

# WELCOME!

Enhancing Hawai'i's Food Security  
Through Aquaculture  
October 11, 2023  
Noon - 12:30 p.m.

- *We will be starting at noon*
- *Session will be recorded and archived on the Actions page of [hiaquacollab.org](http://hiaquacollab.org)*
- *Please introduce yourself in the chat*

hiaquacollab.org

## Hawai'i Aquaculture Collaborative Actions

Home

Actions

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### [Aqua+Culture video: Taste Our Love for Hawai'i](#)

Through the eyes of world renown chefs, this video showcases Hawai'i aquaculture from our unique history of food sustainability through loko i'a to modern day innovations like Blue Ocean Mariculture and Big Island Abalone (Length = 28:31). A collaboration with the Hawai'i Ag Foundation.

### [Aquaculture Training Programs in Hawai'i](#)

### [HDOA Aquaculture Development Program Strategic Plan 2023-2033](#)

### [Pacific Islands Offshore Aquaculture Permitting Guide](#)

### [Working Group Meeting Summaries, Materials, & Other Resources](#)

Article: Hawaii's Aquaculture Industry Is Set To Boom But It Needs State Help – Oct 4, 2023

THRIVE Agrifood Summit Panel: Strategic Planning Discussion for Hawai'i Aquaculture – Sept 27, 2023 [Slides](#); recording will be posted when available

Tech & Research brown bag: HDOA+Industry Discussion: Strengthen & Grow HI Aquaculture – Aug 12, 2023 [Recording](#)

# Upcoming Events

- Today: Oct 11: Transforming Hawai'i's Food System Together - Listening Session #1
- Oct 17: NOAA request for public comment closes
- Oct 26: Feasibility of Feed Mill Operation in Hawai'i Workshop (register by Oct 15)
- Nov 8: Oahu Feed Mill Update

# Opportunities for public comment

- Marine Mammal Interactions: descriptions of aquaculture gear
  - Your chance to help NOAA ensure aquaculture gear is accurately represented and understood when evaluating marine mammal interactions
- Sea turtle critical habitat designation
  - Requires biologists to evaluate sea turtle critical habitat for any federal project (or any project receiving federal funding)
  - Pacific Region consultations already largely include factors of critical habitat, this will ensure those factors are considered for future consultations



# Enhancing Hawai'i's Food Security Through Aquaculture



Kū'ike Kamakea-Ohelo



Carly Wyman



# Enhancing Hawai'i's Food Security through **Aquaculture**

**Swette Center for Sustainable Food Systems**

USDA Agricultural Marketing Service (AMS)

Local Food Promotion Program (LFPP)

2022 - 2024



# Project Objectives

## Objective 1- Market Research

### 1.a. Evaluate consumer

perceptions and preferences for farm-raised local fish including gray sea chub, mullet, milkfish, Hawaiian flagtail, Pacific threadfin, tilapia and seaweed to grow the market potential for these species.

1.b. In partnership with fishpond producers, develop and introduce a new trademark and production standards for loko i'a (fishpond)-raised products that could help distinguish fishpond products from “wild caught” or “farm raised.”

## Objective 2- Supply Chain

Determine supply-chain needs of Hawai'i's aquaculture producers for meeting market demand, including employing strategies such as producer associations, financing, technical assistance, and marketing and food safety standards including FSMA compliance.

## Objective 3- Sharing Findings

Elevate aquaculture systems as viable food production methods through disseminating findings widely.

# Objective 1a

## METHODS

- **Market landscape assessment:** quarterly data on current prices & availability of seafood products in retail grocery stores *(In progress)*
- **Consumer surveys** at grocery stores and fish markets *(In progress)*
- **Commercial buyer surveys and interviews** *(In progress)*
- **Taste tests**



# Market Landscape Assessment



## Basic info

Date, Location, Brand, Species, Package size



## Form

Whole, filet, entree, breaded vs. unbreaded, etc.



## Production Method

Wild caught vs. Farm-raised

## Marketed Name

If it differs from the species name

## Country/Place of Origin

Hawai'i, US, Foreign

## Marketing Claims & Certifications

Best Aquaculture Practices (BAP), Sustainable Seafood MSC, etc.

## Price

Per pound

## Refrigeration

Fresh vs. Frozen



# Market Landscape Assessment

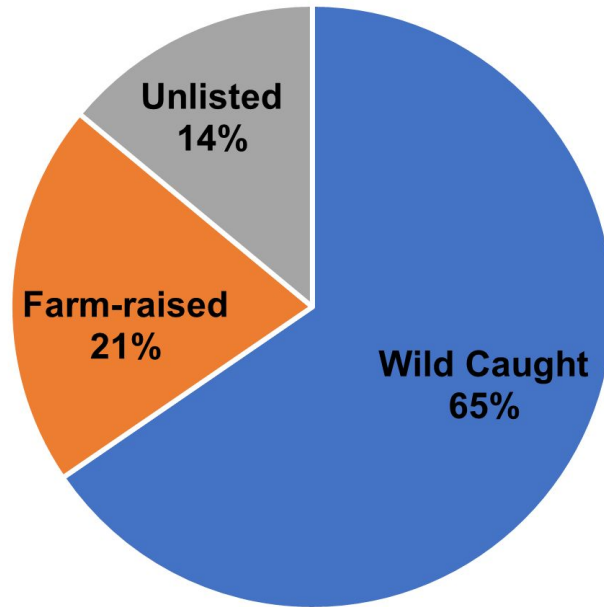
## Goals:

- Average prices: Hawai'i vs. US, vs. Imported
- Understanding customer preferences
- Marketing narratives
- Identify potential species for import substitution
- Seasonal changes in availability



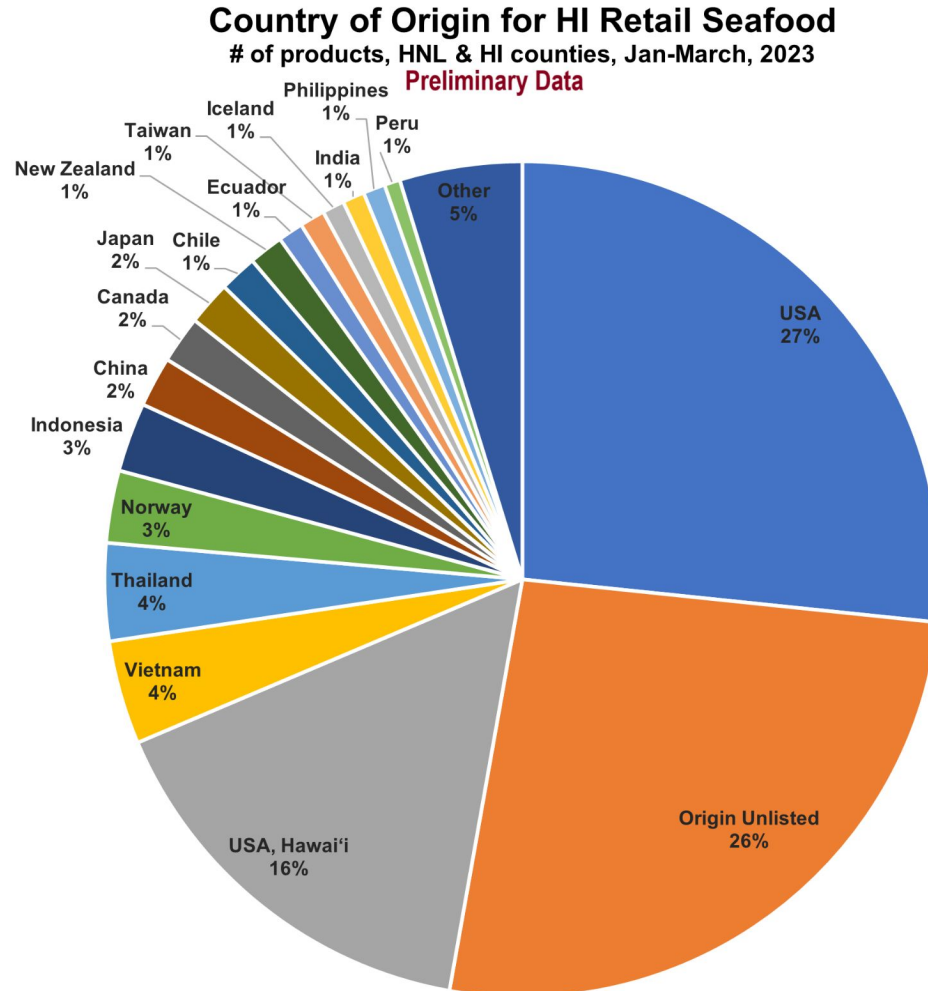
# Market Landscape Assessment

**Production Method of HI Retail Seafood**  
# of products, HNL & HI counties, Jan-March, 2023  
*Preliminary Data*



## Trends in Country of Origin of Hawai'i Retail Seafood Products

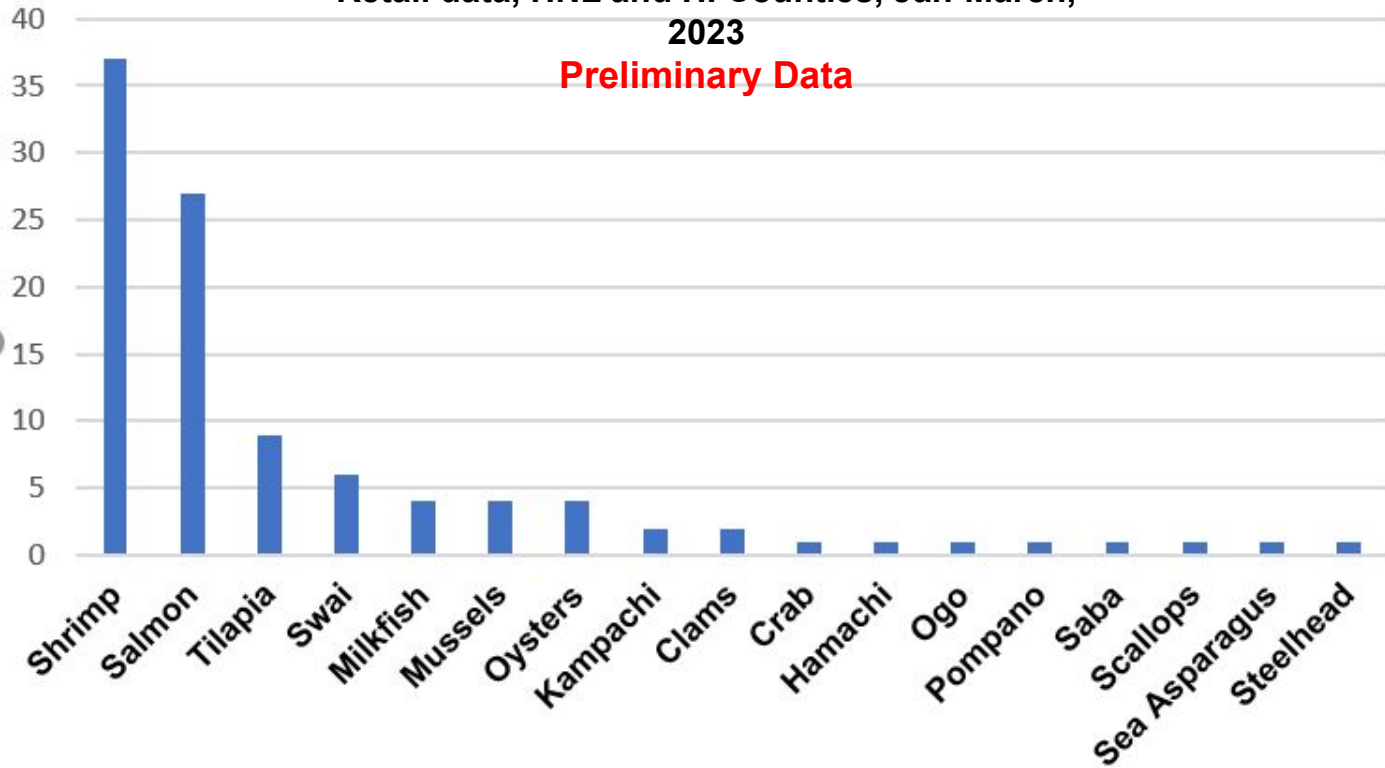
- Only 16% of retail seafood products were locally sourced from Hawai'i
- Including Hawai'i, 43% was of US origin
- 31% is imported from abroad
- 18% of retail seafood products were imported from Asia (Vietnam, Thailand, China, Indonesia, Japan, India, Philippines, Taiwan)
- The country of origin of 26% of seafood products surveyed was not listed



# Farm-Raised Species Available

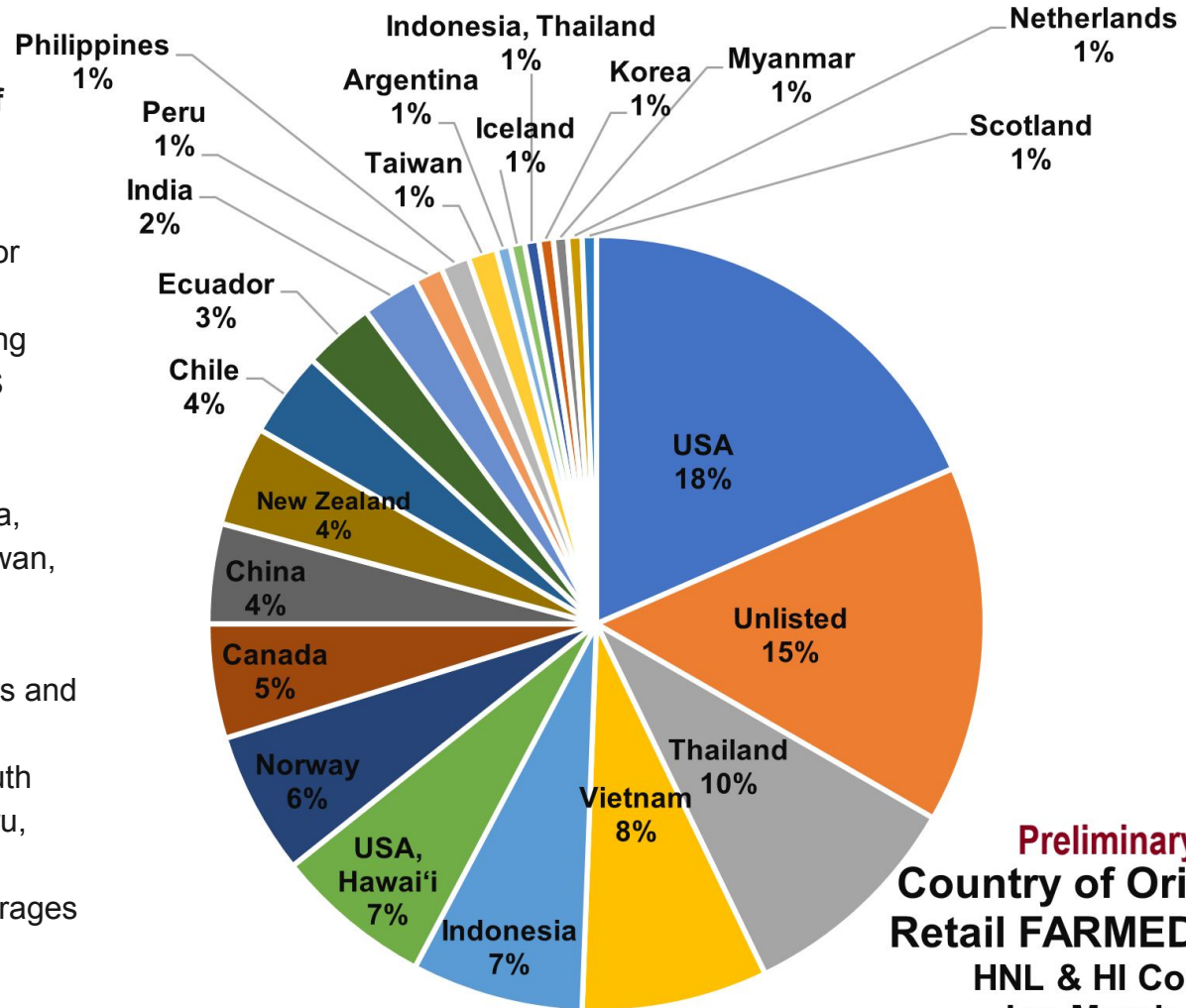
Retail data, HNL and HI Counties, Jan-March,  
2023

Preliminary Data



## Trends in the Country of Origin of Hawai'i Retail Farmed Seafood

- 7% of all farmed retail food products were locally grown or raised in Hawai'i
- 25% are of US origin, including Hawai'i (7% Hawai'i, 18% US other)
- Asia is the source of 36% (Thailand, Vietnam, Indonesia, China, India, Philippines, Taiwan, Korea, Myanmar)
- 9% is imported from Europe (Norway, Iceland, Netherlands and Scotland)
- 9% is also imported from South America (Chile, Ecuador, Peru, Argentina)
- Close reflection of global averages of aquaculture production



**Preliminary Data**  
**Country of Origin for HNL & HI Counties**  
**Retail FARMED Seafood**  
**HNL & HI Counties,**  
**Jan-March, 2023**

# Objective 1a

## METHODS

- **Market landscape assessment:** visit grocery stores & fish markets quarterly and take data on current prices & availability of aquaculture products *(In progress)*
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# Consumer Surveys

## RQ 1:

What aquaculture species have market potential: is there demand for them?

**1a:** What market segments want which species?

**2a:** What prices are folks willing to pay?

## RQ 3:

What seafoods are folks currently purchasing?

## RQ 2:

What are people's perceptions of farmed fish vs. wild-caught vs. loko i'a-raised fish?



## RQ 4:

Which attributes are most important to which segments of consumers when making seafood purchases? (conjoint analysis)



# Consumer Survey

(1/12) Choose your preferred seafood option below:

	Option 1	Option 2	None
Seafood	 Milkfish (Awa)	 Pacific Oyster	None of these options
Price	\$4.50 per pound	\$5.99 per pound	
Refrigeration State	Fresh	Frozen	
Form	Whole	Whole	
Origin	Thailand	Hawai'i	
Source	Farm-raised	Native Hawaiian Fishpond (loko i'a)	
Certification	Sustainable	None	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Conjoint Analysis

In the last 30 days, which seafoods did you purchase? Include seafoods that you bought for at home consumption, to eat out at a restaurant, or on the go from a convenience store, etc. Mark all that apply. (Note: Only mark the seafoods that you *bought*. The next questions will focus on seafoods that you traded for, received as a gift, or caught yourself).

None. I didn't buy any seafood to eat at home in the last 7 days.

Abalone

Agu (Monkfish)

Ahi (Yellowfin or Bigeye Tuna)

Āholehole (Hawaiian Flagtail)

Aku (Skipjack Tuna)

## Purchasing habits



# Consumer Survey

How do you rate the quality of 'farm-raised' seafood?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
It is healthy to eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is sustainable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tastes good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What words, stories, or other things come to mind when you think about 'farm-raised seafood'?

## Attitudinal questions

How would you best describe your ethnic background?

American Indian or Alaska Native

Asian Indian

Black, African American (fill in below, for example, African American, Jamaican, Haitian, Nigerian, Ethiopian, Somali, etc.)

Chinese

Fijian

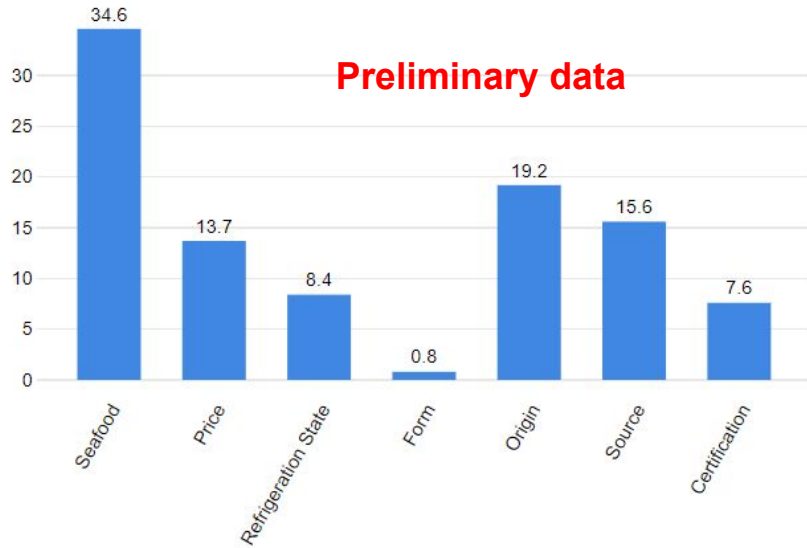
Filipino

## Demographic info



# Consumer Survey

Feature Importance ⓘ



Optimal Package ⓘ

**Preliminary data**

Seafood Shrimp



Price \$2.00 per pound

Refrigeration State Fresh

Form Whole

Origin Hawai'i

Source Native Hawaiian Fishpond (loko i'a)

Certification Supports Native Hawaiian Cultural Practices

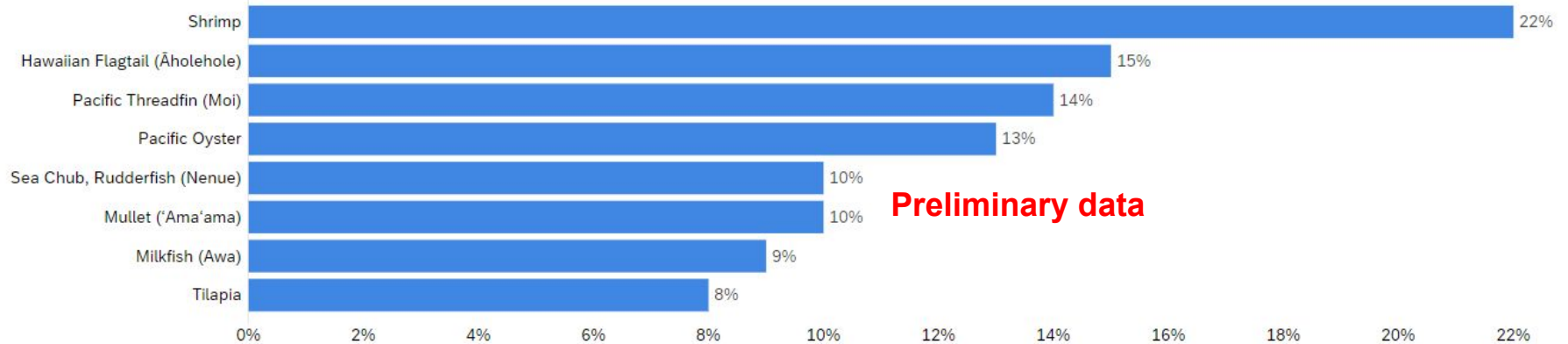
- N = 224



# Consumer Survey

## Seafood

Preference Share ⓘ



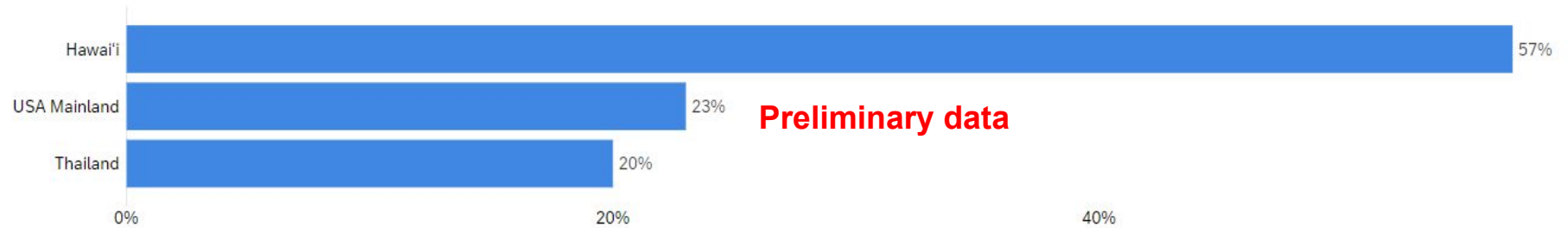
- N = 224



# Consumer Survey

## Origin

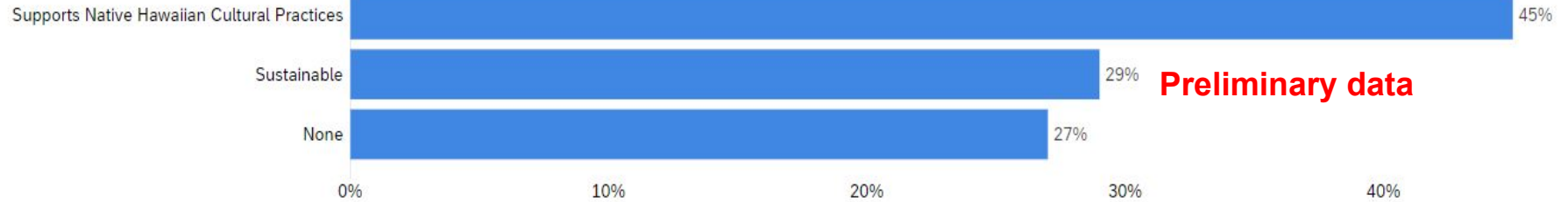
Preference Share ⓘ



# Consumer Survey

## Certification

Preference Share ⓘ



**Preliminary data**





# Consumer Survey

## Consumer Thoughts on FARM-RAISED Seafood

### Preliminary Data





# Consumer Survey

## Consumer Thoughts on LOKO I'A (FISH POND) Seafood

### Preliminary Data



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Elevate aquaculture systems as viable food production methods through disseminating findings widely

# Objective 1b

## METHODS

- **Loko i'a Steering Committee:**  
Engage in discussions to develop potential production standards and a potential loko i'a cooperative product logo (Partnership with Kua 'Āina Ulu 'Auamo, KUA) *(In progress)*



# Loko I'a Steering Committee In-person Gathering #1





# Loko I'a Steering Committee: Ecosystem Services Themes

## Loko i'a provide many ecosystem services:

- Regenerative practices: Investment over extraction, with a goal of a functioning ahupua'a, food as a byproduct of that
- Practices that contribute to the overall health of the ahupua'a: Political advocacy, education of future generations, reforestation
- Restoring the function of the loko within the ahupua'a
- Perpetuation of Hawaiian culture

## Measures of ecosystem services:

- Levels of phytoplankton and zooplankton
- Dissolved oxygen, pH, salinity
- Incubators for fish to reproduce
- Removal of invasive species
- Recruitment of fish and other wildlife
- Education: Number of students, visitors and others educated annually
- Outplanting, 'āina restoration on land surrounding loko
- Potential production levels: including potential juvenile fish production
- Number of people or 'ohana fed from the loko
- Diversity of species



*Kia'i loko clean invasive weeds at 'alakoko loko, Kaua'i, May 2023*

# Loko i'a Cooperative & Marketing & Branding

Potential functions of a cooperative:

- Marketing & branding
- Aggregating production
- Grant writing
- Permitting support
- Policy advocacy, maintaining political relationships
- Assistance with access to land
- Product standardization
- Professional development trainings
- Enforce kapu
- Forthcoming: loko i'a cooperative logo mock-up



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## Objective 2: METHODS

- **Interviews:** With commercial and fishpond producers, leaders & experts *(In progress)*
- **Surveys:**
  - \*Fishpond producers
  - \*Commercial aquaculture producers *(In progress)*
- **Desk Research:** Food safety standards, producer associations, best practices, etc. *(In progress)*

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## Objective 3: METHODS

- **Newsletters:** Monthly. Subscribe here:  
<https://forms.gle/HKcWPQqCgCbRu8VZ9>
- **Webinar:** At close of project, early 2024
- **In- person gathering:** At close of project, early 2024

# Questions



What market research questions do you have? How can this data be useful to you? What other data would be useful for you to see?

What are your main challenges in growing and selling to the Hawai'i market?

How can collaboration help to address market and supply chain challenges?

# Mahalo Nui!

[carly.wyman@asu.edu](mailto:carly.wyman@asu.edu)

[kuikeokalani.kamakea-ohelo@asu.edu](mailto:kuikeokalani.kamakea-ohelo@asu.edu)

