

East Maui DAR Biological Monitoring Summary

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DLNR-Division of Aquatics Resources

MISSION

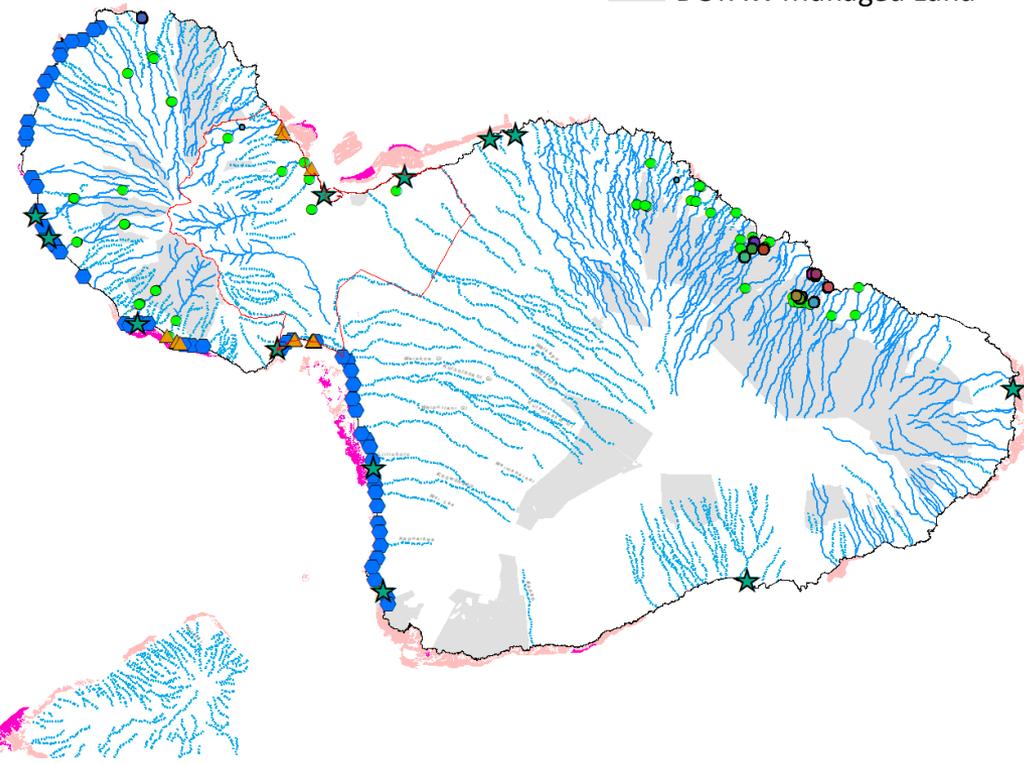
DAR's mission is to work with the people of Hawaii to manage, conserve, and restore the state's unique aquatic resources and ecosystems for present and future generations. Our major program areas include projects to;

- **monitor, protect and restore aquatic ecosystems**
- **protect threatened and endangered aquatic species and their habitat**
- **combat the introduction of invasive species and reduce their impact on ecosystems**
- **effectively manage fisheries**



What DAR monitors

- Moku selection
- HMRF Sites
- Coastal Survey Sites
- Hui O Ka Wai Ola Sites 2024
- CWRM DAR Stream Survey Sites
- Coral 10-50%
- Coral 50-90%
- Coral 90-100%
- Coralline Algae 10-50%
- Coralline Algae 50-90%
- DOFAW Managed Land



1) Water quality (West/South)



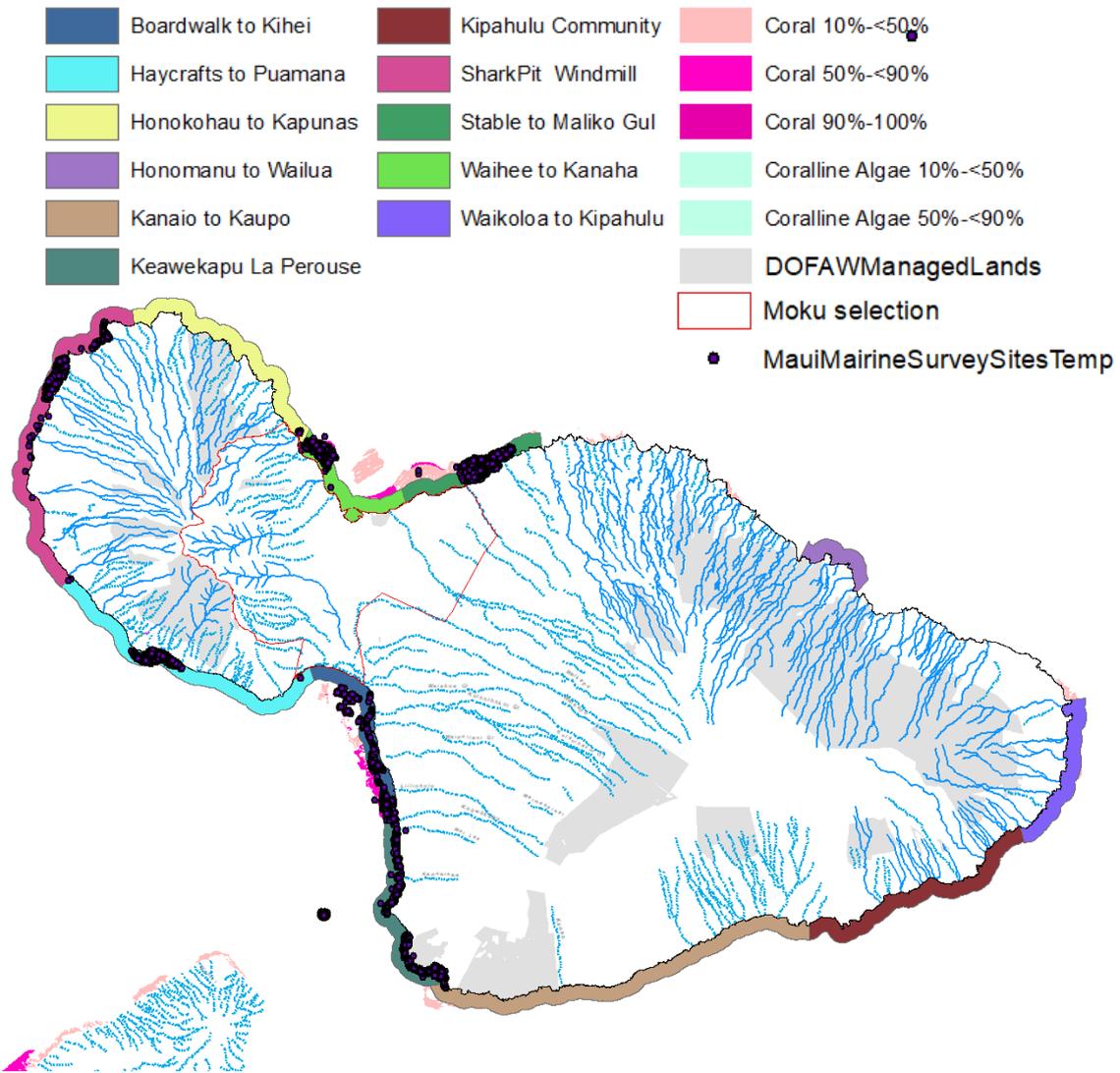
2) Stream



3) Estuary



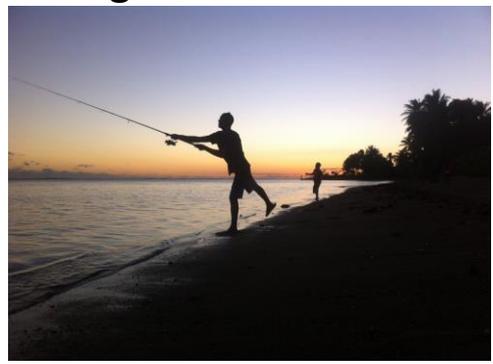
What DAR monitors



4) Marine (Reef)



5) Fishing Activities



New Direction Connecting Mauka to Makai



Estuary Survey:

- Species
- Abundance
- Water Quality

Marine Survey:

- Species
- Abundance
- Coral
- Cover/Habitat



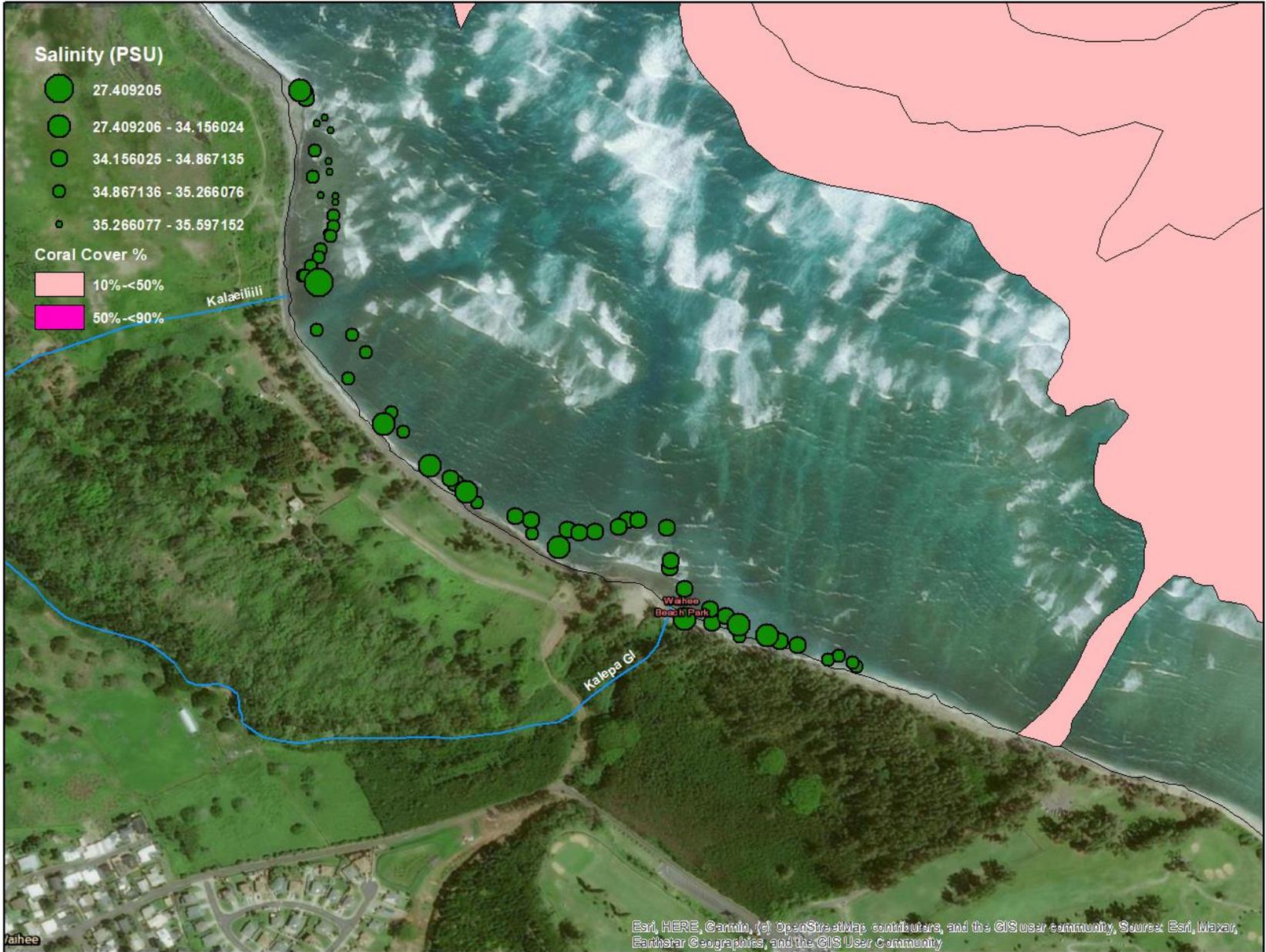
Stream Survey:

- Species
- Abundance
- Water Quality/Habitat



DOFAW
Managed Area

Salinity Track Mapping / Water Quality Monitoring



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Nearshore Monitoring

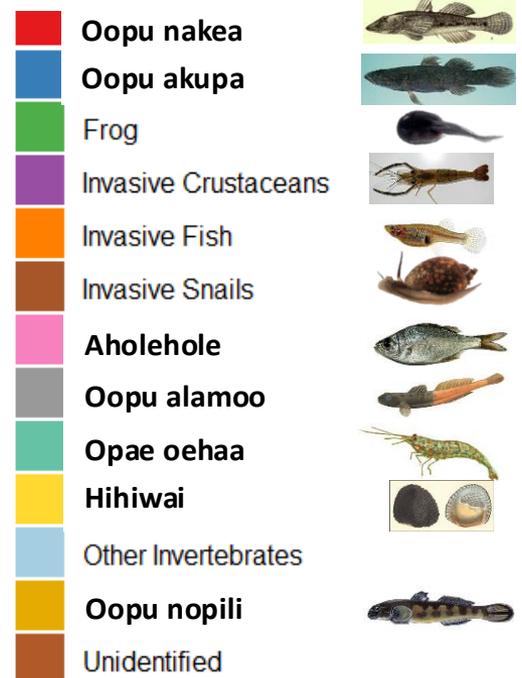
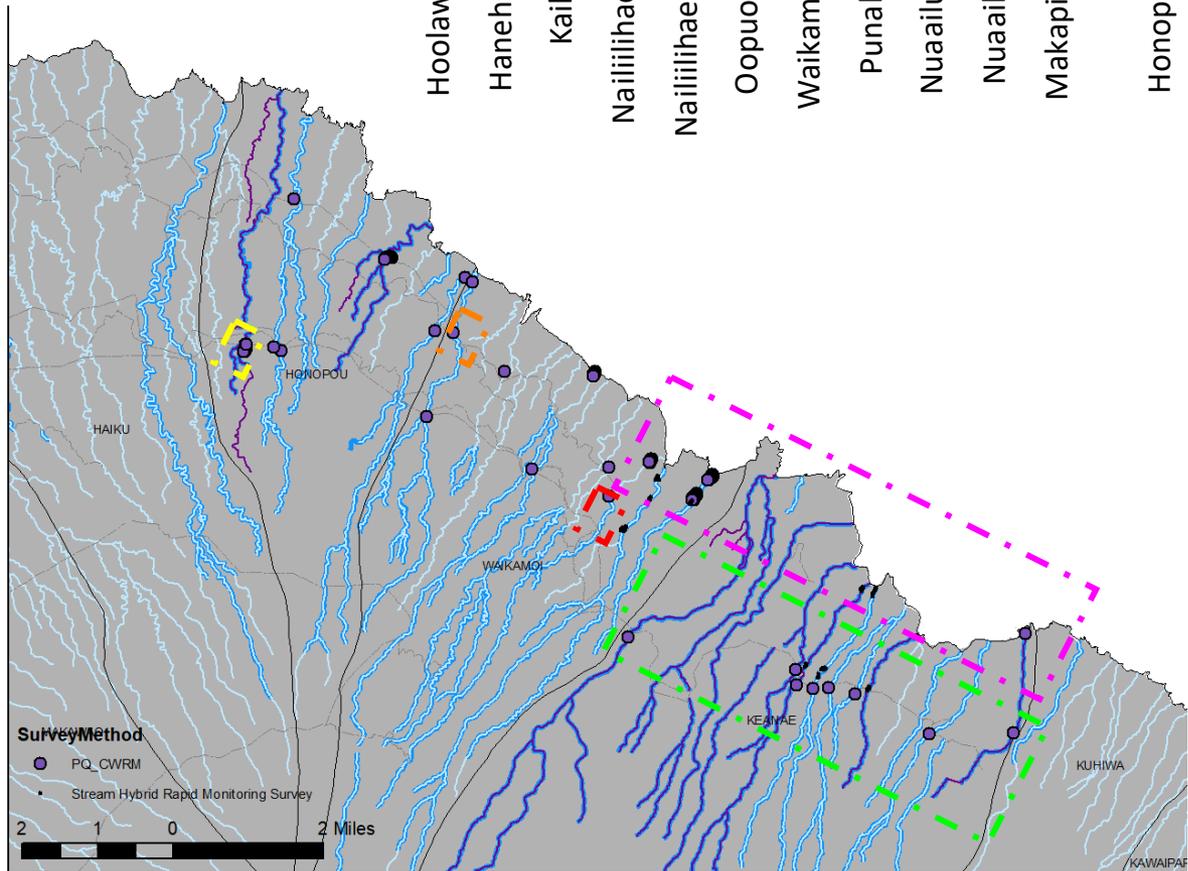
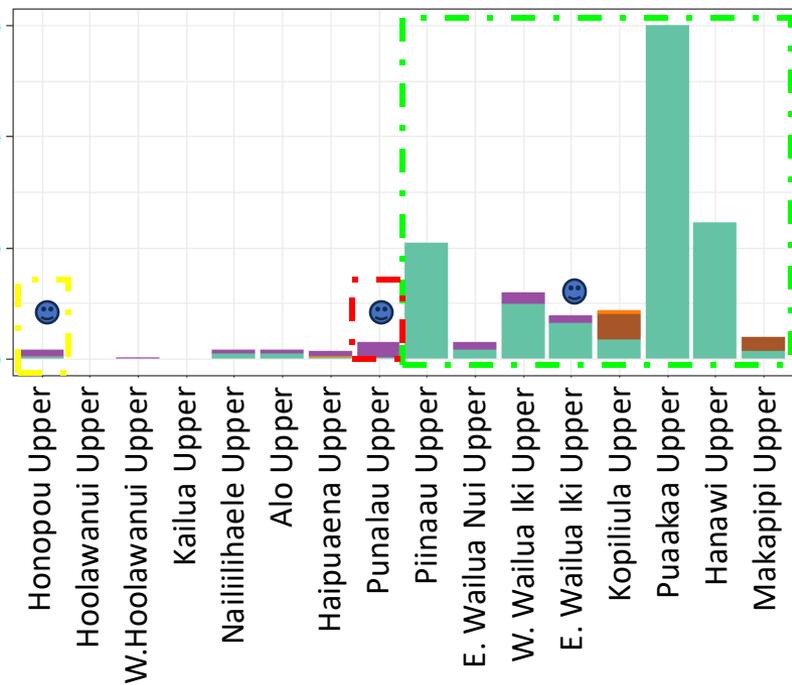
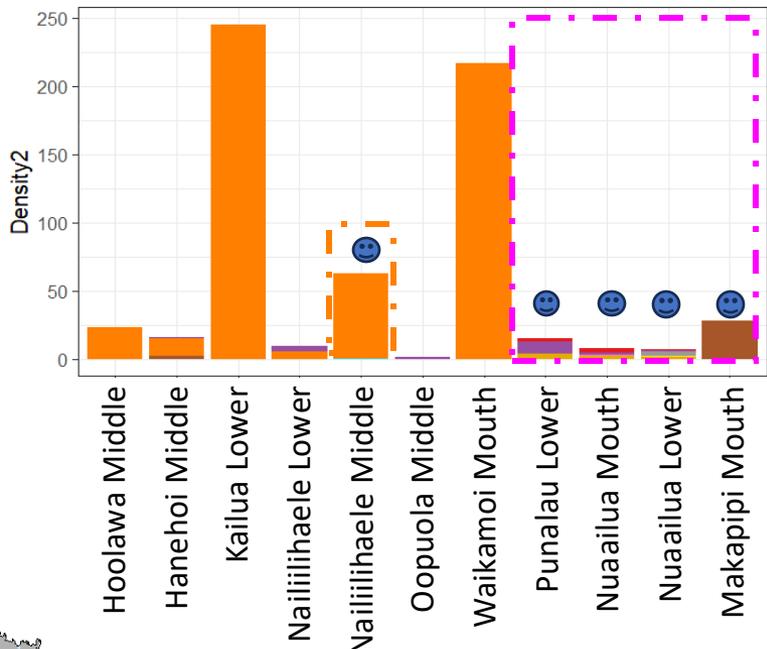
Goal of the monitoring:
How does the near shore fish, limu, and groundwater seepage change over time (wetland restoration, forest restoration, etc.)



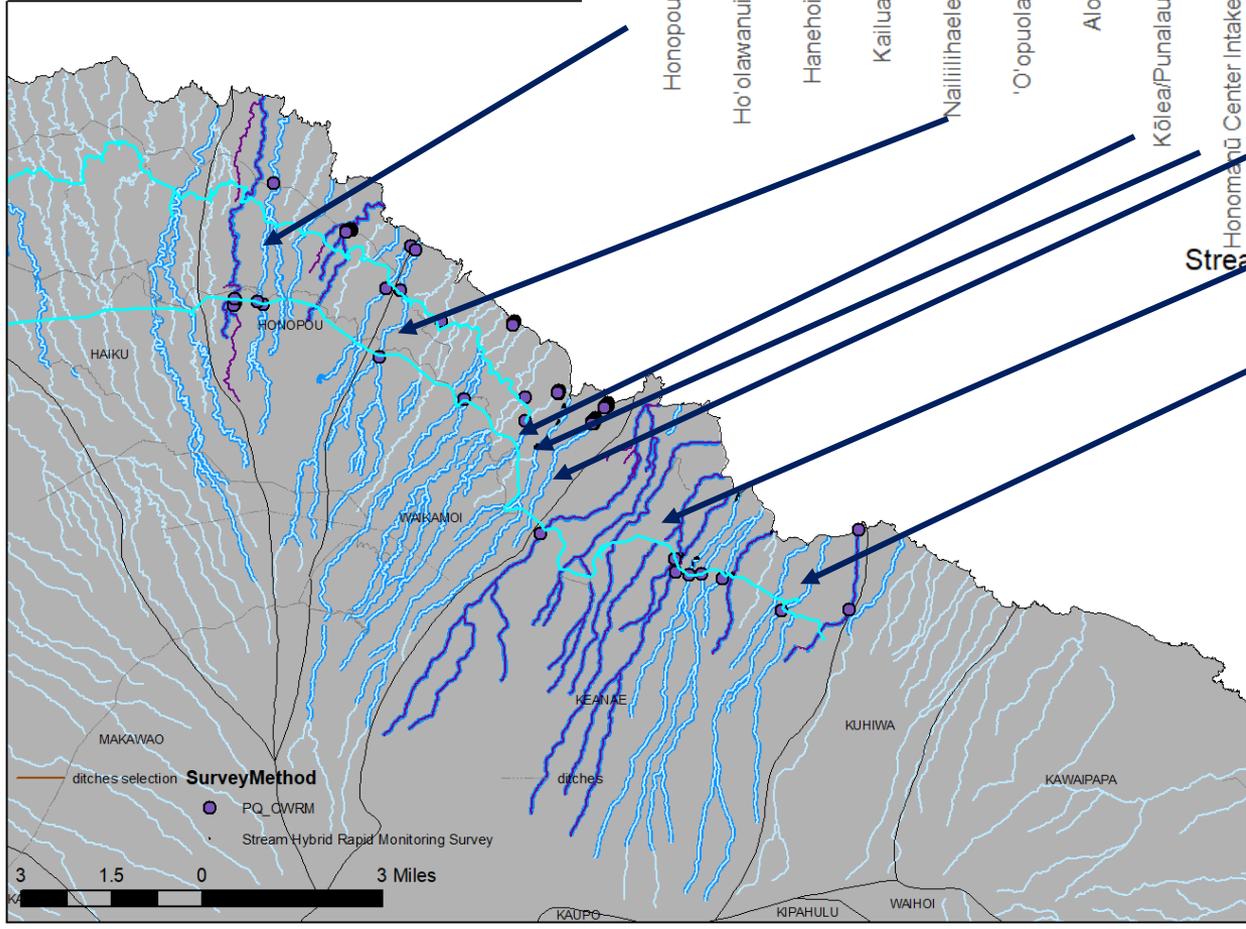
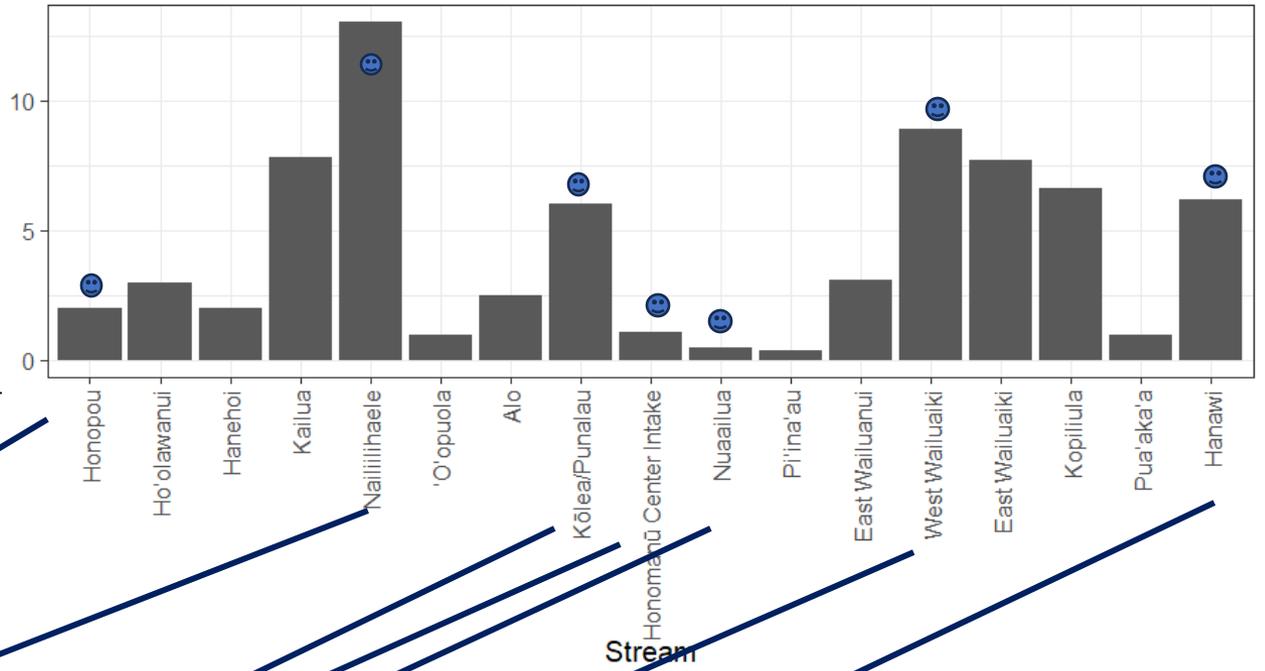
East Maui Stream Biological Monitoring Results



Stream Survey 2020-2022



ft³/sec
(median flow)

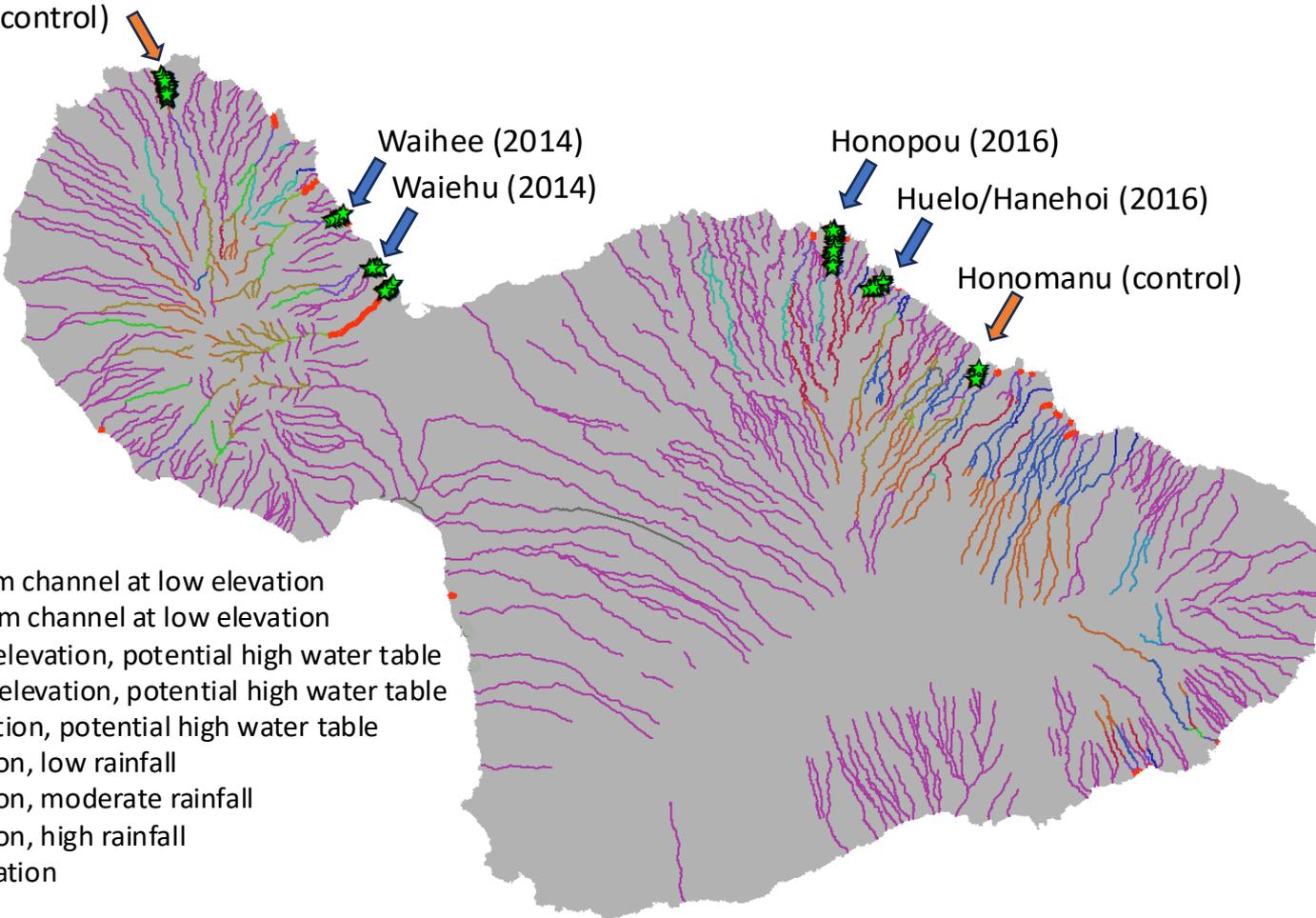


**Estimated Natural
Median Flow (during
low-flow duration)
based on 1984 –
2013 flow data**

Flow Restoration Study

Study Objective

Resurvey the previous survey sites within "Coastal Reach" to see the effect of restored stream flow on stream fauna



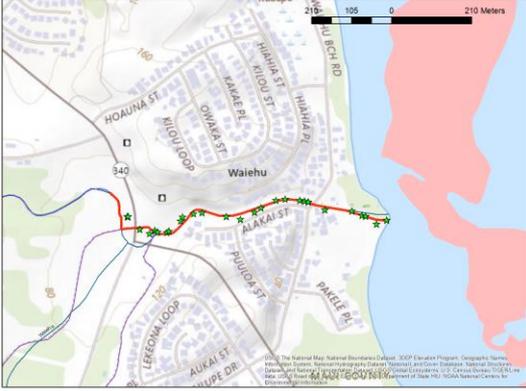
- Coastal
- Low-gradient downstream channel at low elevation
- High-gradient downstream channel at low elevation
- Low gradient, moderate elevation, potential high water table
- High gradient, moderate elevation, potential high water table
- High gradient, high elevation, potential high water table
- Moderate to high elevation, low rainfall
- Moderate to high elevation, moderate rainfall
- Moderate to high elevation, high rainfall
- Terminal falls at low elevation
- Headwater reaches
- Reaches within high elevation bog
- Intermittent reaches
- N/A



Study Sites



Waihee (n=12)



Waiehu (n=21)

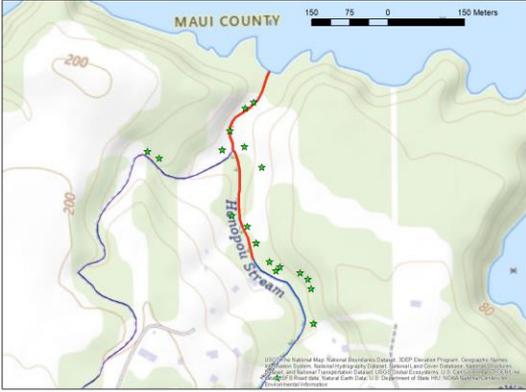


Honokohau (n=19) CONTROL (Diverted)

NorthWest
Maui



Hanehoi/Huelo (n=9)



Honopou (n=13)



Honomanu (n=11) CONTROL (Diverted)

East Maui

Survey Method

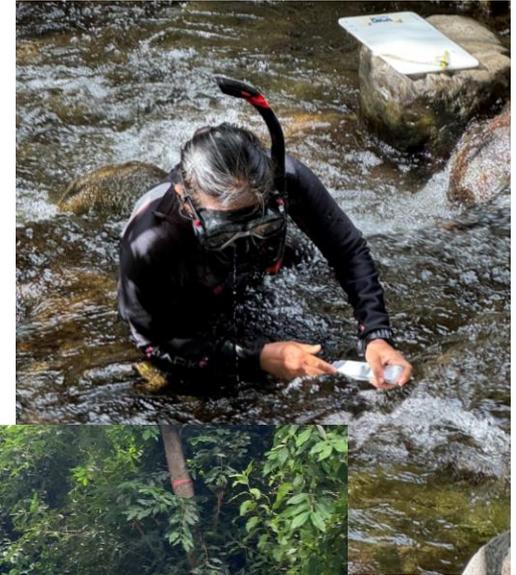
Snorkel Survey:

Species

Size

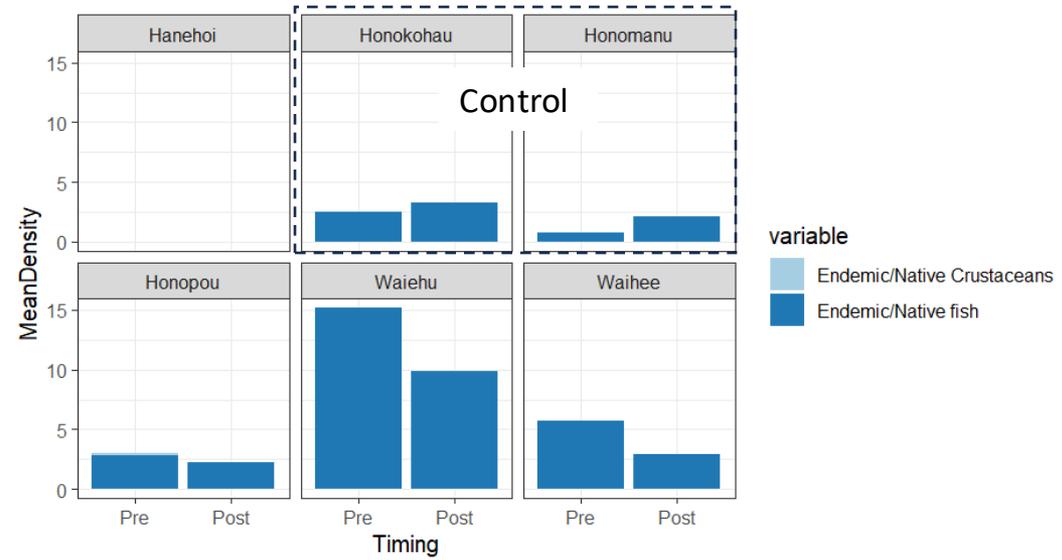
Abundance

Habitat/Substrate/Flow

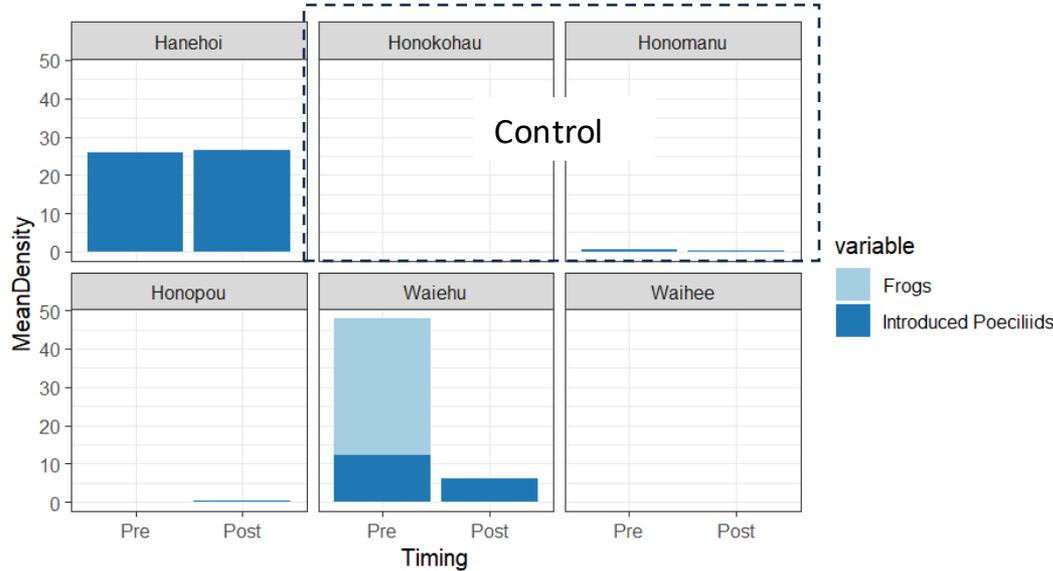


Species Density by Each Stream @ Coastal Reach

Oopu and Opae



Guppies and Tadpoles



Tahitian Prawn

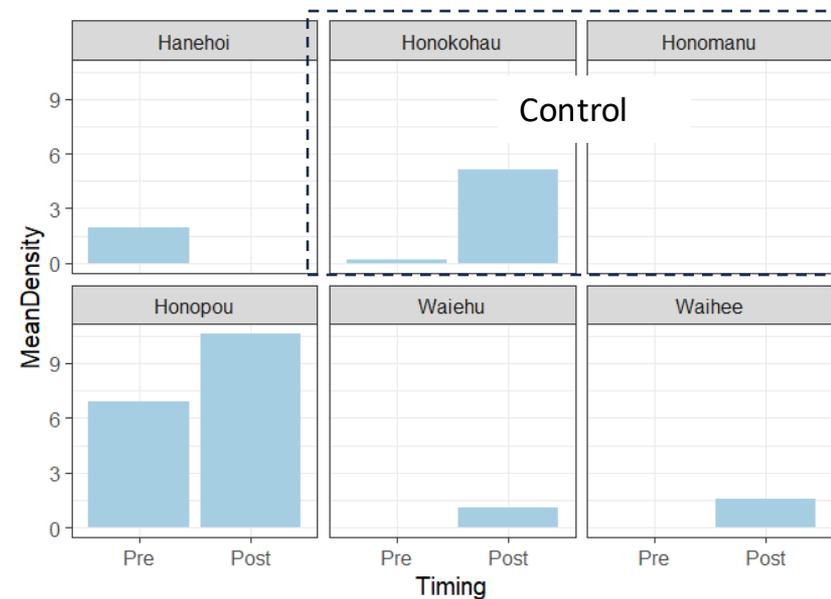
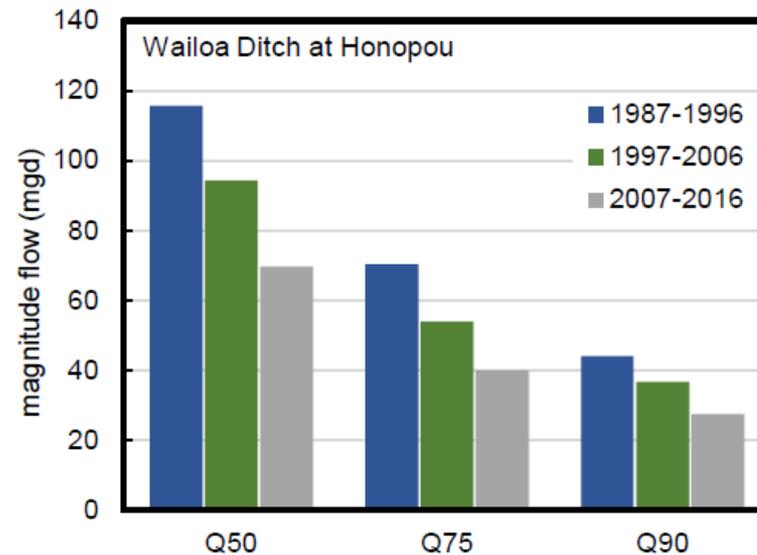
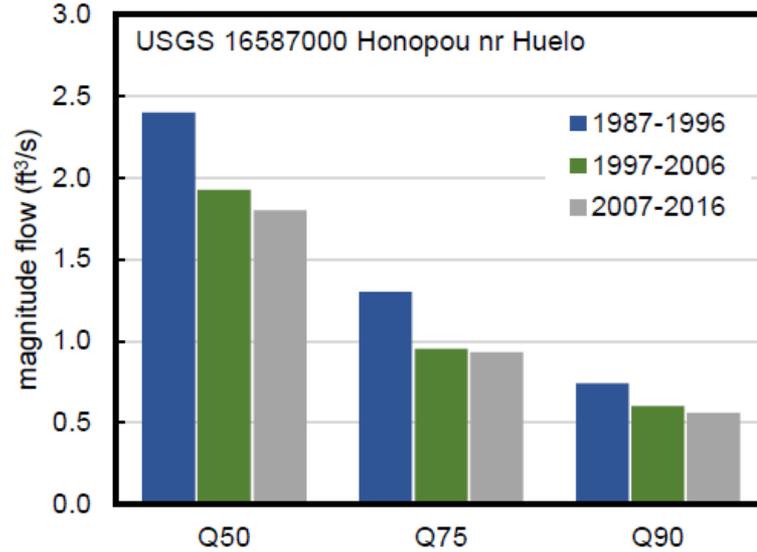


Figure 23. Median (Q₅₀), baseflow (Q₇₅) and low (Q₉₀) flow duration statistics for three 10-year periods (July 1-June 30) for USGS 16587000 on Honopou Stream and flow-duration statistics for Wailoa and Lowrie Ditches for these same periods.

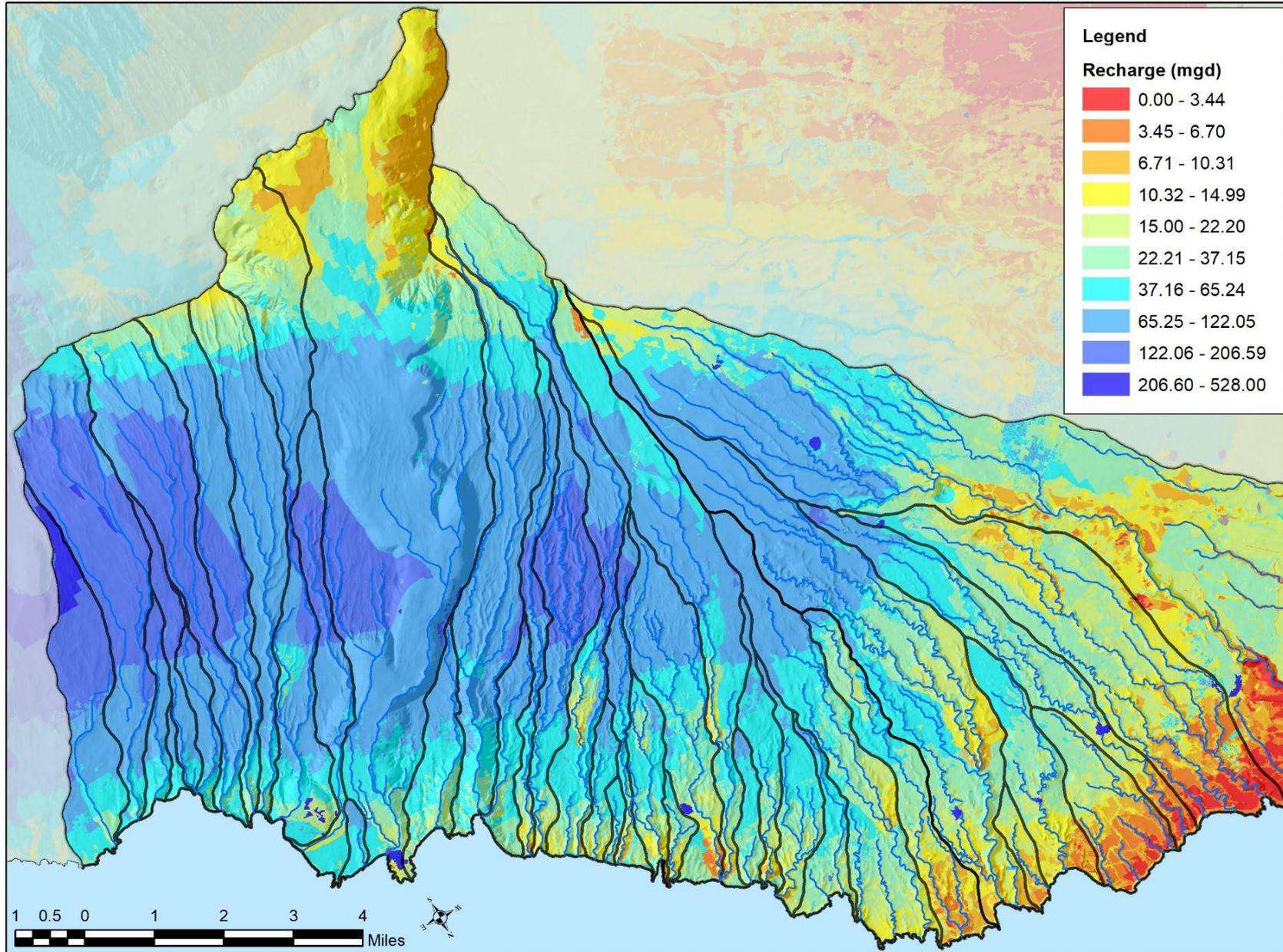
[note: differing units between graphs]



PR 2022-01



Estimated groundwater recharge for surface water hydrologic units



PR 2022-01





Mahalo

