Lāhainā wildfire coastal impacts: risk, recovery, and resilience

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in partnership with HI DLNR-DAR (Russell Sparks), Tova Callender (West Maui Watershed Coordinator), Maui Nui Marine Resource Council, USGS PIWSC[3], USGS GIRT[4]

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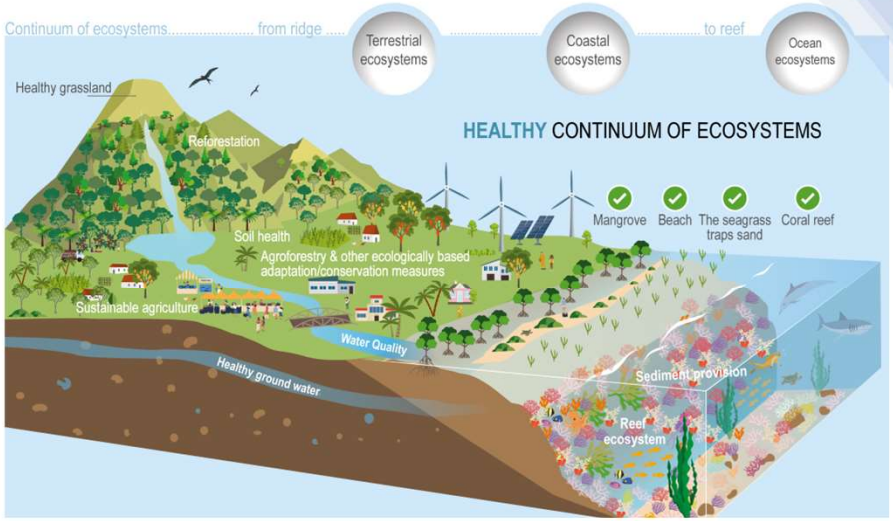

IPCC2022 AR6 WGII, Fig 15_004a

Coastal/marine studies (proposed)

- Wildfire effects on coastal/marine ecosystem [limited USGS funding]
  - Post-fire contaminants
  - Post-fire groundwater (nitrate) discharge, carbonate chemistry
  - Circulation and thus residence time
  - Wet season contaminant runoff to reefs
  - Biotic effects – corals, algae
- Assessment of coral reef damage from sunken vessels
  - High-resolution optical mapping, DEM to guide recovery and restoration
- Modeling of coral reef restoration benefits for long-term coastal resilience: socioeconomic evaluation of coastal hazard protection
- Local partner, stakeholder, Native Hawaiian engagement
  - Co-production of science, communication products
  - Feedback?

Coastal/marine sampling

Post-fire

- Terrestrial ash/soil, beach sediment (select sites analyzed for):
  - Metals
  - PAHs
  - Dioxins/furans
  - PFAS (forever chemicals)
  - other: grain size, TC/TIC/TOC, charcoal
- Marine seabed sediment (Sept 8, Oct 3)
- Passive samplers (dissolved phases, Sept 8 - Oct 3)
- Circulation (tides, waves, currents) and residence time
- Water quality (salinity, temp, pH)
- Continuous nitrate (Lahaina Harbor) in GW

Wet season runoff

- Terrestrial/marine sediment/WQ (proposed)
  - above parameters
  - + PCBs, PBDEs, pesticides, PPCP, 6PPD-q
- Submarine groundwater discharge, quality (proposed)

Questions, feedback?

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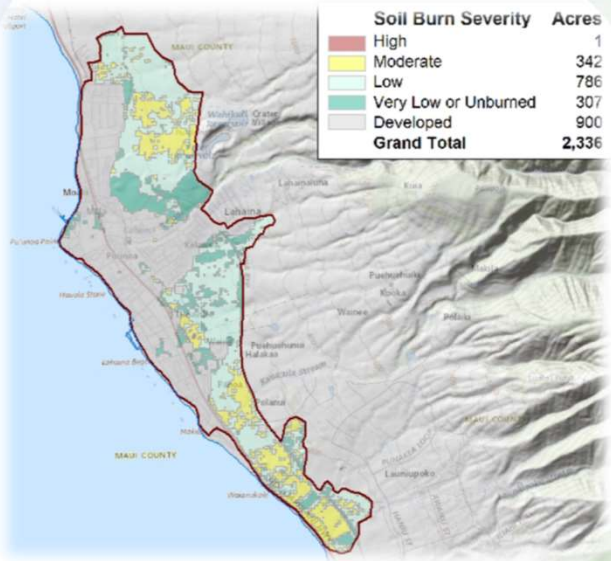

Russell Sparks, DAR, deploying samplers 8 Sept 2023.

Reef sediment collected 8 Sept 2023 by DAR and Tova Callender.

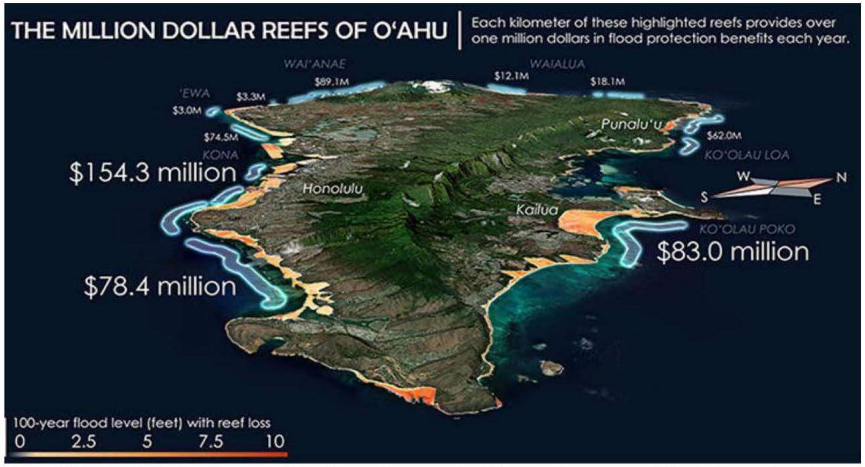

Figure 16. The highlighted reefs around O'ahu all provide greater than USD$1 million in expected flood reduction benefits per kilometer per year. The values in the figure are the sum of the annual expected benefits for reef sections that are several kilometers long (modified from Storlazzi et al., 2019; Reguero, 2021).

Stovall et al. 2021, Coral Reef Restoration for Risk Reduction (CR4): A Guide to Project Design and Proposal Development: U.S. Coral Reef Task Force. https://www.coralreef.gov/assets/about/cr4_guide_nov2022_508.pdf (for FEMA federal hazard mitigation funding).

ADEPT Committee

From: Axel I. Beers
Sent: Monday, October 2, 2023 1:32 PM
To: ADEPT Committee
Subject: ADEPT-1(10) Presentation for October 3
Attachments: USGS_CoastalMarine_for Maui ADEPT_Takesue_Oct3_FIN.pptx

Good afternoon,

Please see the attached presentation for ADEPT-1(10) by Dr. Takesue with the USGS.

Thank you,
Axel

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