JOSH GREEN, M.D.
GOVERNOR | KE KIAʻĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIAʻĀINA

STATE OF HAWAIʻI | KA MOKUʻĀINA ʻO HAWAIʻI
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA ʻOIHANA KUMUWAIWAI ʻĀINA

P.O. BOX 621
HONOLULU, HAWAII 96809

DAWN N.S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

LAURA H.E. KAAKUA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

Testimony of
DAWN N. S. CHANG
Chairperson

Before the House Committee on
FINANCE

Tuesday, February 28, 2023
10:00 AM
State Capitol, Conference Room 308 & Videoconference

In consideration of
HOUSE BILL 1405, HOUSE DRAFT 1
RELATING TO NATURAL RESOURCES

House Bill 1405, House Draft 1 proposes that the Commission on Water Resource Management (Commission) and the Division of Aquatic Resources (DAR) of the Department of Land and Natural Resources (Department), in partnership with the University of Hawai‘i, shall conduct research on limu (seaweed) to understand the impacts of groundwater use on groundwater-dependent ecosystems. The measure also proposes to appropriate $250,000 in general funds to the Department for the purposes of this bill. **The Department supports this measure, provided that its passage does not replace or adversely impact priorities indicated in the Executive Budget request.**

Groundwater-dependent ecosystems (GDEs) rely on fresh water from springs and submarine groundwater discharge. Native species such as limu are particularly vulnerable to changes in discharge and are an important indicator of coastal ecosystem health. Limu holds cultural significance, not only as an important food source, but also for the continuation of Native Hawaiian traditional and customary practices. Unfortunately, as more water is pumped from aquifers and removed from streams, and there is less rainfall due to climate change, these ecosystems are impacted in ways that we are just beginning to understand.[1] The few studies we do have suggest that native limu thrive in brackish conditions and rely on freshwater

[1] Dulai, H., Smith, C.M., Amato, D.W., Gibson, V., Bremer, L.L. (2021), Risk to native marine macroalgae from land-use and climate change-related modifications to groundwater discharge in Hawai‘i, *Limnol. Oceanogr. Lett.*, doi: 10.1002/lol2.10232

input, whereas invasive macroalgae are less adapted to these conditions.[2] Recent studies by researchers at the University of Hawai‘i at Mānoa have identified the importance conserving the quality and quantity of groundwater flows to coastal regions to allow for the vitality of a native limu (limu palahalaha) over a non-native seaweed *Hypnea musciformis*.[3]

To better understand the impacts of water use, well development, pumping, and water quality on limu and GDEs, the Commission recommends building on prior studies by utilizing the $250,000 in general funds for a pilot study that focuses on the south shore of Moloka‘i where native and invasive limu are part of the subsistence lifestyle of many on the island.[4] Building on the United States Geological Survey's report titled "SIR 2019-5150: Numerical Simulation of Groundwater Availability in Central Moloka‘i, Hawai‘i," which quantifies the impacts of various scenarios of future groundwater pumping on nearshore water quality, the Commission and its partners will link changes in water quality to limu health and abundance. To do so, a collaborative partnership including the Commission, DAR, the Department of Health (DOH), and the University of Hawai‘i Water at Mānoa (Water Resources Research Center and The School of Life Sciences), will grow and physiologically characterize select native species of Moloka‘i limu under conditions ranging from healthy reef conditions to those impacted by changes in salinity due to increased pumping. These data combined with groundwater modeling results of various pumping scenarios will allow the research-practitioner team to gain insight into the sensitivity that limu have to changes in coastal waters such as changes in salinity, nutrients and temperature. This work will engage the Moloka‘i community of fishpond and limu practitioners in species choices as well as discussions of outcomes.

Such a study aligns with the State Water Code (Hawai‘i Revised Statutes Section 174C-31), which states the Commission must develop and update the Hawai‘i Water Plan in accordance with the Hawai‘i Water Plan Framework. This includes the completion of studies to inform the allocation of water resources and mitigate the effects of pumping, etc. on those resources and public trust uses.[5]

The Department appreciates the amendments in House Draft 1 to SECTION 1. (a) to include DOH as a listed partner. DOH has primary jurisdiction and responsibility for the State's water quality control programs. Historically, the Commission has deferred to DOH on most water quality related matters. However, as co-trustees of water there is an increasing need for the Commission and DOH to work in partnership rather than operating in silos. DOH can contribute valuable data on water quality and nutrient loads to the Moloka‘i pilot study. In addition, funding from the Clean Water State Revolving Fund, which is administered by DOH, could be tapped to assist with future implementation actions.

Mahalo for the opportunity to provide testimony in support of this measure.

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[2] Amato, D.W., Smith, C.M., Duarte, T.K. (2018), Submarine groundwater discharge differentially modifies photosynthesis, growth, and morphology for two contrasting species of *Gracilaria* (Rhodophyta), *Hydrology*, 5, 65, doi: 10.3390/hydrology5040065

[3] Okuhata, B.K., Delevaux, J.M.S, Richards Dona, A., Smith, C.M., Gibson, V.L, Dulai, H., El-Kadi, A.I., Stamoulis, K., Burnett, K.M., Wada, C.A, & Bremer, L.L. In Review. Effects of multiple drivers of environmental change on native and invasive macralgae in nearshore groundwater dependent ecosystems. Submitted to *Water Resources Research*

[4] https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/e96d5318-ff46-4f66-bd5e-3758988877a0/content

[5] Section 174C-101, HRS

Food+ Policy Internship 2023

food@purplemaia.org

To: Chair Yamashita, Vice Chair Kitagawa, and members of the House Committee on Finance

Subject: HB1405 Limu Research and Commission on Water Resource Management

Aloha mai,

Hawaii Food+ Policy Supports HB1405, which is a very important bill that requires the commission on water resource management and the division of aquatic resources of the department of land and natural resources to partner with the University of Hawai‘i to conduct research on limu and to understand the impacts of groundwater use on groundwater dependent ecosystems.

Limu has played a significant role in Native Hawaiian traditions and ahupua‘a stewardship, has been an integral part of the traditional Hawaian diet, and is used for medicinal, religious and cultural purposes. We, the residents of Hawai‘i, as stewards of the land, need to have a better understanding of the environment that provides limu production.

HB1405 would also help to strengthen Hawai‘i‘s food system and agricultural industries by conducting research in understanding impacts of groundwater use on ground water dependent ecosystems.

Ground water is one of Hawaii‘s most important natural resources. It is used for drinking water, irrigation and domestic, commercial, and industrial needs. Ground water provides about 99% of Hawai‘i‘s domestic water and about 50% of all freshwater used in the state.

In order for Hawai‘i to become more resilient and self-sustaining, we must begin to create a stronger food secure infrastructure. That begins with understanding the impacts of groundwater use on groundwater dependent ecosystems, and the effects this system has on limu production in the state of Hawai‘i.

Mahalo,
Kelsey Amos & the Food+ Policy Team
#fixourfoodsystem

The Food+ Policy internship develops student advocates who learn work skills while increasing civic engagement to become emerging leaders. We focus on good food systems policy because we see the importance and potential of the food system in combating climate change and increasing the health, equity, and resiliency of Hawai‘i communities.

In 2023, the cohort of interns are undergraduate and graduate students from throughout the UH System. They are a mix of traditional and nontraditional students, including parents and veterans, who have backgrounds in education, farming, public health, nutrition, and Hawaiian culture.

HB-1405-HD-1
Submitted on: 2/25/2023 11:22:29 AM
Testimony for FIN on 2/28/2023 10:00:00 AM

Submitted By	Organization	Testifier Position	Testify
Cards Pintor	Individual	Support	Written Testimony Only

Comments:

I support this bill because we need more funding to understand the limu population. Understanding limu in groundwater/groundwater ecosystems will help us learn more about our ʻĀina.

HB-1405-HD-1
Submitted on: 2/26/2023 10:35:05 AM
Testimony for FIN on 2/28/2023 10:00:00 AM

Submitted By	Organization	Testifier Position	Testify
Caroline Azelski	Individual	Support	Written Testimony Only

Comments:

In suppot of HD1. Thank you.