



The Rain Follows The Forest

A Plan to Replenish Hawaii's Source of Water

January 12, 2012 – ENE/EEP Informational Briefing

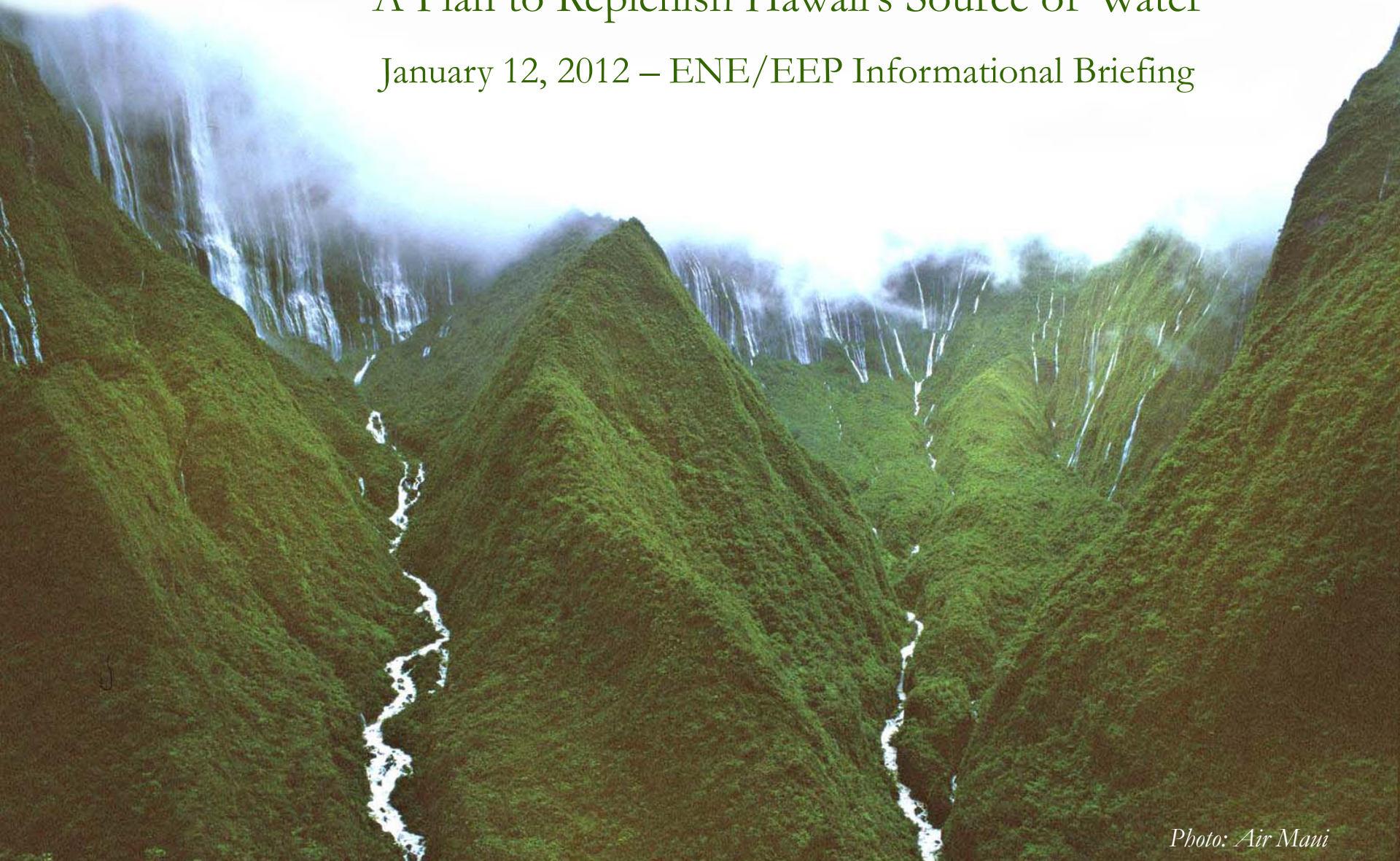
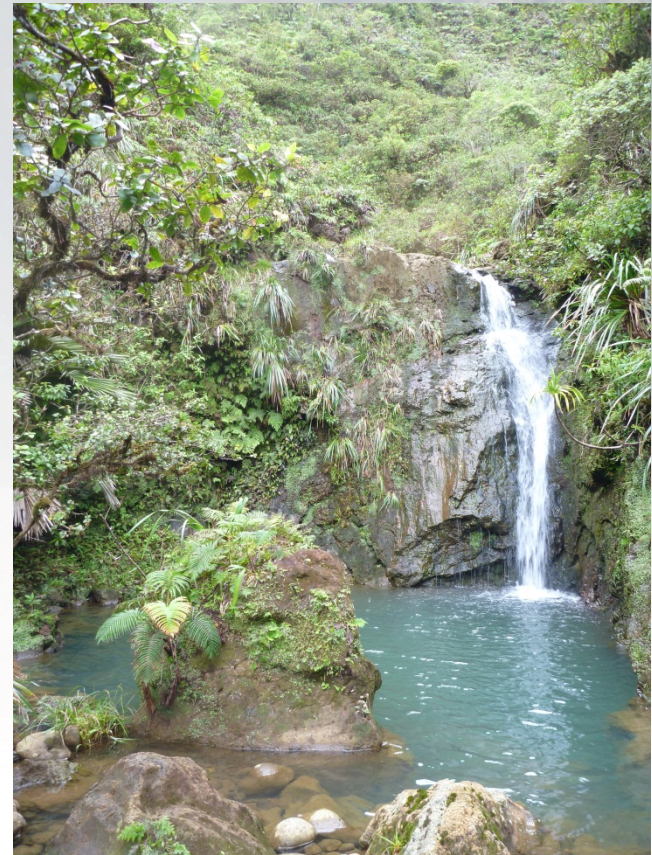


Photo: Air Mani



The Rain Follows the Forest

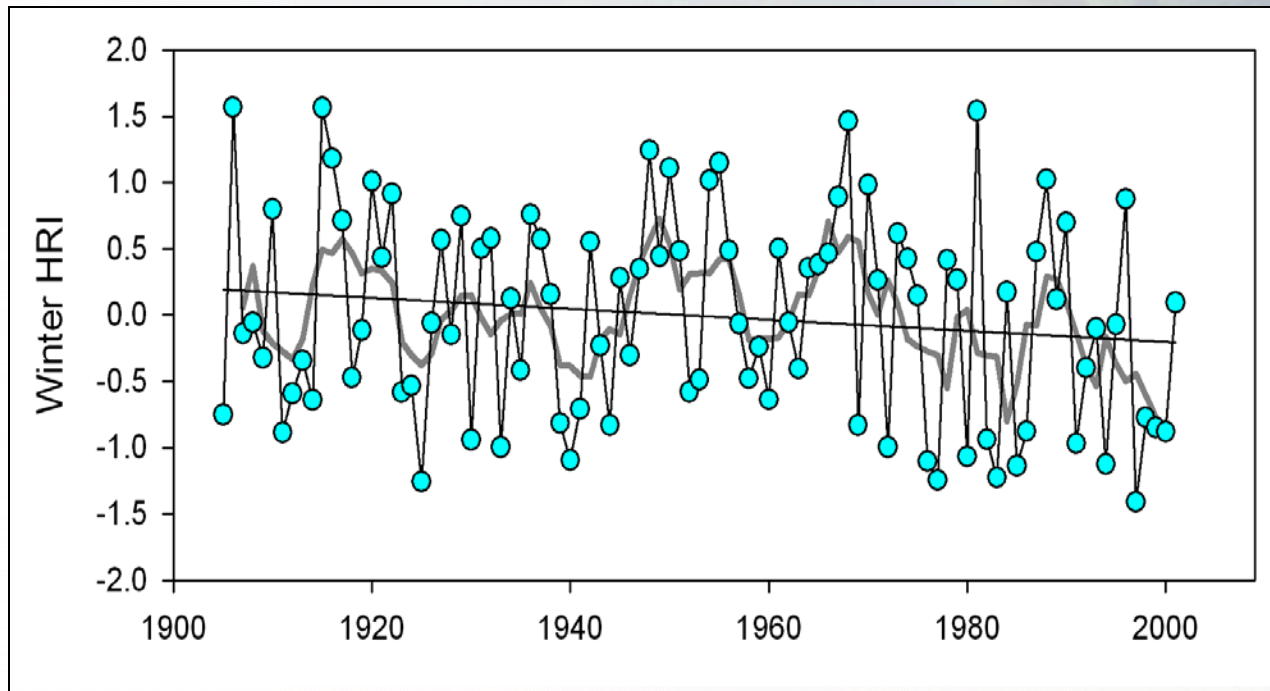
- Hawaii's water supply is at risk
- Benefits of forest watershed protection
- Action plan
- Funding





Hawaii's Water Supply is at Risk

Evidence of Long-term Decline in Rainfall

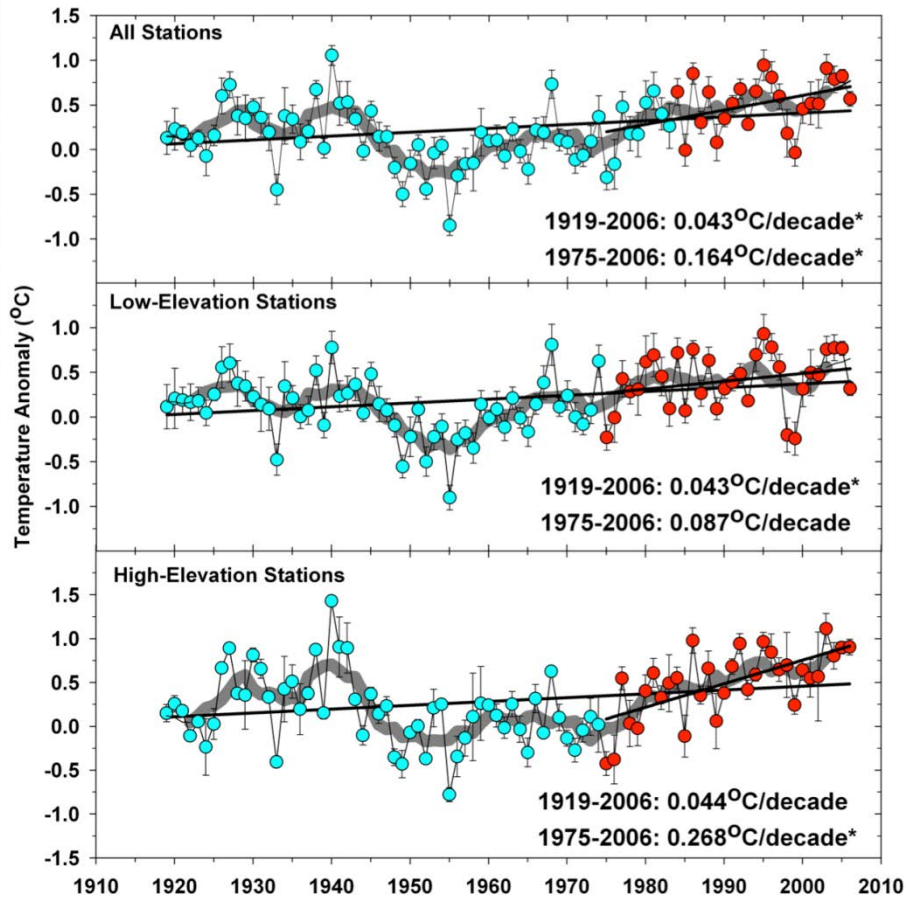


Chu, P.-S., and Chen, H. 2005. Interannual and interdecadal rainfall variations in the Hawaiian Islands. *Journal of Climate* 18: 4796-4813.



Hawaii's Water Supply is at Risk

Hawaii Temperature

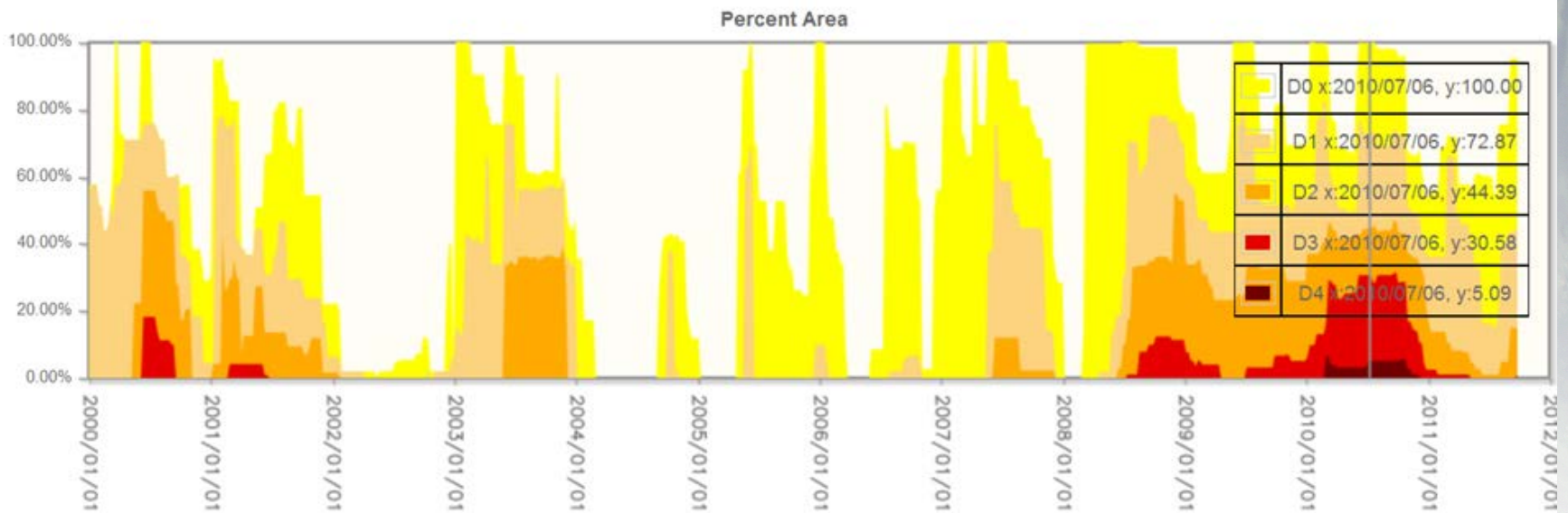


Giambelluca, T.W., Diaz, H.F., and Luke, M.S.A. 2008. Secular temperature changes in Hawai'i. *Geophysical Research Letters* 35, L12702, doi:10.1029/2008GL034377.

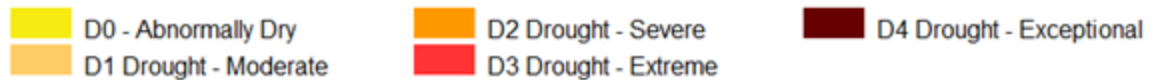


Hawaii's Water Supply is at Risk

Drought



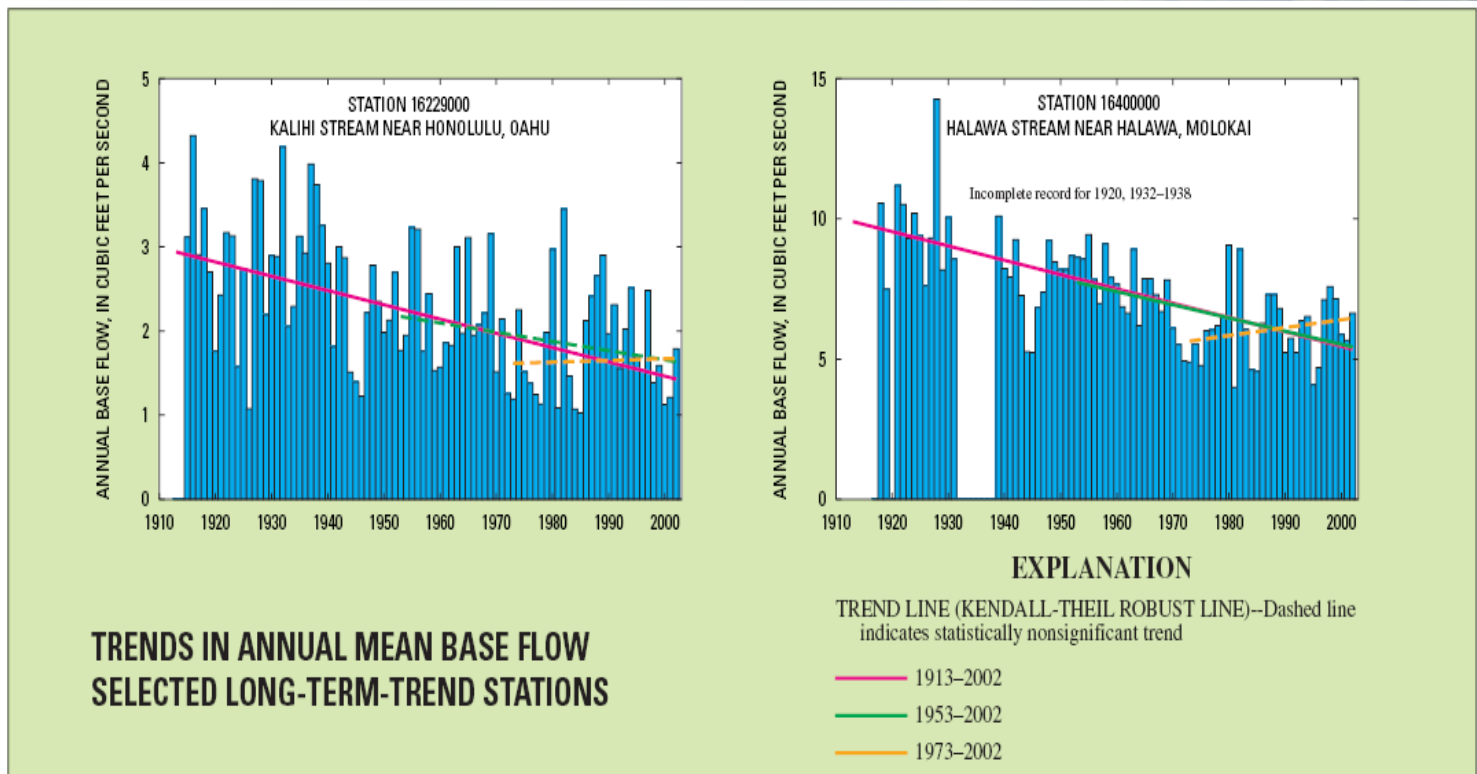
Drought Severity





Hawaii's Water Supply is at Risk

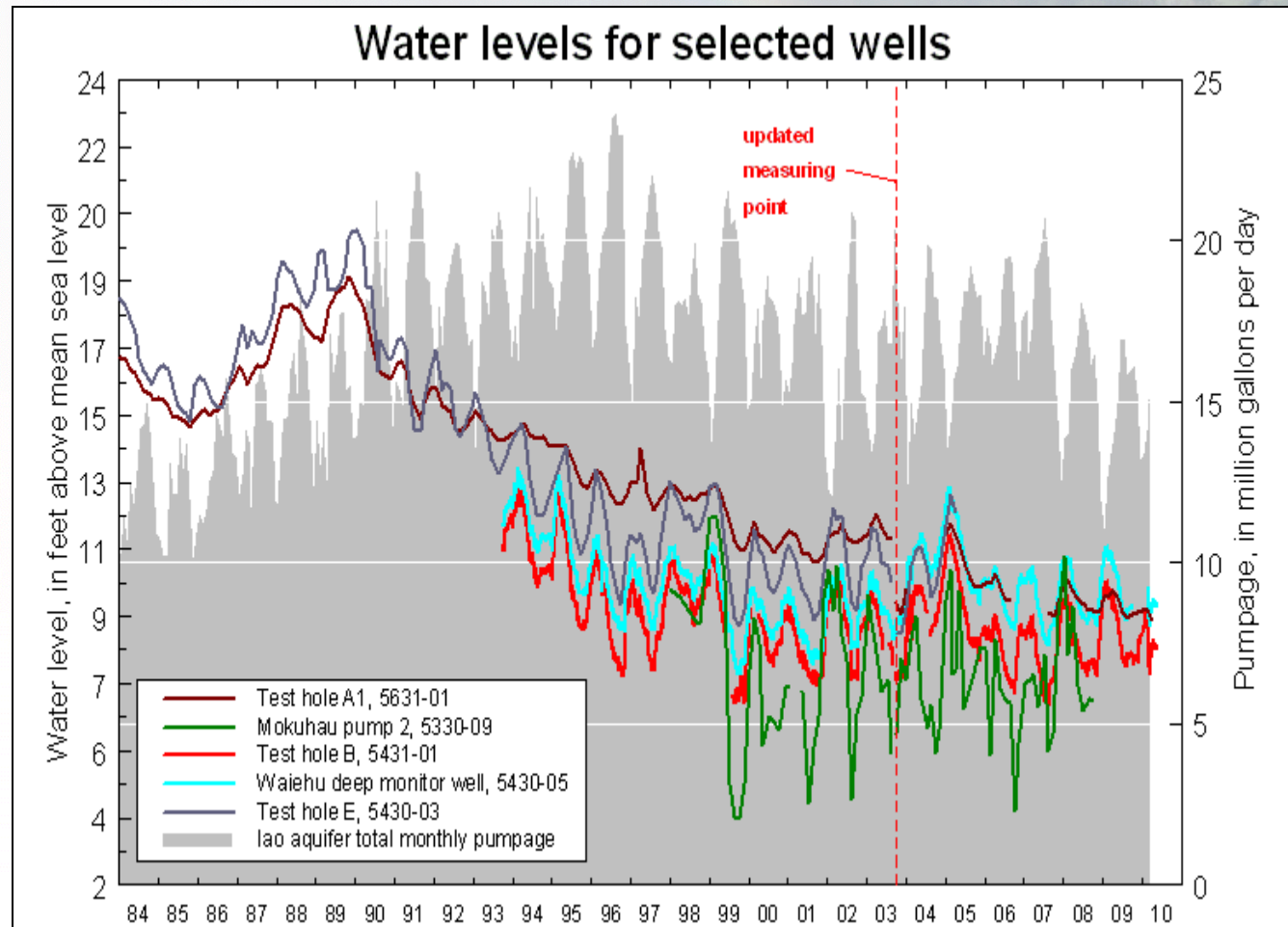
Stream Base Flow in Decline



Oki, D.S., 2004, Trends in Streamflow Characteristics in Hawaii, 1913-2003: U.S. Geological Survey Fact Sheet 2004-3104, 4 p.



Hawaii's Water Supply is at Risk





Benefits of Forest Watershed Protection



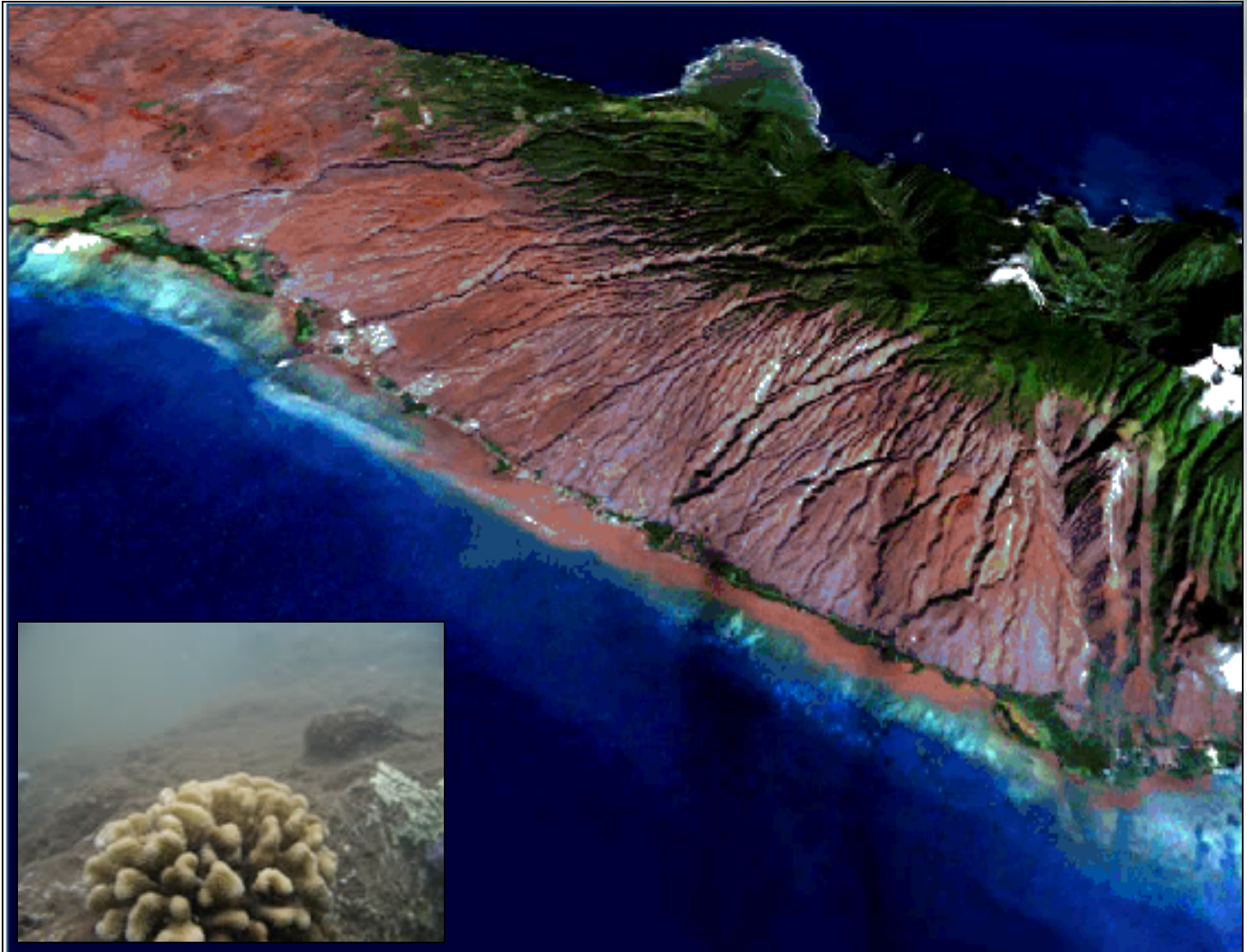
Forests capture rain and cloudwater

- Forests can increase water capture by up to 30%
 - 1% loss of recharge in the Ko`olau Mtns costs \$42 million
 - Invasive plants reduce estimated groundwater recharge in East Hawaii by 85 million gallons/day
 - Desalination plant planned for `Ewa will cost \$40 million to construct and \$5 million annually to produce 5 million gallons/day





Benefits of Forest Watershed Protection





Managed



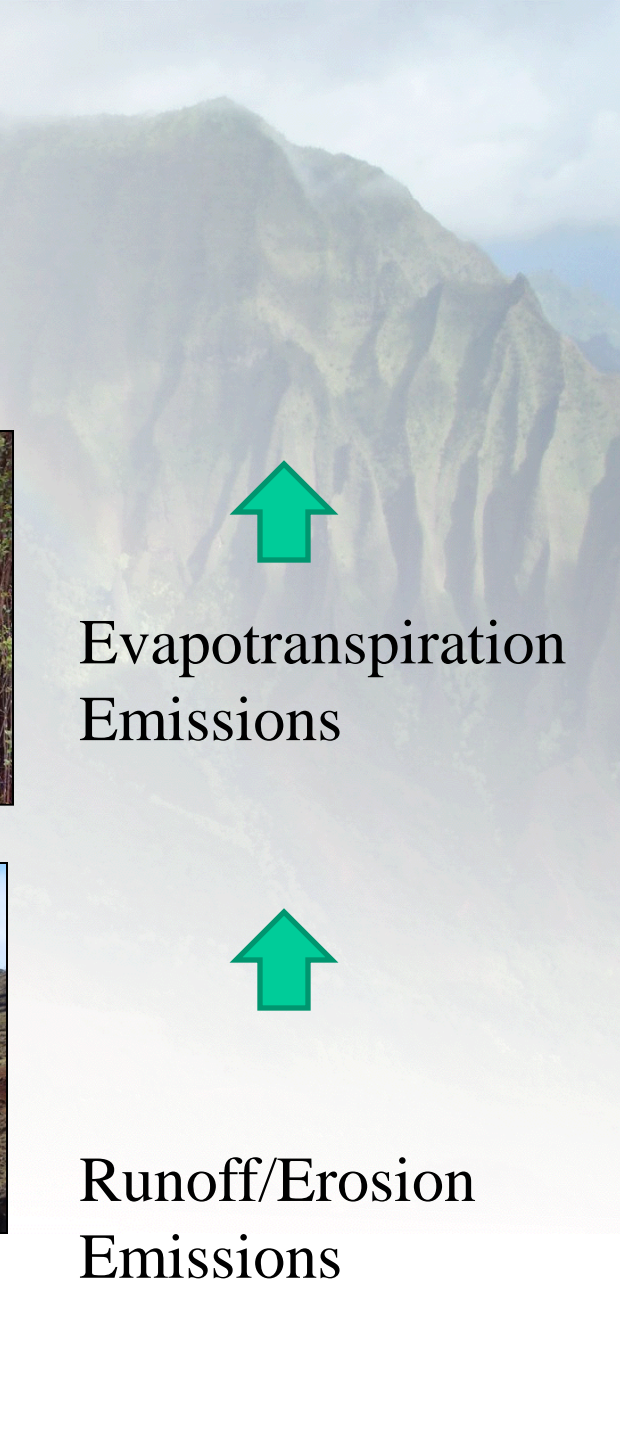
Unmanaged



Evapotranspiration
Emissions



Runoff/Erosion
Emissions





Managed



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Unmanaged



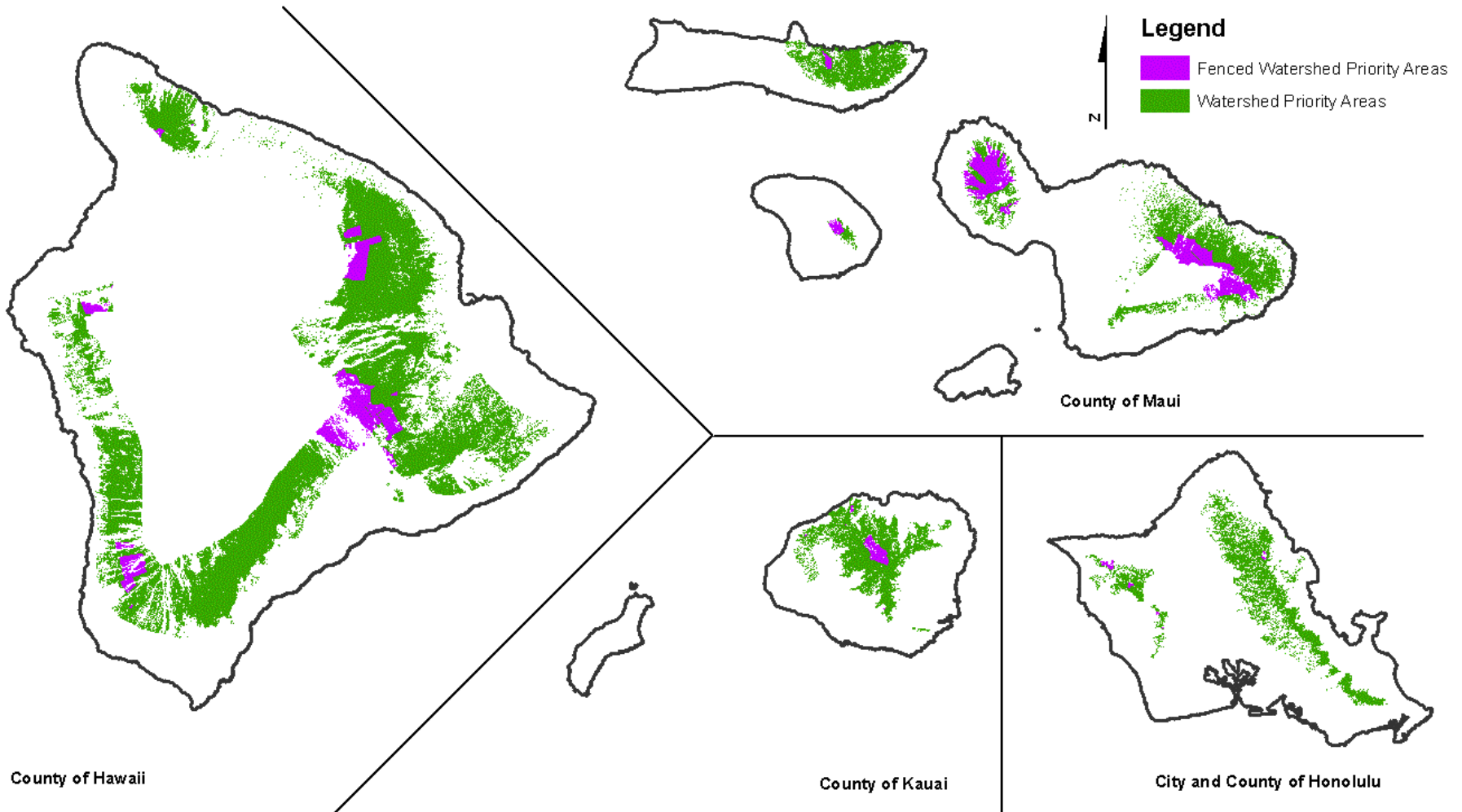


Action Plan



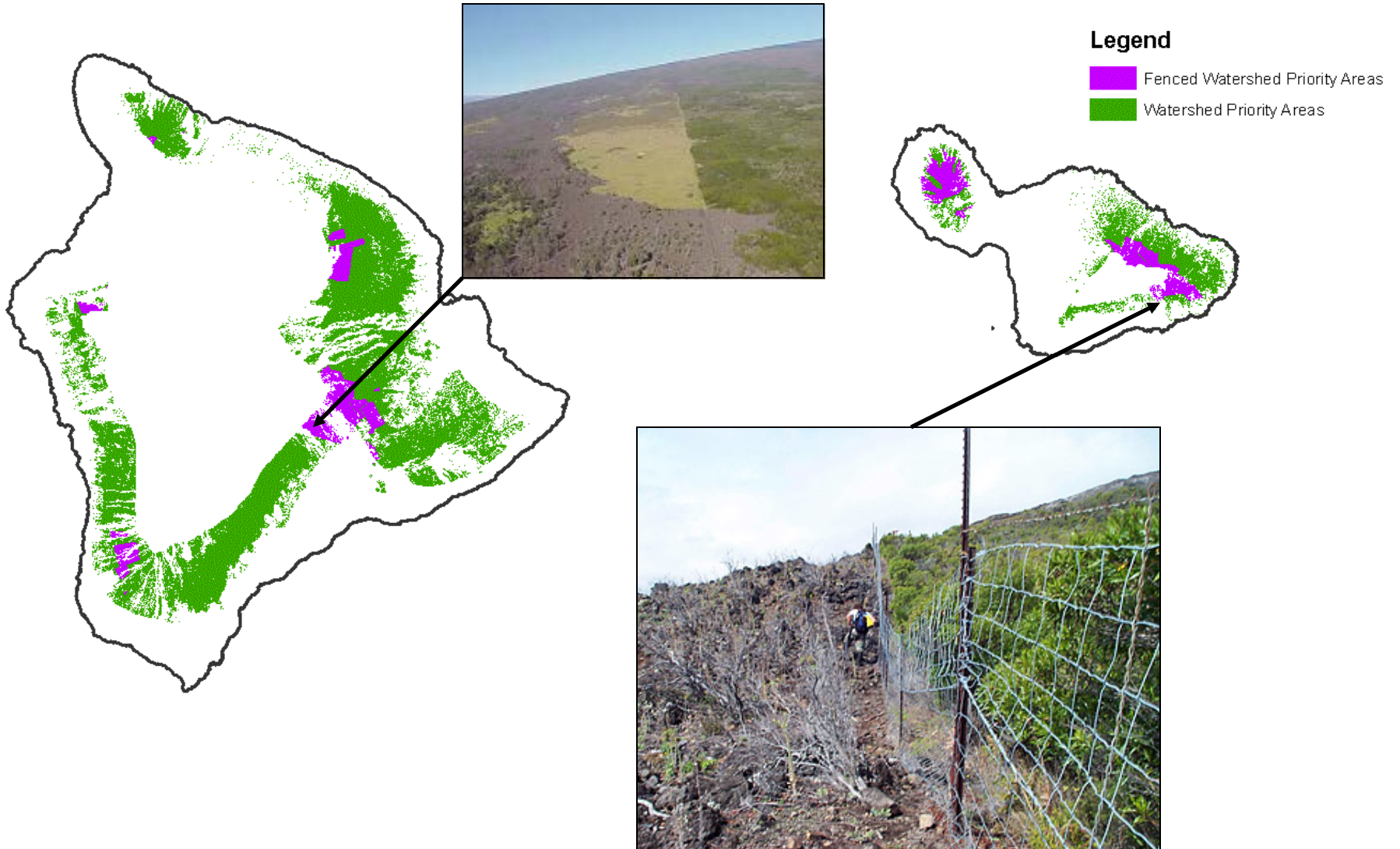


Watershed Priority Areas





Watershed Priority Areas





Action Plan

- DLNR's Goal
 - Double acreage protected in next 10 years
 - Requires investment of approximately \$11 million per year
 - Fund approximately 150 FTE natural resource careers
 - This level of effort, or more, needed in perpetuity to stabilize Hawaii's water source



Funding

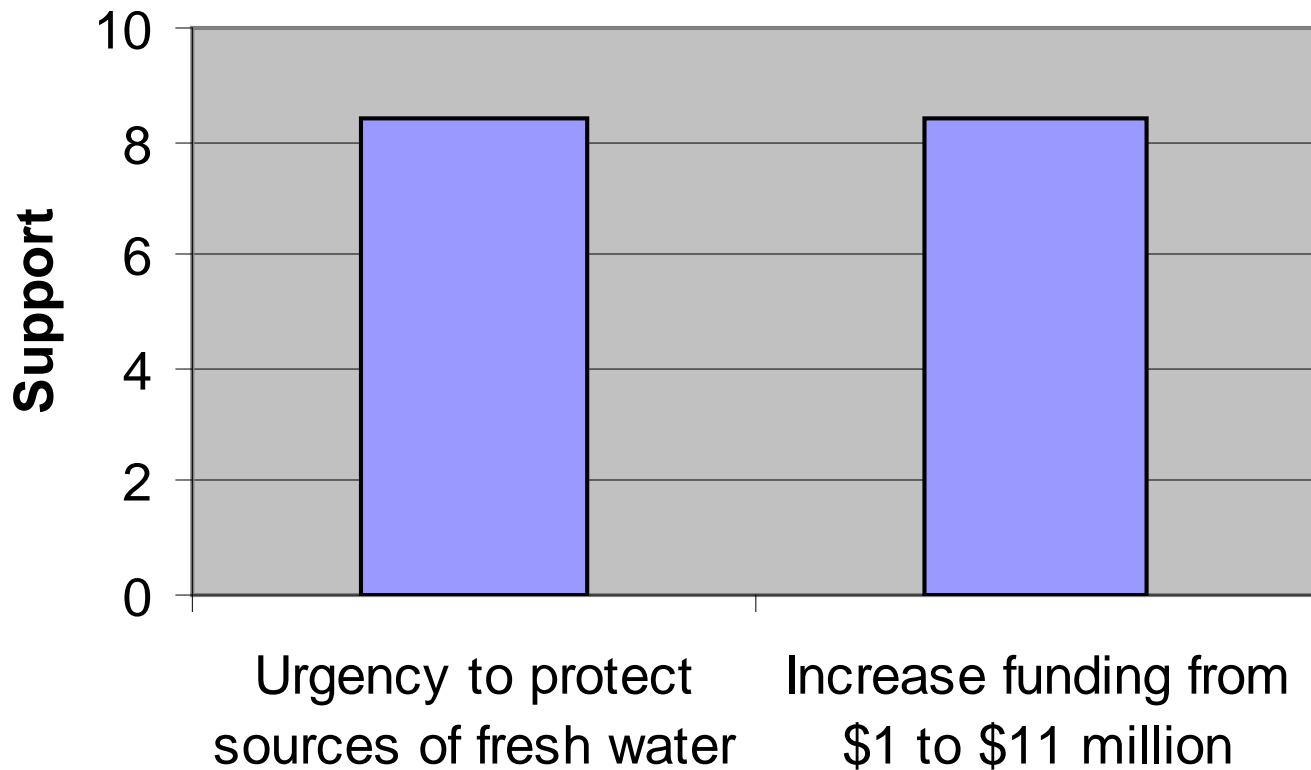
- Dedicated funding needed
- Watershed protection benefits multiple sectors





Polling

Public Support





MAHALO

Hahai no ka ua i ka ulula`au

The rain always follows the forest

hawaii.gov/dlnr