

# **HAWAII STATEWIDE AQUACULTURE INDUSTRY SUMMIT**

## **The Future of Hawaii's Blue Economy**

### **“Organizing for 2020”**

November 16, 2017

#### **Breakout Session Notes**

#### **EXECUTIVE SUMMARY**

The Hawaii Statewide Aquaculture Industry Summit provided two one-hour breakout sessions with the goal of sharing success stories, identifying strengths and opportunities, and building consensus on what the top aquaculture priorities should be.

The breakout sessions were divided into four sectors: oceanic farming, freshwater farming, breeding/seedstock marine species and algae production. The specific breakout session notes are transcribed below. Each sector approached the ranking of their findings somewhat differently. However, there was a fair amount of overlap for the four sectors in terms of defining strengths and opportunities.

Hawaii's strengths include high quality natural resources such as clean water, Hawaii's isolation/biosecurity, the ability to control temperature, the existing legal framework and Hawaii's brand name. Opportunities therefore exist in leveraging the Hawaii brand, building on established successes, existing expertise and reputation.

All four sectors had the build out of a Hawaii brand (including certification to protect the brand) as a key goal. Another recurring key goal was the development of programs including incubator/accelerator programs and establishing/strengthening existing advocacy/trade associations. Policies to further develop the aquaculture sectors included support from legislators and others to fund business launch and growth, streamlining species importation and perhaps developing a biosecurity center to establish guidelines for sustainable best practices for aquaculture.

## **BREAKOUT SESSION I: OCEAN FARMING**

### **Ocean Farming - Morning Breakout Session Notes**

#### Key sector strengths

\*\* Legal framework

Political support

Native Species diversity

We are doing it – unique in USA and global leadership

Consistency of water quality – environmental asset

\*\* High quality environmental assets / biosecurity - Environment and location (access to Asian markets),  
incl. Clean high-quality water (but nutrient poor)

Onshore/offshore capability – vertical integration capability

Proximity to open ocean

Proximity to deep water

Isolation

R&D Capacity

\*\* Hawaii Brand value/cachet

Large local market – appreciates premium

Cultural and social ties and support

Bathymetry data available

Ethnic diversity of population creates

Low risk to investment due to US location

#### Weaknesses

Energy costs

Competition for nearshore waters

Shipping costs for inputs (raw materials and logistics)

Isolation

Labor costs and availability

Jones Act

Challenge to working in deep water

Cost of land

Need buy-in from community - NIMBY – negative public perception

Small market (lack of local demand)

Product-Market fit (Hawaii production tends towards high value products)

Local market not sufficient for business sustainability - products (incl. technology) must export

Continuing poor public perception of fish farming (40-yr hangover) – need an industry  
spokesman to drive the positive message

Consumer education shortfall

Nutrient poor waters

Clever farming vs marketing vs business

#### Key sector opportunities

\*\* PR educational campaign

Change the way business is done – Hi could be a global leader

Opportunity for industry to partner for consumer (and investor?) education

- \*\* Leverage Hawaii brand (including Hawaii's sustainability standards and environmental consciousness)
- Ground-zero for high-health broodstock
- \*\* Local population concern for overfishing

### Threats

- R&D export (brain drain) of technology
- The "bad apple" (one poor practitioner can stain the whole industry)
- Climate change
- Food scares (Bad apple)
- Possible loss of Political support (bad PR can have a disproportionate influence)
- Difficulties in competing in the global marketplace (need to focus both Nationally and Locally)
- Price/market volatility is higher for high-value products (e.g. sensitivity to macro-economic forces)
- Ability of local markets to absorb local products
- Industry not yet well organized – e.g. to respond to internal and outside influences, events, threats

### Recent events/investments/activities

- \*\* Legal framework established
- \*\* Success of some local businesses - SHRIMP
- Clean energy initiative
- Hawaii initiative to double local food production by 2025
- \*\* Scientific and R&D breakthroughs – feed mill
- Hawaii's seafood culinary dominance (chefs)

## **Ocean Farming - Afternoon Breakout Session Notes**

What this forum could and should do to improve our current position prior to 2020

### Key Sector Goals

- Product market fit - Find the key products in which Hawaii can succeed in (dominate?) the global market
  - i.e. Select the local lemon from which to make lemonade (the right high-value product – e.g. high health broodstock) for export
- Focus on low cost environmentally safe product
  - for the local market vs high-value/high-quality product for the outside market (or tourist) vs BOTH
- Identify the impact the sector has on the local economy

- \*\* Define and build a Hawaii brand - Build a healthy supportive collective brand around Hawaii aquaculture products
- Use 100% of the fish
- \*\* Embrace sustainability
- Promote Hawaii's strength in seafood economy

Make the HOST Park more energy-efficient/sustainable

- \*\* Embrace Aloha Plus Goals

How do we measure progress towards goals - metrics

- Capital deployed
- Net production income
- Number of producers
- Number of Blue jobs
- Reduce the seafood deficit

Identify collective pre-competitive collaboration efforts (R&D emphasis)

- Lobby for research

How many jobs can the sector foresee in Hawaii?

### Key Sector “Need-to-have” Capabilities

- \*\* A well organized coordinated industry group
  - Industry spokesman to drive the public outreach message
  - Consumer education (alkazeltzer for the 40-year hangover)
  - Respond to internal and outside influences, events and threats
  - Protect the Hawaii aquaculture brand
  - Police the local industry (e.g. define a code of conduct)
  - Lobby for organization’s objectives at the State and Federal levels

Hawaii Seafood Certification

- \*\* Marketing the Hawaii brand (but need to offer value to back the promise of the brand)
- Collective commitment to produce a high quality product
- Commit to a sustainability standard (is this part of The Brand?)

### Policy Recommendations

- \*\* Define a State Agency to own aquaculture -Need the State to define focus and regulatory scheme
- \*\* State needs to “up its game” in core competency in the aquaculture sector divisions
- Define a lead agency for Hawaii aquaculture
- Document Hawaii Aquaculture’s Global reach (identify Hawaii’s specific participation in the global economy)
- Lobby to challenge the Jones Act?
- \*\* Create incentives to keep new/key technologies “at home”
- Ease regulations
  - Streamline importation process for non-Hawaii species

Regional management plan as opposed to farm-specific plans

### Discussion notes:

- Is Hawaii capable of being more on the global stage than an exporter of shrimp broodstock?
- Hawaii may not be able to lead in extensive land-based crops – but maybe ocean based?
- Can never compete in commodities – must capitalize on brand
- Capitalize on the farm to table demand (eat local movement)
- Segmentation of the Hawaii market - local vs tourist (3 times more tourists than locals)

Current organizations:

- HAAA (2 people in the room are members)
- Keahole Point Assoc.

What should be the relationship of Hawaii aquaculture to the fishing industry

- Assimilate into a broader coalition?
- Work synergistically together

Food safety modernization act – how does it affect aquaculture?

Look at other countries and how they have handled particular aspects of the industry (learn from the experience of others)

### **Ocean Farming Breakout Session Take-aways:**

#### Key sector strengths

- Legal framework
- High quality environmental assets / biosecurity - Environment and location (access to Asian markets), incl. Clean high-quality water (but nutrient poor)
- Hawaii Brand value/cachet

#### Key sector opportunities

- PR educational campaign
- Leverage Hawaii brand (including Hawaii's sustainability standards and environmental consciousness)
- Local population concern for overfishing

#### Recent events/investments/activities

- Legal framework established
- Success of some local businesses - SHRIMP
- Scientific and R&D breakthroughs – feed mill

#### Key Sector Goals

- Define and build a Hawaii brand around Hawaii aquaculture products
- Embrace sustainability
- Embrace Aloha Plus Goals

#### Key Sector "Need-to-have" Capabilities

- A well organized coordinated industry group
  - Industry spokesman to drive the public outreach message
  - Consumer education
  - Respond to internal and outside influences, events and threats
  - Develop and protect the Hawaii aquaculture brand
  - Participate in creating a "Hawaii Seafood Certification"
  - Police the local industry (e.g. define a code of conduct)

- Lobby for the organization's objectives at the State and Federal levels
- Marketing the Hawaii brand

#### Policy Recommendations

- Assign one single State Agency to "own" aquaculture - Need the State to define the focus and regulatory scheme
- State needs to "up its game" in core competency in the State's own aquaculture sector divisions
- Create incentives to keep new/key technologies "at home"

## **BREAKOUT SESSION II: FRESHWATER FARMING**

**Yellow shaded items indicate top priority rankings**

### **Freshwater Farming - Morning Breakout Session Notes**

#### **A) What are the Key Sector Strengths?**

1. The temperature of the water and climate in Hawaii is an advantage. Hawaii has “winterless climate” where things can grow all year round.
2. Palamanui Community College, culinary school can serve to demonstrate the use and cooking of freshwater fish and aquaponic products.
3. There is an abundance of clean fresh water potentially available around the State from the former sugar industry / much of the water distribution system and flumes can be reused. The time is now to rearrange use of land and water – for aquaculture / aquaponics.
4. There are technical up opportunities across several sectors in Hawaii to support growth of freshwater farming and aquaponics.
5. There are emerging opportunities for freshwater farming and aquaponics in Hawaii – Hawaii branding / locally grown food.
6. There are scale up opportunities for merging freshwater fish farming and aquaponics with exiting agriculture industry.
7. Can use land that does not have other uses.
8. Can trap resources available at university(s). There needs to be a technical support center for the industry – need for funding for extension services

#### **Key Sector Weaknesses**

- State of Hawaii major obstacle / No support from State
- Aquaponics is not a mature industry on a large commercial level. Most farms are very small (<4 acres). Only three large commercial freshwater fish / aquaponic farms.
- There is no certification process for aquaponics on State or Federal level
- There needs to be a multi-level approach – what is strategy? Food security is the issue (too many imports)
- No co-ops, processing facilities, certified kitchens available.

#### **B) What are the Key Sector Opportunities?**

1. Need educational program support / work force development support
2. Nile tilapia approval to import to Hawaii.
3. Community colleges – work force development opportunities.
4. Opportunity for Hawaiian Brand – brand support at all levels
5. Hawaii has well established markets – need to guarantee steady supply
6. Sector brings together use of water, land & local food production which displaced the need for imports.
7. Need more value adding to product
8. Can build on SPF shrimp program to develop clean certified freshwater fish – Tilapia, etc.

**C) What are two recent event/investments/activities that have positively changed the outlook for this sector in Hawaii.**

1. Development of feed mill in Hilo
2. Existing success stories that can be expanded

**Freshwater Farming - Afternoon Breakout Session Notes**

**A) What are the Key Sector Goals?**

1. Enable the process for increasing food safety
2. Replace imported live fish (brood stock & fingerlings) and replace with local species from local hatchery.
3. Improve quality and consistency of product / reduce off flavors
4. Expand consumption of tilapia by reducing negative conations/stigma, improving culinary techniques, better marketing plans, value added, etc. Improve feed quality to improve flavor.
5. Obtain better support and cooperation from State of Hawaii government (need Co-op; access to certified kitchen – etc.
6. Verify that there is a market for freshwater fish / is there an opportunity to scale up?
7. Standardize brand and price – need co-op
8. Access to available land & access to water.
9. Scale up production to develop export market – Hawaii brand
10. Develop industry or government owned cooperative for processing (certified kitchen), marketing, cold storage, feed, hatchery to supply consistent fish supply, etc.

**B) What are the Key Sector "need to have" capabilities?**

1. Need investors
2. Ice house / processing facility – Co-Op
3. Need Hatchery Plan – supported by government (UH?) / associated by Co-Op
4. Consistent Political Support and seed capital for co-op
5. Need Extension Services
6. Need Marketing Plan
7. Need a true co-op owned by growers
8. Need land and access to water
9. Re-establish Extension programs / ADP

**C) What three policy recommendations are needed to further develop this Sector in Hawaii?**

1. Re-establish Aquaculture Development Program (ADP) office
2. State should support and provide funding for freshwater expansion of aquaculture & aquaponics – promotes food safety and independence
3. Need clear guidelines of “best management practices” for aquaponics
4. Need to develop Standard Operating Procedures



## 5. Better marketing

## **BREAKOUT SESSION III: BREEDING AND SEED STOCK MARINE SPECIES**

### **Breeding and Seed Stock Marine Species - Morning Breakout Session Notes**

	<b>Strengths</b>	<b>Vote</b>	<b>Opportunities</b>	<b>Vote</b>
B	Isolation – Water Quality – Water Temperature Deep & Surface	13	Raise all species	9
G	US Based Aquaculture – Legal Structure	7	Invest in an Aquaculture Accelerator Incubator – Hawaii Brand – package a one stop shopping for VC	8
M	Bivalve development	2	SPF Program for Bivalve	7
A	Marine species germ plasm	5	Molecular Genetics	6
C	SPF Species Developed	1	Produce SPF Food Species	5
S			Public – Private Partnership Research – Business Partnership	5
N	Strong local aquaculture market	0	Local Feedstock development Live Feed development	4
O	Strong Aquaculture Industry	2	Forum for calibration between Hawaii Aquaculture	4
E	Academic Research	3	Research projects to Aquaculture problems	3
K	State SPF Programs	4	Strengthen in areas other than shrimp	3
P	Shrimp is strong industry in Hawaii	1	State Support for small aquaculture business - Bivalves - Tilapia	3
D	Research Institutions	6	Extension Services	2
L	Marine Ornamental Fish	1	Utilize Genetic Tools for Marine Ornamental Fish	2
F	Hawaii - Brand	9	Incorporate into Aquaculture Avoid commodity	1
	Culture Tradition in Aquaculture	2	Branding	1
H	Brood Stock or seed supply to other regions and in-State farms	5		0
I	Hawaii Genetic Tech in Agriculture	0	Transfer to Aquaculture	0
J	Proximity to Asia	3		0
Q			Create a local market for Aquaculture	0
R	Sea Food Market	0		0

### **Breeding and Seed Stock Marine Species - Afternoon Breakout Session Notes**

	<b>Goals</b>	<b>“Need to Have” Capabilities</b>	<b>Policy</b>	<b>Vote</b>
C	USDA Disease Certified Lab	Diagnostic Lab Capabilities	State Funding for USDA qualified Lab	10

J	Robust species portfolio of SPF genetically improved aquatic species	Remove barriers	Fund it!	10
A	SPF Program for other species, brood stock and seed	Develop a target list for other species	Develop market demand and building upon the SPF shrimp program	8
K	Develop a Hawaii based aquaculture fund – Gov. - Private	Aquaculture research institution – organization that manages aquaculture fund	Legislate a % of ERS to Aquaculture fund, other Hawaii businesses or target Hawaii business round table for funds	8
B	Reduce the cost of business in Hawaii	Kona as an export port	US fish and Wildlife Inspection at Kona	6
E	Protect the water quality, isolation...	Surveillance for biosecurity for imported aquaculture products	Biosecurity Center for Aquaculture, Industry Sustainability practices for aquaculture	6
D	Create more capital in Hawaii		Tax Credits for investments in Aquaculture	3
F	Government Sponsored Aquaculture Zones		Tax credits for farm equipment, limited building regulations	3
G	SPF Zones	Harmonizing rules Difficulties of aquaculture company to move stocks around but consumer market can bring the same species into restaurants supermarkets		1
I	Published genome	Genetically improved marine animals		1
L	Marketing program for Hawaii Aquaculture			1
H	Make Hawaii center of important marine species			0

## **BREAKOUT SESSION IV: ALGAE PRODUCTION**

### **Algae Production - Morning Breakout Session Notes**

1. What are the key sector strengths?
  - a. Natural resources - climate – 12 month growing season, temp and sun
    - i. Controlled salinity and temperature (elevation)
  - b. Established microalgae companies
  - c. Intellectual talent - Lots of former and current university and private sector algae staff and researchers (includes undergrad experiences)
    - i. How many? Compared to San Diego?
  - d. Water quality far superior to other parts of world
    - i. Low nutrient (clean state of water)
    - ii. Variety of temp, low particulates
    - iii. Gives availability to control/modify water
  - e. Diversity of genetic resources/species available and underutilized currently
    - i. Value added commodities (marine + freshwater natural products)
  - f. Algae collections – available from private companies? Several libraries but currently held by private companies
  - g. Access to deep seawater (clean and high nutrients)
  
2. What are the key sector opportunities?
  - a. High quality reputation (branding) of Hawaii algae companies – need to capitalize with larger collection companies
    - i. Should be leveraged more - sustainability
  - b. Access to water (saltwater and especially freshwater)
    - i. Pure / ability to filter groundwater
    - ii. Different qualities of water
  - c. Streamline species importation rules and permitting (HDOA)
  - d. Inter-island shipping – need permit each time (HDOA)
  - e. Staff shortage at HDOA?
  - f. Need streamline inspections for interisland transfer
  - g. Create other NELHAs on other islands?
  - h. Availability of open spaces – don't have to compete with other companies – can grow on lava rock

- i. Able to provide training to students and professionals to variety of people because they want to come to Hawaii
    - i. Do they stay?
    - ii. Need to get young local talent to stay in Hawaii
    - iii. Lose employees to tourism and construction industries (better pay)
    - iv. Partnership with UH and CC's to show them the path and opportunities
  - j. Need better outreach to promote students to stay in Hawaii and in STEM programs
  - k. Expand macro-algae sector
  - l. Need to create opportunities for capital/investors to invest in Hawaii companies
  - m. On island feed sources trying to reduce shipping costs of feed by utilizing local sources
  - n. Other macro and micro algae opportunities for food
3. What are two recent events/ investments/ activities that have positively changed the outlook for this sector in Hawaii?
- a. Farm housing – workers can live in cottages on farm property (both success and challenge)
    - i. No building permit for 3,000 sq foot building (non-residential)
  - b. Discussions of entrepreneurial ecosystem
    - i. Ex. NELHA incubator
    - ii. Palamanui
    - iii. Business plan competitions
    - iv. Executive office on Oahu - business and licensing assistance for 1 stop shop
  - c. DOE is interested in macroalgae

Additional Observations:

Lack of outreach due to proprietary knowledge (positive or negative)

- Interaction with UH is a negative due to private nature of research

Difficulty finding qualified work force

Cost of living creates hardship (too expensive and not enough affordable availability)

Poor public school perception?

Need California mentality so issues don't drop

Could GMO restrictions in Hawaii county eventually restrict algae?

**Algae Production - Afternoon Breakout Session Notes**

**Yellow shaded items indicate top priority rankings**

1. What are the key sector goals?
  - a. Scalable production –
    - i. Must have capital and scale to bring down costs
    - ii. Bring cost of production down so it is affordable for fish feed costs
    - iii. Efficiency
    - iv. Critical mass of algae companies
  - b. Continue expanding in human food market
  - c. Find/create subsidies for equivalent of ag land
  - d. Availability of low cost land for ag land
  - e. Rent holidays or other incentives (tax credits, tax holidays, tax incentives) and figure out how to finance through better incentives
  - f. Increase private/public partnerships for startups (especially hard for first 2 years)
  - g. Utilize byproducts to expand market products
  - h. Build out Hawaii brand with all algae producers (ex. Kona coffee, Idaho potatoes)
  - i. Create better message for sustainability, purity, transparency (have to combat threat of synthetic products)
  - j. Create trade association for Hawaii companies
  - k. Continue investment with R&D for future possibilities
  
2. What does the algae sector need to have capabilities?
  - a. Critical mass (the more companies the better the capacity for the overall industry) currently 4-6 companies although many other companies grow their own algae for feed
  - b. Need advocacy from trade association (special interest group)
    - i. Trade association
  - c. Other algae's to add, different production systems
    - i. Continue R&D to have break throughs in the industry
    - ii. Innovation and high tech development
  - d. Companies have to have a value added product to start then hopefully diversify later
  - e. Cheaper energy costs, production supplies
  - f. Better / more capital
  - g. More affordable housing for workforce (corporate housing, small worker housing, employee housing)
  
3. What are three policy recommendations to further develop this sector in Hawaii?
  - a. Rent holidays or other incentives (tax credits, tax holidays, tax incentives)
    - i. Old form T223 (?) for rebates from equipment purchases
  - b. Streamline species importation
    - i. Inter island inspection
    - ii. Expanding allowable species to be imported

- iii. Indigenous microalgae list already available
- c. Clarify Hawaii statute rules for species allowed (maybe update the whole list at once vs on a case by case basis)
- d. Policy or branding transparency, knowing your source, synthetic vs non-synthetic, labeling
- e. Create a certification label (similar to SPF) for algae
  - i. Could also reduce risk
  - ii. Made in Hawaii label? Fossil fuel derivative
- f. Create Hawaii algae trade association
- g. More flexibility with microgrid options
- h. Cold water access is critical for temp control
- i. Funding for business launch and growth
  - i. Support from legislature
  - ii. Create accelerators, incubators
- j. Assistance with trade export

## LIST OF ATTENDEES SORTED BY BREAKOUT SESSION SELECTED UPON REGISTRATION

Moderators are highlighted for each section.

### Attendees - BREAKOUT SESSION I: OCEAN FARMING

Hiroshi	Arai	Big Island Abalone Corporation
Gregory	Barbour	NELHA
Antonio	Bernardo	American Samoa Government
Patti	Chang	Feed The Hunger Foundation
John	Corbin	Aquaculture Planning & Advocacy LLC
Liz	Corbin	Aquaculture Planning & Advocacy LLC
Mary Alice	Evans	NELHA Board of Director
Ben	Gordon	Big Island Abalone Corporation
Bruce	Johnson	Fresh island fish
Kevin	Kelly	Triton Aquatic Corporation
Susan	Kim	Governor's Office
Jack	Kittinger	Conservation International
Dane	Klinger	Forever Oceans
<b>Christopher</b>	<b>Kruse</b>	<b>Blue Ocean Mariculture</b>
Alex	Leonard	NELHA
Tom	Leonard	Hawaii Technology Development Corporation
Diane	Ley	County of Hawaii Director of Dept. of Research & Development
Todd	Madsen	Blue Ocean Mariculture
Kuuipo	McCarty	Kualoa Ranch
Helen	Meigs	Kampachi Farms
Robbie	Melton	Hawaii Technology Development Corporation
William	Mielcke	NELHA Board of Director
Norman	Moe	private co.
Mark	Nakashima	Legislator
David	Nichols	NOAA - National Marine Fisheries Service
Richard HK	Onishi	Legislator
Lucas	Porter	Oceanic Institute
Matthew	Ramsey	Conservation International Hawaii
William	Rolston	NELHA Board of Director
Linda	Rosehill	NELHA Board of Director
Dale	Sarver	Kampachi Farms
Neil Anthony	Sims	Kampachi Farms, LLC
Christopher	Somogyi	Reef Capital
Julien	Stevens	Kampachi Farms
Stella	Vaccaro	Kona resident/diver
Cecilia	Viljoen	Big Island Abalone Corporation
Liz	Xu	HDOA
Leonard G	Young	Windward Community College



## Attendees - BREAKOUT SESSION II: FRESHWATER FARMING

Adrian	Barnes	UHH
Troy	Bonaventure	TRG Equity
Natalie	Cash	Olomana Gardens
KYLE	DATTA	ULUPONO INITIATIVE
Candee	Ellsworth	Friends of NELHA
Kevin	Hopkins	UH Hilo
Marty	Kennedy	West Hawaii Small Business Development Center
Keniseli	Lafaele	American Samoa Government
Evan	Lanigan	Los Angeles Organic Farm
Todd	Low	HDOA
Glenn	Martinez	Olomana Gardens
Frederick	Mencher	Hawaii Aquaculture and Aquaponics Association
SUSAN	MILLER	UH MAUI COLLEGE
Michael	O'Malley	Goodsill Anderson Quinn & Stifel
Marcus	Powe	
Joseph	Tabrah	Pacific Mariculture Concepts LLC
Jan	War	NELHA
Ron	Weidenbach	Hawaii Fish Company

## Attendees - BREAKOUT SESSION III: BREEDING AND SEED STOCK MARINE SPECIES

Bruce	Anderson Ph.D	NELHA Board of Director
Dennis	Bishop	NELHA scientific advisory board
David	Cohen	State of Hawaii, DLNR
David	Cunningham	Legacy Reef Foundation
John	Del Rosario	Veteran Abalone Farmer
Suzi	Dominy	Aquafeed.com, LLC
Karl	Fooks	Hawaii Strategic Development Corporation
Bradley (Kai)	Fox	UHM CTAHR
Maria	Haws	Pacific Aquaculture and Coastal Resources Center, University of Hawaii Hilo
Crystal	Johnson	Fresh Island Fish
David	Katz	Varuna Capital
Kelei'i	Kotubetey	Paepae o He'eia
Brian	Koval	Hawaiian Shellfish LLC
Pii	Laeha	Mauna Lani Hotel
Cheng S.	Lee	Center for Tropical and Subtropical Aquaculture, HPU
David	Leong	SIS
Jason	Moniz	HDOA
Kelly	Moran	Hilo Brokers Ltd.
Shaun	Moss	Oceanic Institute of Hawaii Pacific University
Keith	Olson	NELHA
Lauren	Primiano	Reef Capital Ventures

Justin Glenn	Reinicke Sako	UH Hilo DKICP County of Hawaii Dept. of Research Development Agriculture Specialist
Ester	Tolentino	Moana Technologies, LLC
<b>Jim</b>	<b>Wyban</b>	<b>Marine Genetics LLC</b>
Lei	Yamasaki	Hawaii Department of Agriculture
Jinzeng	Yang	University of Hawaii at Manoa
Trenton	Yatsui	Hawaii Department of Agriculture

### **Attendees - BREAKOUT SESSION IV: ALGAE PRODUCTION**

David	Anton	Cellana
Sue	Aronson	Kona Coast Realty Corp.
Ulu	Ching	Conservation International Hawaii
Leighton	Chong	Blue Revolution Hawaii, Inc.
Linda	Connelly	UH Hilo DKICP
Jacob	Conroy	Kanaloa Octopus Farm
<b>Gerry</b>	<b>Cysewski</b>	<b>Cyanotech Corporation</b>
Warren	Dominy	Aquafeed.com LLC
Cindy	Evans	House of Representative
Armando	Garcia-Ortega	University of Hawaii at Hilo
Jen	Johansen	Cyanotech Corporation
Michael	Jones	The Maritime Alliance
Aaron	King	Pacific Biodiesel
Larry	Kobayashi	Hawaii First Water, LLC
Pamela	Madden	NELHA
Heidi	Kuehnle	Kuehnle AgroSystems Inc
Mawae	Morton	Cyanotech Corporation
Luria	Namba	Hawaii Community College-Palamananui
Laurence	Sombardier	NELHA
Lisa	Vollbrecht	Kampachi Farms