DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Testimony of
SUZANNE D. CASE
Chairperson

Before the Senate Committees on
WATER AND LAND
and
AGRICULTURE AND ENVIRONMENT

Wednesday, February 16, 2022
1:00 PM
State Capitol, Conference Room 229 & Videoconference

In consideration of
SENATE BILL 2023
RELATING TO HAWAIIAN FISHPONDS

Senate Bill 2023 proposes to require the Department of Land and Natural Resources (Department) to utilize the current state-of-the-art knowledge in marine finfish hatchery production to establish a functional system to provide pua ʻama and pua awa to stock loko iʻa. **The Department appreciates the intent of this measure and offers the following comments and recommendations.**

Loko iʻa, Hawaiian fishponds, are unique aquaculture systems throughout Hawaii and are important components of the ahupuaʻa (traditional land stewardship framework) that contribute to a healthy, sustainable, and robust food system. Fishponds and aquaculture can provide a sustainable source of local-grown fish for Hawaii residents. Production of fingerlings for grow-out can take pressure off nearshore fish stocks which can be a conservation tool for managing fisheries. At a broader level, fishponds can increase local food production, improve food security, perpetuate local and traditional practices, and provide employment opportunities for Hawaii residents. The Department is interested in exploring opportunities to support Hawaiian fishponds by providing technical support and finfish brood stock production.

The Department's hatchery facilities and staff at the Anuenue Fisheries Research Center (AFRC) are currently focused on production of native urchins for use with invasive algae removal and mitigation efforts. Neither AFRC nor the Department's Wailoa Fisheries Research Station in Hilo have ever been used as a finfish hatchery for producing pua ʻama or pua awa, and current staff do not have direct experience producing fingerlings from broodstock.

In order to carry out the intent of the bill, the Department recommends including an appropriation of funds, similar to what is proposed in Senate Bill 3378. Funding would be used to hire staff or contractors with expertise in finfish hatchery production, purchase equipment and supplies, and conduct training workshops. Without appropriation to support the proposed legislation, the Department simply does not have the resources or expertise to do this.

Thank you for the opportunity to comment on this measure.

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Testimony of
SUZANNE D. CASE
Chairperson

Before the Senate Committees on
WATER AND LAND
and
AGRICULTURE AND ENVIRONMENT

Wednesday, February 16, 2022
1:00 PM
State Capitol, Conference Room 229 & Videoconference

In consideration of
SENATE BILL 2023
RELATING TO HAWAIIAN FISHPONDS

Senate Bill 2023 proposes to require the Department of Land and Natural Resources (Department) to utilize the current state-of-the-art knowledge in marine finfish hatchery production to establish a functional system to provide pua ʻama and pua awa to stock loko iʻa. **The Department appreciates the intent of this measure and offers the following comments and recommendations.**

Loko iʻa, Hawaiian fishponds, are unique aquaculture systems throughout Hawaii and are important components of the ahupuaʻa (traditional land stewardship framework) that contribute to a healthy, sustainable, and robust food system. Fishponds and aquaculture can provide a sustainable source of local-grown fish for Hawaii residents. Production of fingerlings for grow-out can take pressure off nearshore fish stocks which can be a conservation tool for managing fisheries. At a broader level, fishponds can increase local food production, improve food security, perpetuate local and traditional practices, and provide employment opportunities for Hawaii residents. The Department is interested in exploring opportunities to support Hawaiian fishponds by providing technical support and finfish brood stock production.

The Department's hatchery facilities and staff at the Anuenue Fisheries Research Center (AFRC) are currently focused on production of native urchins for use with invasive algae removal and mitigation efforts. Neither AFRC nor the Department's Wailoa Fisheries Research Station in Hilo have ever been used as a finfish hatchery for producing pua ʻama or pua awa, and current staff do not have direct experience producing fingerlings from broodstock.

In order to carry out the intent of the bill, the Department recommends including an appropriation of funds, similar to what is proposed in Senate Bill 3378. Funding would be used to hire staff or contractors with expertise in finfish hatchery production, purchase equipment and supplies, and conduct training workshops. Without appropriation to support the proposed legislation, the Department simply does not have the resources or expertise to do this.

Thank you for the opportunity to comment on this measure.

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Testimony of
SUZANNE D. CASE
Chairperson

Before the Senate Committees on
WATER AND LAND
and
AGRICULTURE AND ENVIRONMENT

Wednesday, February 16, 2022
1:00 PM
State Capitol, Conference Room 229 & Videoconference

In consideration of
SENATE BILL 2023
RELATING TO HAWAIIAN FISHPONDS

Senate Bill 2023 proposes to require the Department of Land and Natural Resources (Department) to utilize the current state-of-the-art knowledge in marine finfish hatchery production to establish a functional system to provide pua ʻama and pua awa to stock loko iʻa. **The Department appreciates the intent of this measure and offers the following comments and recommendations.**

Loko iʻa, Hawaiian fishponds, are unique aquaculture systems throughout Hawaii and are important components of the ahupuaʻa (traditional land stewardship framework) that contribute to a healthy, sustainable, and robust food system. Fishponds and aquaculture can provide a sustainable source of local-grown fish for Hawaii residents. Production of fingerlings for grow-out can take pressure off nearshore fish stocks which can be a conservation tool for managing fisheries. At a broader level, fishponds can increase local food production, improve food security, perpetuate local and traditional practices, and provide employment opportunities for Hawaii residents. The Department is interested in exploring opportunities to support Hawaiian fishponds by providing technical support and finfish brood stock production.

The Department's hatchery facilities and staff at the Anuenue Fisheries Research Center (AFRC) are currently focused on production of native urchins for use with invasive algae removal and mitigation efforts. Neither AFRC nor the Department's Wailoa Fisheries Research Station in Hilo have ever been used as a finfish hatchery for producing pua ʻama or pua awa, and current staff do not have direct experience producing fingerlings from broodstock.

In order to carry out the intent of the bill, the Department recommends including an appropriation of funds, similar to what is proposed in Senate Bill 3378. Funding would be used to hire staff or contractors with expertise in finfish hatchery production, purchase equipment and supplies, and conduct training workshops. Without appropriation to support the proposed legislation, the Department simply does not have the resources or expertise to do this.

Thank you for the opportunity to comment on this measure.

KUA'ĀINA ULU 'AUAMO

Testimony Before The
Senate Committee on Education
IN SUPPORT OF SB 2023
February 16, 2022, 1:00PM, Room 229

My name is Kevin Chang and I am the Executive Director of Kua'āina Ulu 'Auamo (or KUA). KUA works to empower grassroots rural and Native Hawaiian mālama 'āina groups to celebrate their places and pass on their traditions to better Hawai'i and achieve 'āina momona— an abundant, productive ecological system that supports community well-being.

KUA employs a community-driven approach that currently supports a statewide network of 36 mālama 'āina community groups collectively referred to as E Alu Pū (moving forward together), 40 fishpond projects and practitioners called the Hui Mālama Loko I'a, and a growing group of over 60 Limu practitioners and supporters called the Limu Hui. Participants in our networks have had long term dreams of bringing fishponds, food fish and limu back to our shorelines and dinner tables.

KUA supports SB 2023 as an incremental step on a pathway towards 'āina momona. This bill would require the Department of Land and Natural Resources to utilize the current state-of-the-art knowledge in marine finfish hatchery production to establish a functional system to provide pua 'ama and pua awa to stock loko i'a. **We would also like to suggest native limu be included as another species to be offered for loko i'a stocking.**

KUA's coordinators and network participants in all three of our networks have built stronger connections to the DLNR-DAR and the aquaculture community knowing very well that to reach a vision of greater food self-sufficiency we need to transform our culture, values and institutions together. Supporting a DLNR role in producing native fingerlings and limu for restorative aquaculture would directly address one of the recommendations in the 1993 Report of the Governor's Task Force on Moloka'i Fishpond Restoration. This report was published nearly 30 years ago, but many of its findings are still relevant and indeed, important to fishponds on most other islands in Hawai'i in addition to Moloka'i; a Loko I'a Needs Assessment finalized in November 2020 reiterated the continued interest in contemporary aquaculture technology to support fishpond revitalization. We acknowledge the existing resources and technical capacity within DLNR-DAR's existing hatchery program and encourage this proposed further support to build towards that vision of 'āina momona.

Importantly, the 1993 report recommended that "the State of Hawai'i…actively support and help fund the development of a hatchery to provide seedstock for fishponds and stock enhancement of the reefs." Many practitioners envision a future when loko i'a can be stocked again from natural populations of prized species such as 'anae, but since those fisheries are depleted in many areas across Hawai'i, hatchery-raised fingerlings are an important component of the restoration efforts for loko i'a and their surrounding waters. In our conversations with the Hui Mālama Loko I'a, practitioners from 24 loko i'a on 5 different islands have indicated this opinion in the past several years. Then looking beyond the boundaries of the walls, loko i'a themselves are key assets to restocking the wild fishery by serving as enhanced nursery areas.

Indeed, as we look to the future our communities are raising the kupa‘āina who want to have jobs focused on mālama ‘āina. I am sure some of the submitted applications that recently inundated and exceeded the capacity of the DOCARE Academy enrollment portal came from these kinds of young people. We appreciate creative and collaborative approaches that build the capacity and skills of the next generation with intention, and in a way that benefits ongoing community efforts at loko i‘a as a catalyst for ecosystem regeneration.

The communities we work with are committed to ensuring the long-term health of our biocultural resources. They have depended on them for generations. We believe our environment, the foundation of our very existence, is about long-term investment and a vision of ‘āina momona. To get there it requires among other things taking the steps toward greater self-sufficiency, development of a pipeline of new and more innovative career pathways, mindsets, relationships and resource flows for mālama ‘āina. Passing this bill out of your committee will open a pathway toward reaching this vision.

Mahalo for this opportunity to testify in support.

Aloha ‘Āina Momona.

SB-2023
Submitted on: 2/13/2022 2:17:45 AM
Testimony for WTL on 2/16/2022 1:00:00 PM

Submitted By	Organization	Testifier Position	Remote Testimony Requested
Kimeona Kane	Individual	Support	Yes

Comments:

aloha nui,

mahalo for your efforts to perpetuate a critical piece of hawaiian culture and sustainability. As a Kumu Uhau Humu Pōhaku who is educating multiple memvbers across the island about the skill of rock weaving which is used to build these structures, and someone who is actively participating in the restoration of various loko iʻa, it is important that we too, teach and understand the processes of hatcheries. These hatcheries, which would have existed within the loko iʻa complexes, are an incredible recognition of the ʻike kupuna that our ancestors held and have passed down. We will need these modern day hatcheries to get the loko iʻa that are being restored, stocked and in production again as an important part of community life. I support this bill wholeheartedly and ask that the upstream and downstream aspects that are connected, also, find themselve furthered forward.

Mahalo nui loa,

Kimeona Kane

SB-2023
Submitted on: 2/15/2022 11:24:41 AM
Testimony for WTL on 2/16/2022 1:00:00 PM

Submitted By	Organization	Testifier Position	Remote Testimony Requested
Jane Au	Individual	Support	No

Comments:

Loko iʻa (Hawaiian fishponds) are part of advanced food systems that optimized natural patterns of watersheds, nutrient cycles, and fish biology. They are one of most successful and sustainable aquaculture achievements in the world. As the effects of climate change, COVID-19, food insecurity, and other crises continue, Hawaiʻi will need loko iʻa to survive. These powerful and unique resources must be utilized to ensure the health and wellbeing of future generations in Hawaiʻi. The historic loss of loko iʻa and their food production played a tragic role in furthering food inequity in Hawaiʻi, and points to the need to reinvigorate efforts to get ponds in operation .

In 2020, the Hui Mālama Loko Iʻa, a growing network of loko iʻa practitioners and organizations, met regularly to discuss collective needs and goals to restore and operate loko iʻa statewide. Now that there is a streamlined loko iʻa restoration permitting process the next major hurdle our hui faces is the biological restoration of ponds, which – alongside issues of water flow, sedimentation, and invasive species – includes the stocking ponds with fish through the use of fish hatcheries.

Loko iʻa practitioners sadly concluded that current marine health is too degraded for natural stocking. In Hawaiʻi from 1903 to 1983 fishery stocks of ʻamaʻama (mullet) and awa (milkfish) declined by over 99%. A depleted population and degraded nursery habitats render the natural recruitment of pua (juvenile fish) impossible. While a return to natural stocking remains a priority the current predicament necessitates use of fish hatcheries to uplift loko iʻa operations and contributions to Hawaiʻi's food security. Presently, hatchery production is the best option to restore loko iʻa productivity and access to hatchery-raised pua was identified as a pivotal need.

While many successful loko iʻa restoration efforts exist throughout Hawaiʻi, there is a strong need to move beyond physical restoration towards biological restoration. From the 1970-80s-state and federal funded research on hatchery ʻamaʻama production demonstrated successful maturation, spawning and rearing of ʻamaʻama through the larval stages. This research resulted in a better understanding of growth under culture conditions. Similar success with awa showed the potential role hatchery-raised pua could have for re-stocking efforts.

These initial successes generated interest in loko iʻa restoration and productivity. The movement to renovate and restore some ponds was, in part, encouraged by this aspiration. While the successful technology for ʻamaʻama and awa production got exported to Southeast Asia and the

Middle East, the loko iʻa community in Hawaiʻi has waited - now over three decades - to enjoy the benefits of this nearly 50 year old Hawaiʻi based research and knowledge.

Efforts of Senators Daniel K. Inouye and Daniel K. Akaka were instrumental in securing funds for this research. We honor the groundwork that they and others at that time established for our community as beneficiaries of locally developed scientific progress. In this spirit, the loko iʻa community wants to pursue two important steps to restore abundant ʻamaʻama and awa populations in Hawaiian waters.

1. Utilize current state-of-the-art knowledge in marine finfish hatchery production to establish a functional system to provide pua ʻama and pua awa to stock loko iʻa.
2. Utilize the experience and knowledge from stock enhancement research in Hawaiʻi to produce pua ʻama and pua awa for release into Hawaiʻi's nearshore waters to support the recovery of those fisheries to increase the natural recruitment of pua into loko iʻa.

Historically, numerous community efforts to create more pragmatic and viable pathways towards State-supported loko iʻa restoration evolved. As early as the 1970's, efforts were made to ease cumbersome bureaucracy that stultified loko iʻa restoration. In the early 1990's, community leaders on Molokaʻi were appointed by Governor John Waiheʻe to create a task force to explore "opportunities and constraints for Native Hawaiian fishponds in the modern world." The ensuing "Report of the Governor's Task Force on Molokaʻi Fishpond Restoration," written in 1993, includes an entire chapter on cultural, historic, and community recommendations to the State of Hawaiʻi for loko iʻa repair. Notably, recommendations for hatchery support were included. Nearly thirty years later, no recommendations have been fully met, and yet, the conditions that warranted the creation of this report, including a decline in marine health and need for increased food security, have not only persisted, but have dramatically increased to the detriment of our communities.

Re-stocked loko iʻa will have numerous benefits for the State and the constituencies it serves. Prioritizing loko iʻa restoration and revitalization is an active state step to improve food systems, end hunger, and increase responsible consumption and production patterns.

1. Restoration addresses the food security challenges of being an isolated island community.
    1. Estimates show that loko iʻa once produced about 400–600 pounds of sustainable protein per acre, per year. Assuming the low end of this range and an average loko iʻa area of about 18 acres, which is also low, the annual yield of loko iʻa in pre-contact times neared 2 million pounds a year.
    2. According to Department of Business Economic Development and Tourism (DBEDT), the replacement of just 10% of current food imports locally would save over 300 million dollars in state revenue annually.
2. Stock enhancement hatcheries and loko iʻa restoration can also create sustainable jobs and economic development beyond our over-dependence on the tourism industry.

    1. With several thousand constituencies out of work due to the current pandemic, new and innovative workforces are needed, particularly in environmental sustainability and food production.
    2. Building more careers around this work is key for the State's future, and loko iʻa are a meaningful way to achieve that goal.
3. Loko iʻa also aid in ocean conservation, climate resilience, reef protection and enhancement.
    1. Restoration and revitalization of loko iʻa are a vital aspect of reaching 30x30 and UN Sustainable Development goals.

Given the global COVID-19 pandemic and other crises recent to us, the State of Hawaiʻi is limited in funding new ventures. Still, the HMLI hui is set on garnering State support, and being more involved in the political sphere as we work to reinstate loko iʻa as a major aspect of the local economy. It is our goal to reinstate loko iʻa, particularly the biological revitalization of loko iʻa, as a key state priority. During this 2021 session, it is our goal to have the State pronounce loko iʻa stock enhancement as a major issue and priority. We would also like an expression of intent to explore policy that will aid efforts to biologically restore loko iʻa statewide. Loko iʻa and hatchery support could be readily placed in local food production, marine conservation, and sustainable development policies, and having such policy would be a major step forward for our collective loko iʻa work.

Food+ Policy Internship 2022

food@purplemaia.org

LATE

February 15, 2022

To: Chair Inouye, Chair Gabbard, Vice Chair Keith-Agaran, Vice Chair Nishihara, and members of the Senate Committees on Water and Land & Agriculture and Environment

Subject: Testimony in **SUPPORT of SB2023**, Relating to Hawaiian Fishponds

Aloha mai kākou,

I am writing on behalf of Hawai'i Food+ Policy to express our support for SB2023, relating to Hawaiian Fishponds. This measure would require the DLNR to use current state-of-the-art knowledge in marine finfish hatchery production to establish a functional system to provide pua'ama and pua'awa to stock loko i'a.

In the early 1900s, there were around 360 loko i'a (fishponds) around the islands, 99 of them being active. Their estimated annual production was about "680,000 pounds, including 486,000 pounds of 'ama'ama and 194,000 pounds of 'awa." (Keala, 2007) At the time, Keala says that there was also very "minimal amount of fishpond 'input' and maintenance effort," so the lack of appropriating funding in this specific bill could be aided by other aquaculture bills moving through legislation.

From canoe-building to fishponds, Hawaiians used their intelligence to efficiently utilize their resources. Their practices were also highly evolved to the point of having a large variety and quantity of fishponds across the Hawaiian archipelago. In 1994, Moloka'i created a blueprint to use their current fishpond resources. At the time, Moloka'i had more than 60 fishponds, which were considered "underutilized potential to create employment and sustainable economic growth opportunities through practicing traditional and modern aqua-farming" (Keala, 2007). Our islands have the capacity to produce sustainable seafood for the local community, we just need a baseline stock input to get the ball rolling.

Requiring the DLNR to establish a functional system to provide pua'ama and pua'awa to stock loko i'a would be essential in creating a resilient community as we create less dependence on imported seafood.

Mahalo,

Kiana & the Food+ Interns
#fixourfoodsystem

References

Keala, G.B (2007). *Loko Ia: A manual on Hawaiian Fishpond Restoration and Management.*