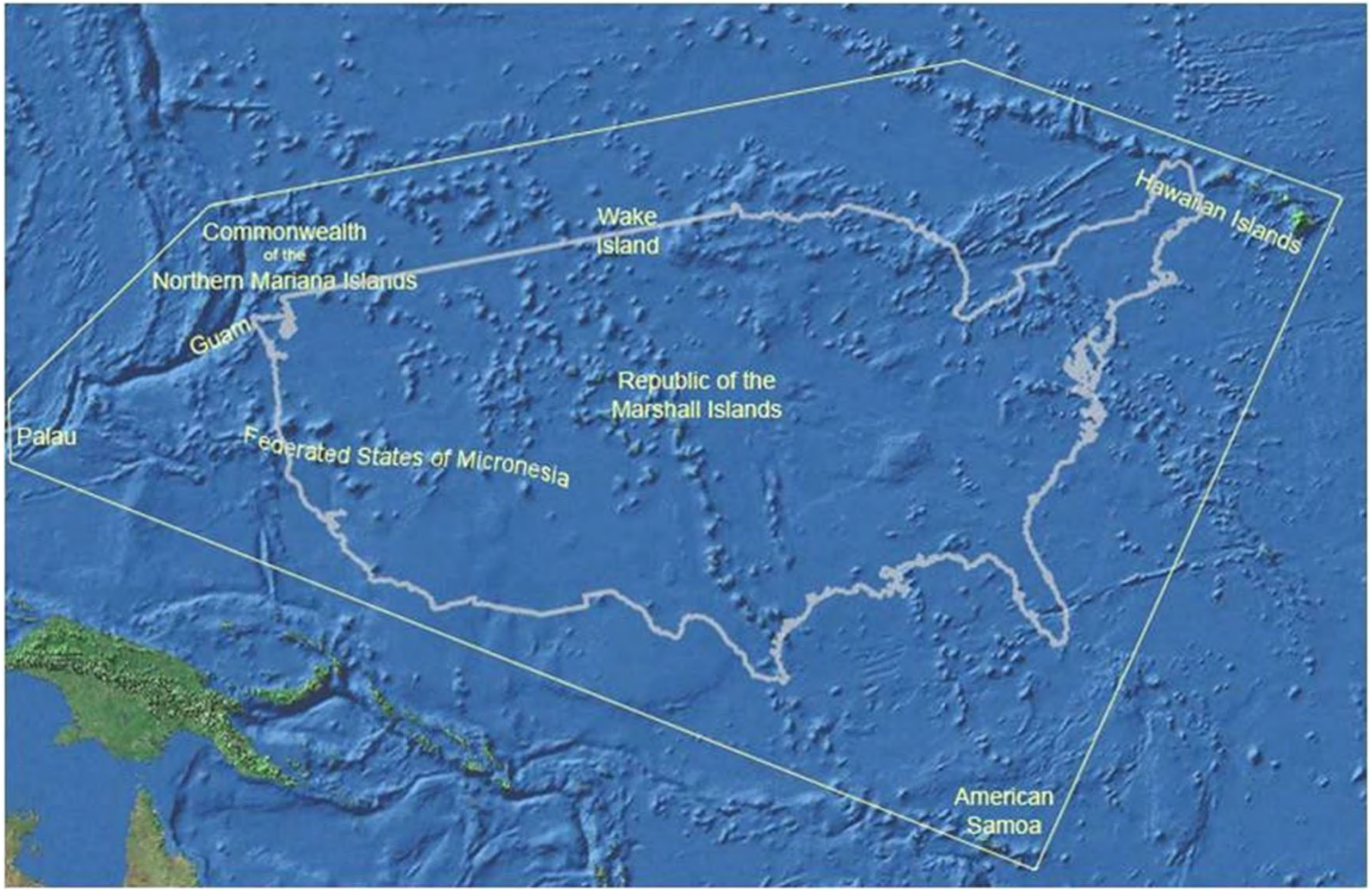
HWMO Hawaii Wildfire Management Organization

The Pacific Fire Exchange



PFX is a wildfire science communication partnership between Hawaii Wildfire Management Organization and University of Hawaii at Mānoa

The Pacific Fire Exchange



FIRESCIENCE.GOV
Research Supporting Sound Decisions

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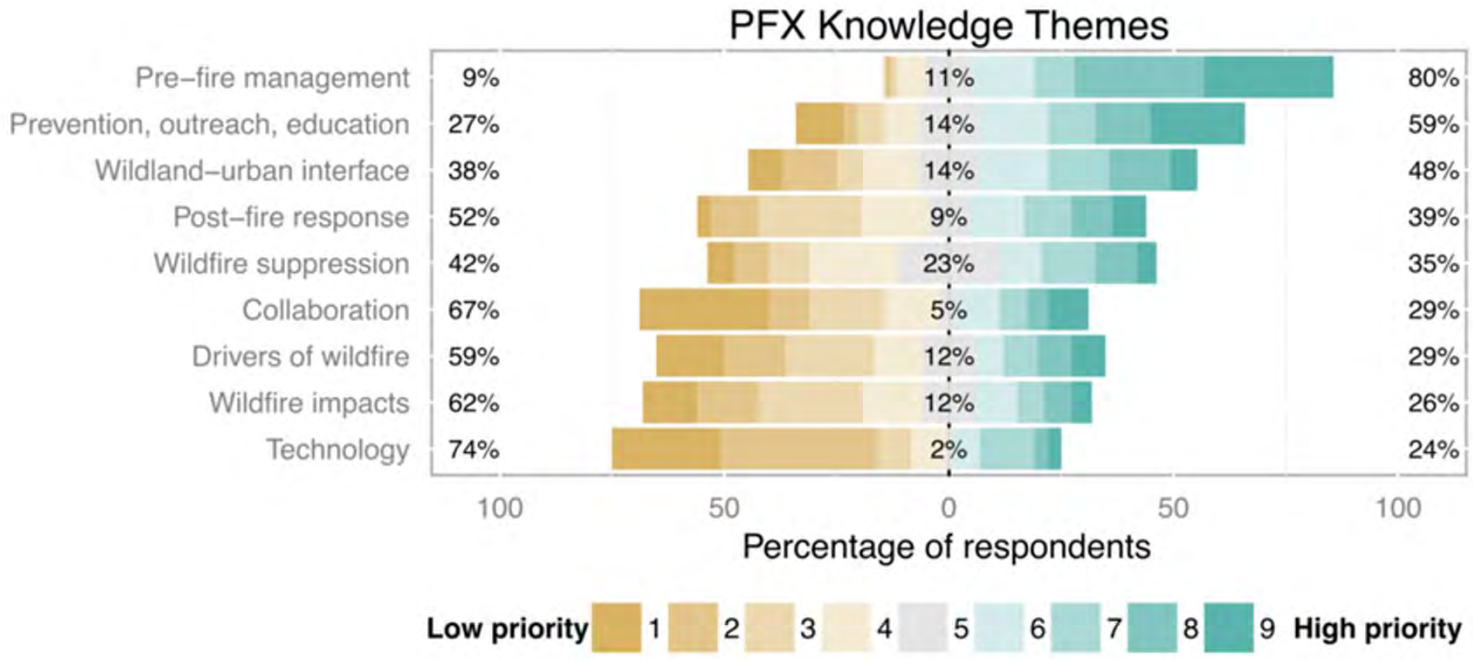
Bridging Science & Management with a Focus on Co-Production

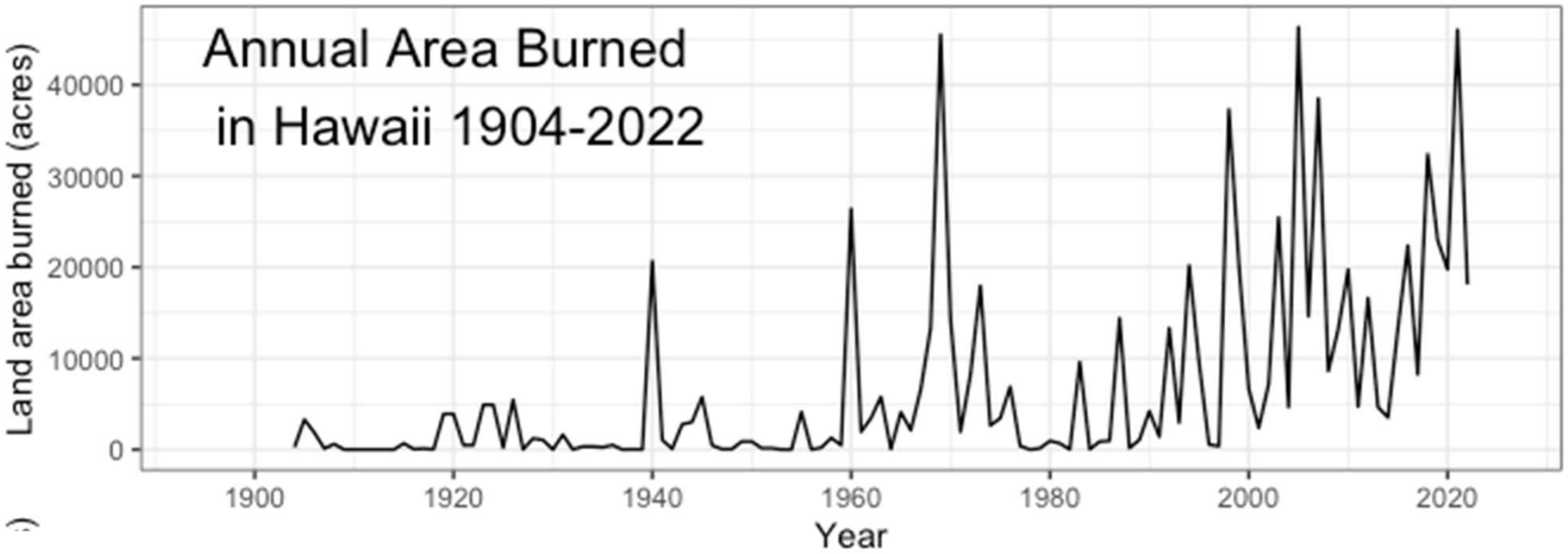
Identifying and Prioritizing Stakeholder Needs



PFX
Pacific Fire Exchange

Hawaiian fire regimes are changing

Annual area burned has increased 300% since the 1990s



COOPERATIVE EXTENSION
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HWMO
HAWAII WILDFIRE MANAGEMENT ORGANIZATION


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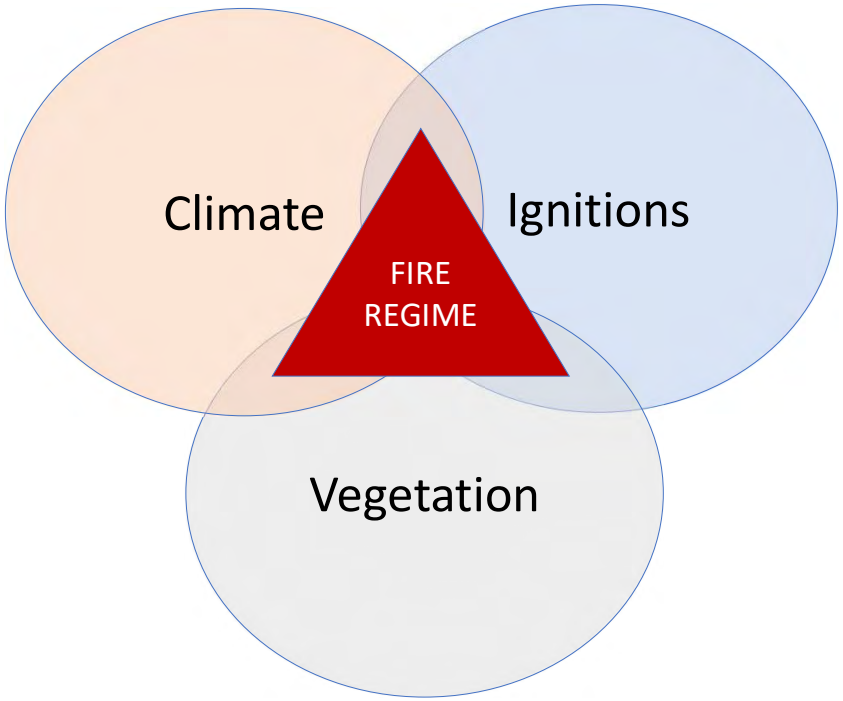
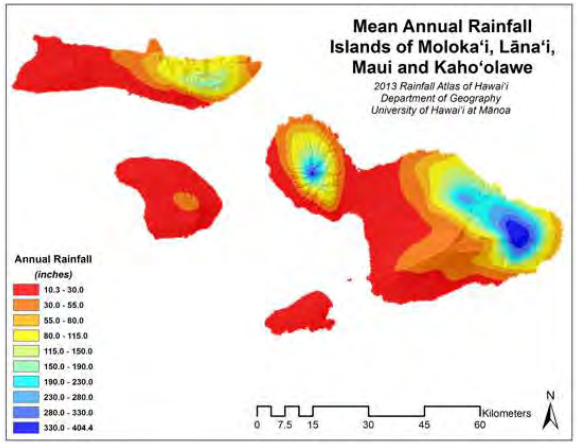
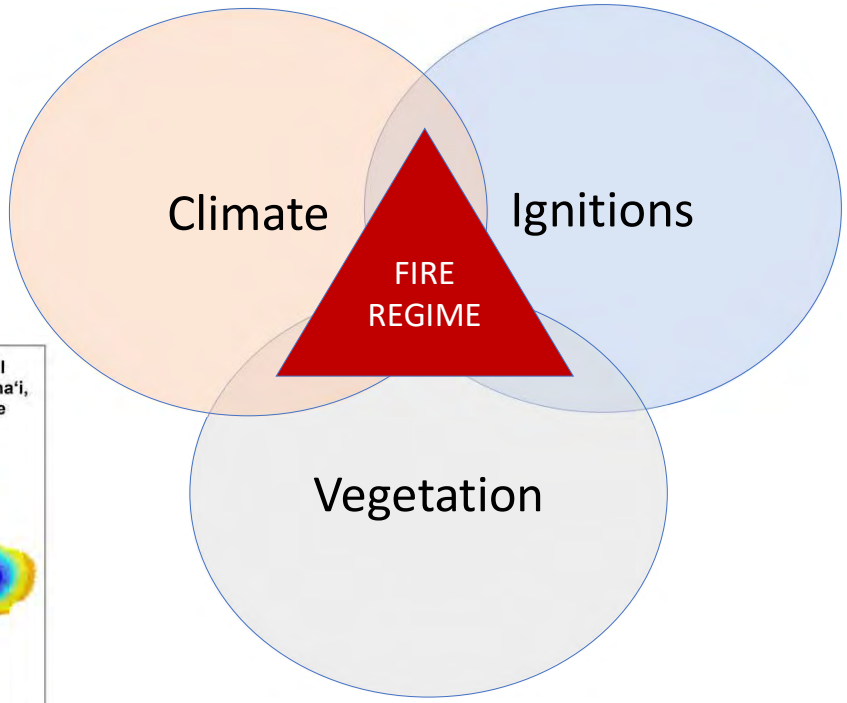


Hawaiian fire regimes are changing

Wet and dry cycles
Long-term drying trends





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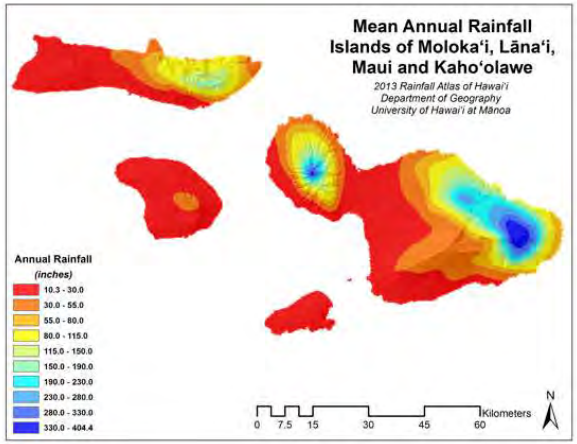
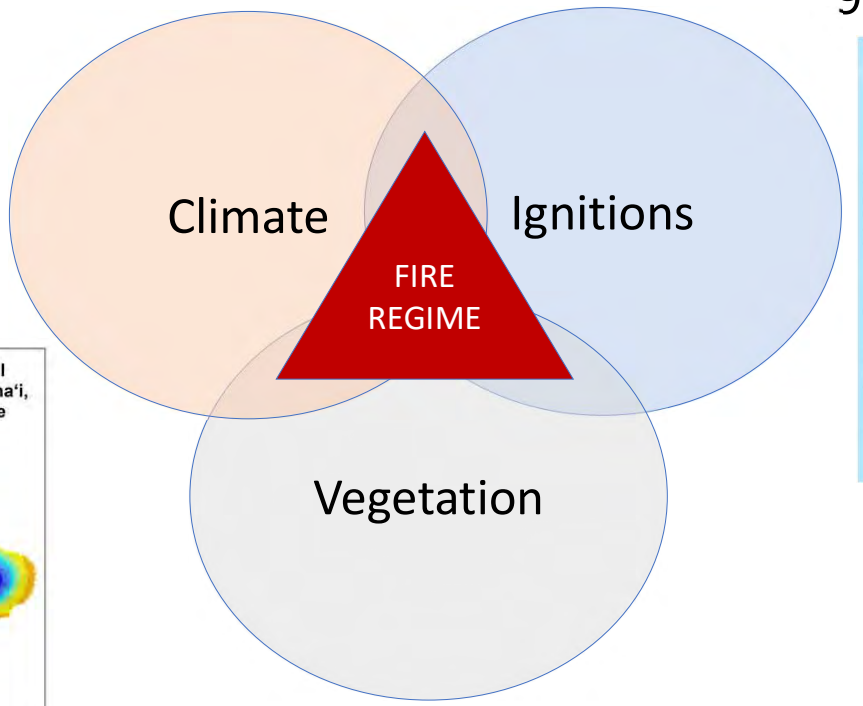
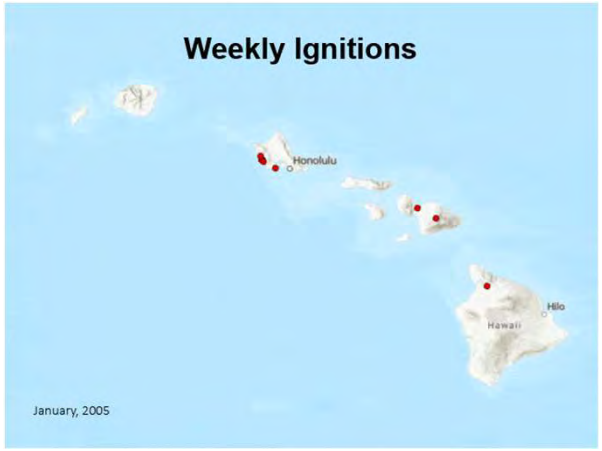




99% Human-caused ignitions



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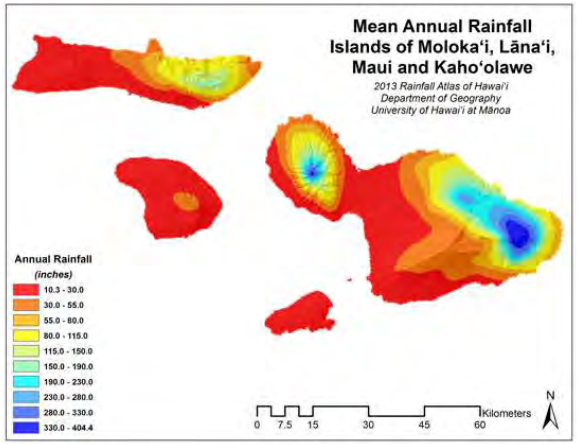
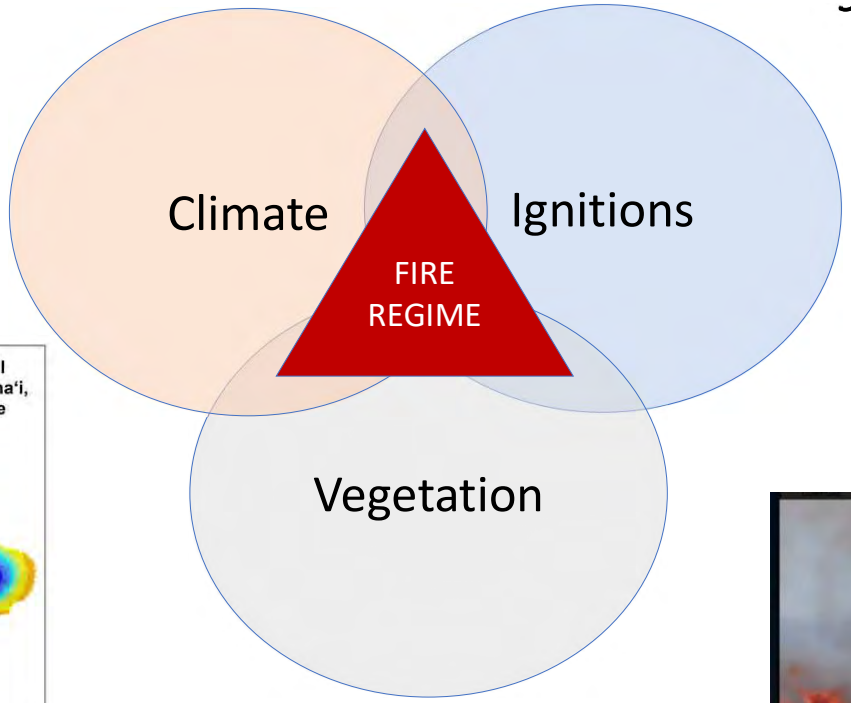
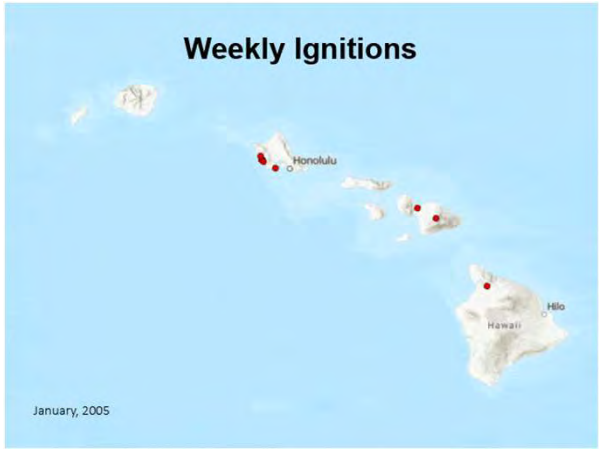




Unmanaged, nonnative
grasslands & shrublands

99% Human-caused ignitions



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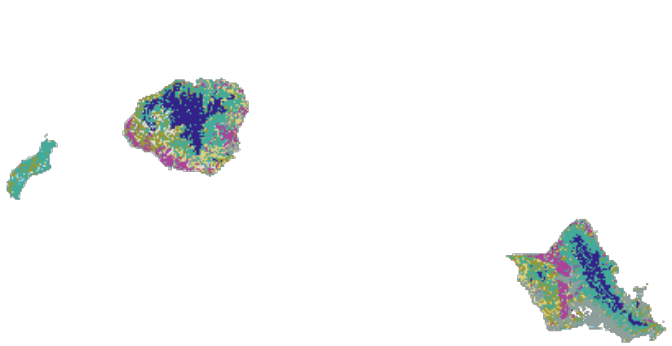
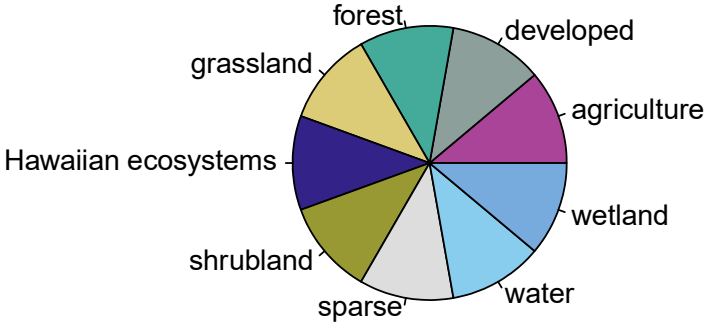
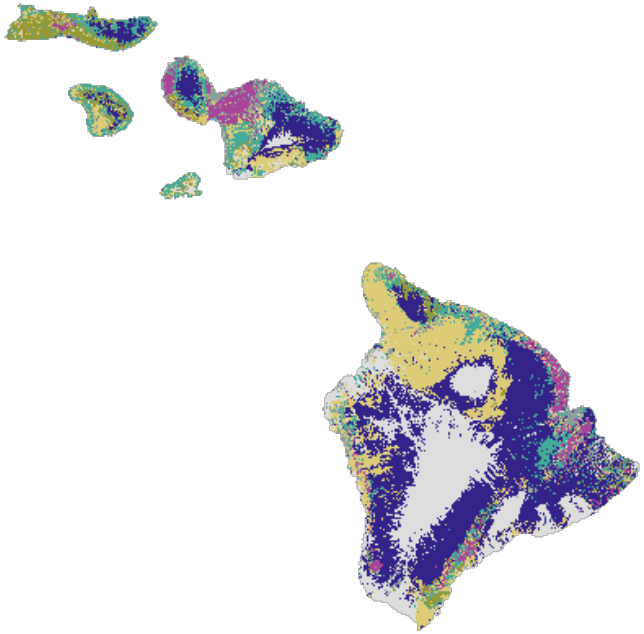
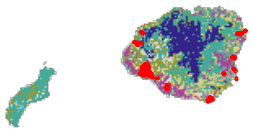


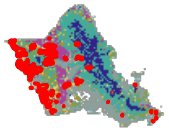


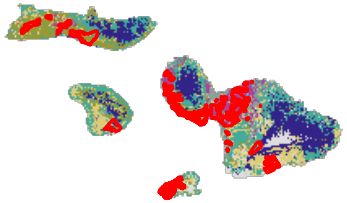
Hawaiian ecosystems → 1.3 million acres
Nonnative ecosystems → 1.5 million acres

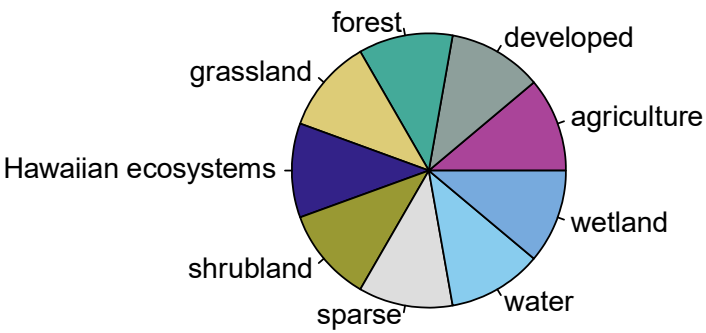
>1 million acres of "grass-dominated" vegetation
(Trauernicht et al. 2015. Pacific Science)









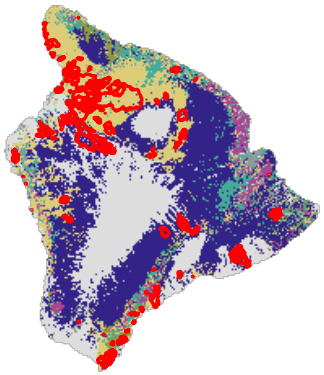


Hawaiian ecosystems → 1.3 million acres
Nonnative ecosystems → 1.5 million acres

>1 million acres of "grass-dominated" vegetation

Fires! (1999-2020)

Hawaiian ecosystems	36,000 acres
grasslands/shrublands	**158,000 acres**
forests	23,000 acres

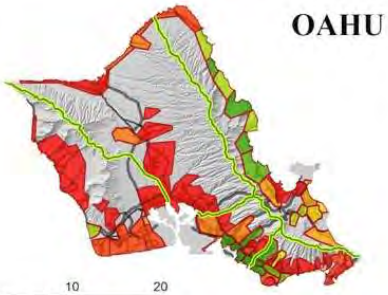


COMMUNITIES AT RISK FROM WILDFIRES
State of Hawaii

KAUAI

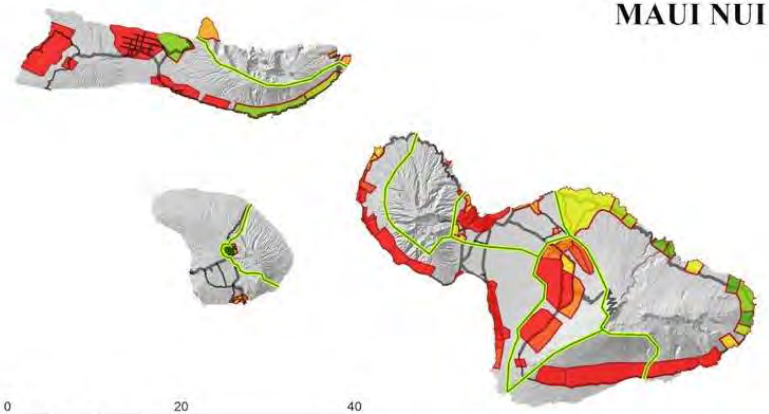
0 10 20
Miles

OAHU



0 10 20
Miles

MAUI NUI



0 20 40
Miles

Fire Risk Community Zoning

Community Fire Risk Rating

LOW RISK

HIGH RISK

N

Map created by M. Wasser, 12/17/13, NAD 83 UTM Zone 4/5N

This publication made possible through a grant from the USDA Forest Service.
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BIG ISLAND

0 25 50
Miles

HWMO
Hawaii Wildfire Management Organization

Hawaiian fire regimes and climate change?

The Maui News

Today's Paper | Subscribe

Resources for Lahaina Wildfire Relief

Hawaii Community Foundation · maui humane society · United Way Maui United Way · The Maui News

Maui has the know-how to deal with wildfire risk

VIEWPOINT

LETTERS TO THE EDITOR

FEB 3, 2019

CLAY TRAUERNICHT

TWEET SHARE

I appreciate your newspaper's coverage of the West Maui fires (The Maui News, Jan. 27), especially with respect to their impact on the local community. I agree these fires raise many serious questions. However, I'd also offer that many, many people are working on the very answers to those questions across the state.

HONOLULU CIVIL BEAT

Community Voice

Recent Maui Fires Require Proactive Statewide Response

Communities and landscapes must become more resilient on social, economic and environmental fronts.

2

By Clay Trauernicht / October 28, 2019

Reading time: 5 minutes.

The Pacific Fire Exchange recently organized a field tour of the Central Maui fires for state and county leadership to discuss solutions to Hawaii's wildfire issues. The nearly 20,000 acres that burned this summer may be unprecedented for Maui, but reflect dramatic increases in wildfires across the state. This field trip aimed to bring forward ideas and experiences of fire responders, land managers, landowners and others who have been

Wildfire Review Series

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.[1] 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 occured 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

AMS Journals

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Editorial Type: Article

Article Type: Research Article

Fire and Rain: The Legacy of Hurricane Lane in Hawai'i

Alison D. Nugent, Ryan J. Longman, Clay Trauernicht, Matthew P. Lucas, Henry F. Diaz, and Thomas W. Giambelluca

Online Publication: 02 Jun 2020

Print Publication: 01 Jun 2020

DOI: https://doi.org/10.1175/BAMS-D-19-0104.1

Page(s): E954–E967

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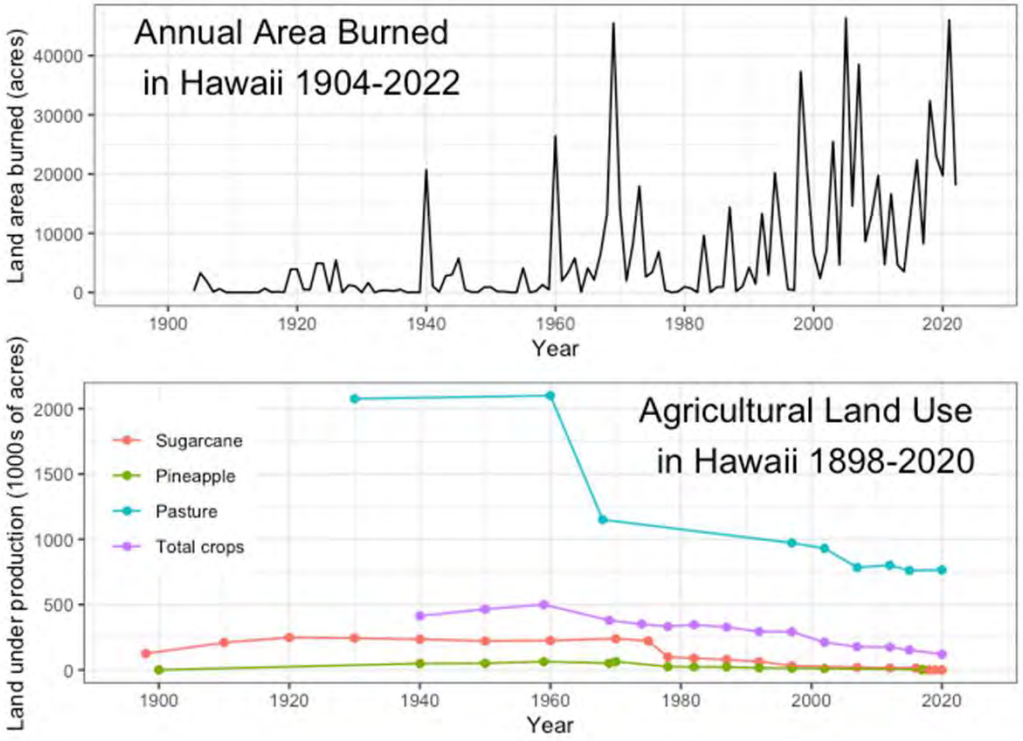
Abstract/Excerpt Full Text PDF

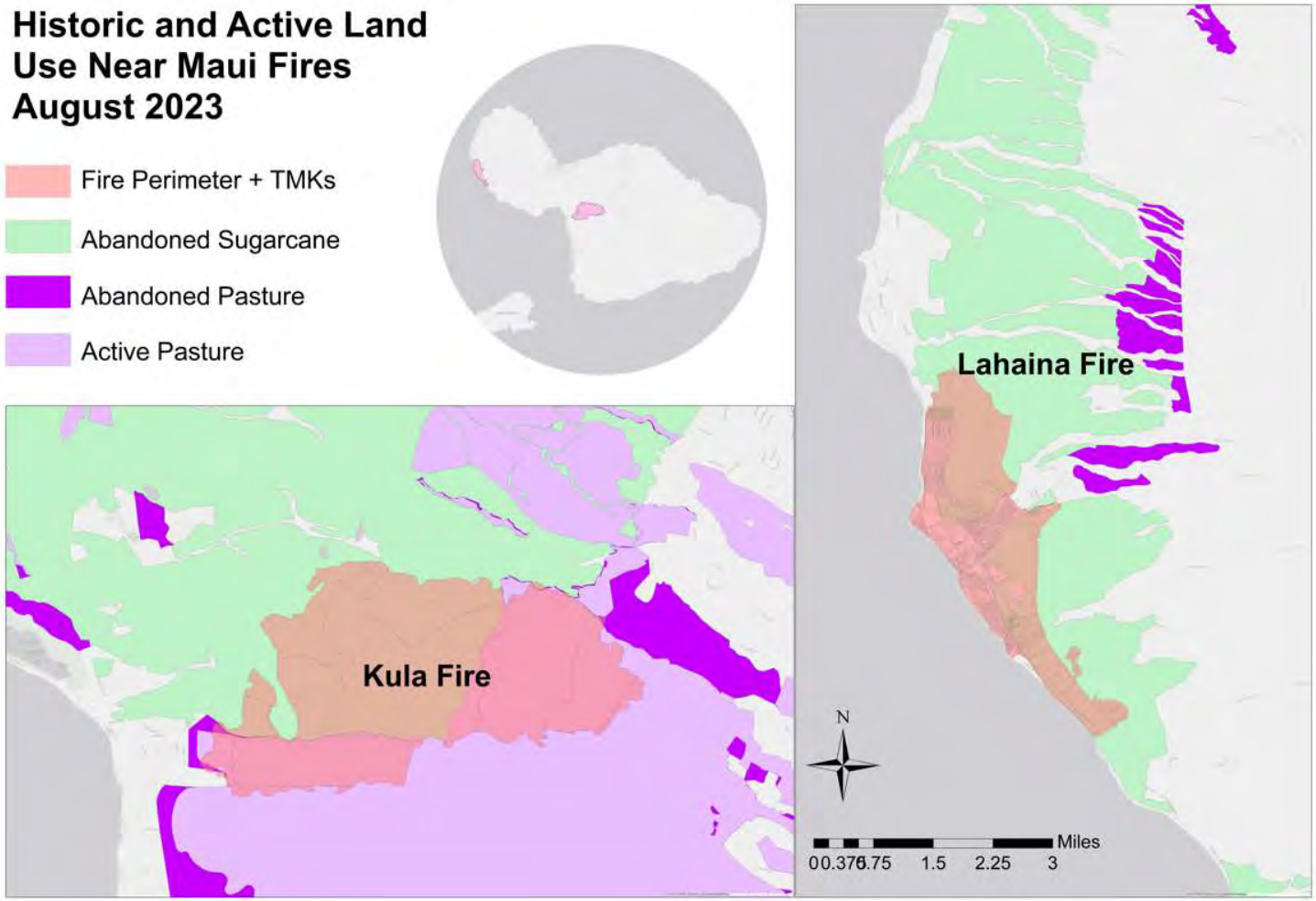
Abstract

Hurricane Lane (2018) was an impactful event for the Hawaiian Islands and provided a textbook example of the compounding hazards that can be produced from a single storm. Over a 4-day period, the island of Hawai'i received an island-wide average of 424 mm (17 in.) of rainfall, with a 4-day single-station maximum of 1,444 mm (57 in.), making Hurricane Lane the wettest tropical cyclone ever recorded in Hawai'i (based on all available quantitative records). Simultaneously,

Fire activity in Hawai‘i is directly related to declines in agricultural land use and the expansion of non-native grasslands



Data from University Hawaii at Manoa Wildland Fire Program; Schmidt 1977, USDA Agricultural Census; Perroy Agricultural Baseline of Hawai‘i


Historic and Active Land Use Near Maui Fires August 2023
Fire Perimeter + TMKs
Abandoned Sugarcane
Abandoned Pasture
Active Pasture
Kula Fire
Lahaina Fire
N
Miles
0 0.375 0.75 1.5 2.25 3

Maui Landcover:
Woody and Grass Cover

Woody

Grass

Data Source: University of Hawaii at Manoa
Inquiries @ Dr. Clay Trauernicht, trauerni@hawaii.edu

What we have:

SOCIAL INFRASTRUCTURE

- Relationships across agencies
- Engaged communities
- Educational resources
- Community-informed plans

LOCAL KNOWLEDGE FOR FUELS MANAGEMENT

- Traditional agriculture
- Grazing
- Ecosystem restoration
- Plant propagation

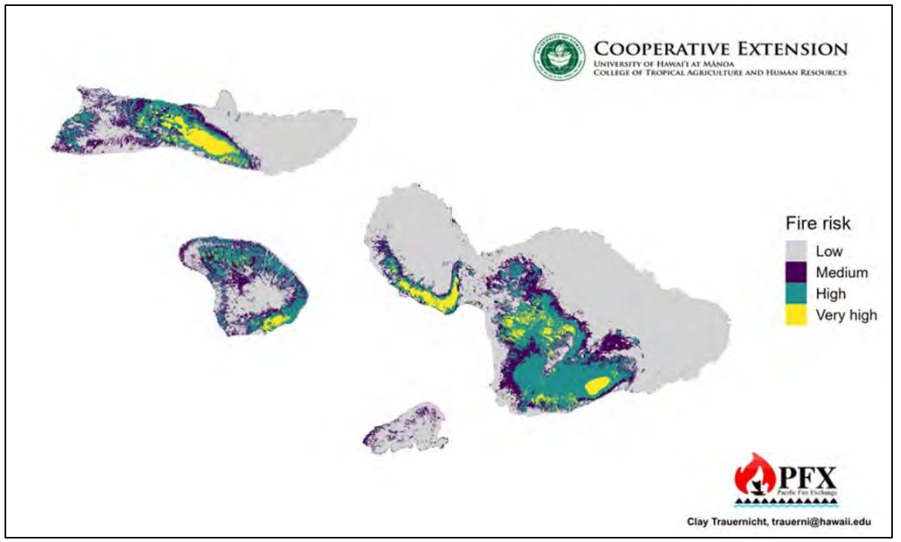
HWMO
Hawaii Wildfire Management Organization

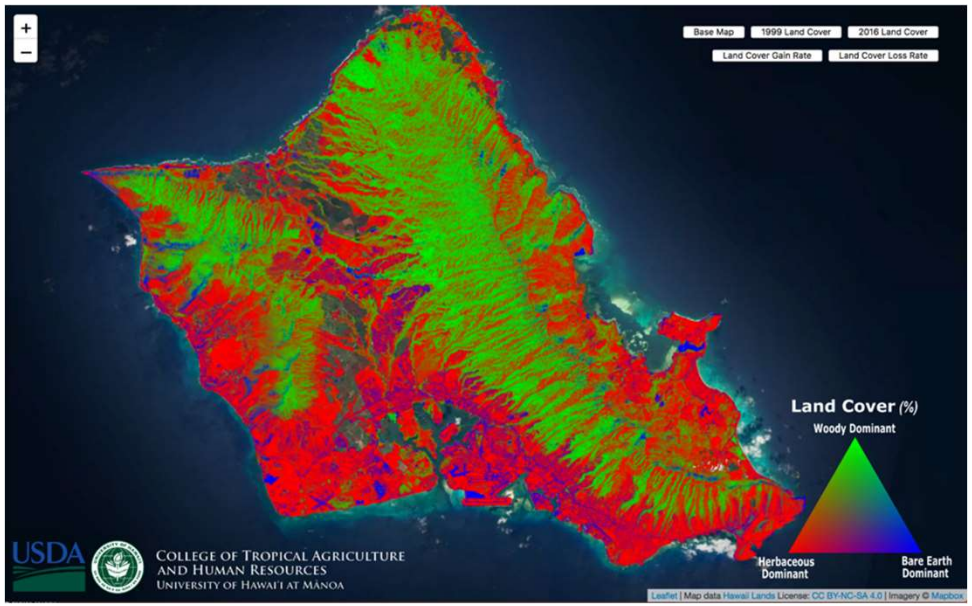
www.hawaiiwildfire.org

What we have:

SCIENCE AND TECHNOLOGY FUNDAMENTALS:

- High resolution fire history data
- Current and Future Fire Probability Maps
- Custom Fuels Maps
- Gridded Climate Data (Hawaii Climate Data Portal)
- Weed Risk Assessments
- Best practices for post-fire, fuels mitigation, etc.





What we need

INFRASTRUCTURE INVESTMENT for “Fire Adapted Communities”

- Energy systems,
- Home hardening,
- Ingress/egress,
- Public education,
- Water systems

FUELS MANAGEMENT INVESTMENT for “Fire Resilient Landscapes”

- Large scale, multi-partner projects
- Grassland conversion/reforestation;
- Farming and ranching subsidies;
- Access to water and land

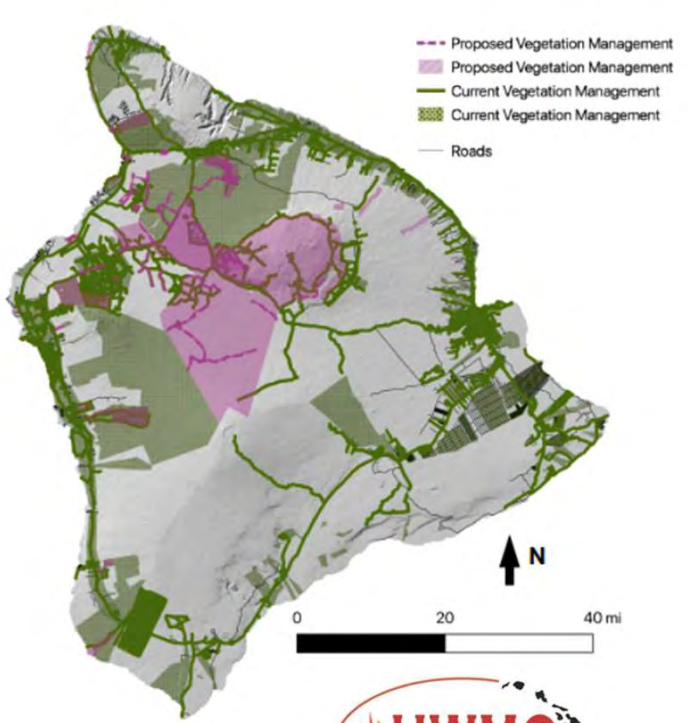
What we need

REGULATION and OVERSIGHT, FUNDING

- Accountability for bad actors;
- Funding support for good actors;
- Updated codes and enforcement;
- Increased resources for County Fire Depts, State Forestry, Watershed Programs;

CAPACITY TO COORDINATE PLANNING AND IMPLEMENTATION

- Cross-boundary coordination;
- Access and easements;
- Securing Matching Funds;
- Proposal development;
- Plant materials development;
- More “Boots on the ground”



HWMO
Hawaii Wildfire Management Organization

What we need

SCIENCE AND TECHNOLOGY

In the works:

- Real-time fire risk mapping
- Seed production pipelines/capacity assessment
- Post-fire soils assessment
- Web portal for fire risk layers

Future needs:

- Dynamic fine fuels mapping
- Plant selection – flammability trials, green break suitability
- Fuels management capacity (labor and materials)
- Water resources assessment – post-fire/pre-fire mitigation
- Web portal to identify projects/partners

What should land care look like?

Clay Trauernicht
Extension Specialist in Ecosystems and Fire
trauerni@hawaii.edu