

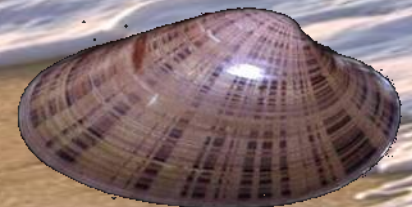
# Eliminating Barriers to Commercial Production of Sunray Venus Clams in Florida:

## Determination of Wholesale Market- related Product Attributes

**Chuck Adams**

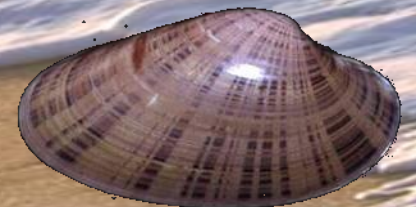
*Food and Resource Economics Dept.*

*Florida Sea Grant Program*



# Sunray Venus Clam: A New Species to Diversify the Florida Hard Clam Aquaculture Industry

- Funded by Florida Sea Grant, L/LR-A-44, **2006-8**
  - John Scarpa, Harbor Branch Oceanographic Institute at FAU
  - Leslie Sturmer, UF IFAS Cooperative Extension Service
  - LeRoy Creswell, UF Florida Sea Grant
  - Jose Nunez, UF The Whitney Lab
  - **Chuck Adams, UF IFAS Food and Resource Economics**



# Tested Market Perception of Cultured Sunray Venus Clams at Restaurants

- Shellstock provided to 4 restaurants
  - Ave. 2.5" SL, 0.9" SW, 33 g TWt (14/lb)
- Chefs chose preparation method – all cooked
- 239 surveys completed by patrons
  - Detect grittiness? **No-89%**
  - Would you order product again? **Yes-94%**
  - Would you recommend product? **Yes-97%**



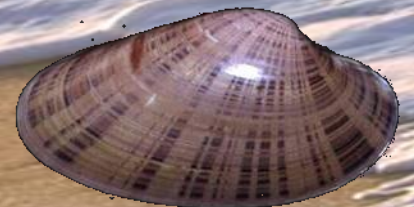
## Attribute Ratings

Overall Excellent and Very Good attribute ratings **(90%)** by consumers, chefs, and managers

	Excellent	Very Good	Good	Fair	Poor
	. . . . % of all respondents for each attribute . . . . .				
Appearance	84	13	2	1	0
Taste	72	18	8	2	0
Texture	63	25	9	2	1
Tenderness	58	25	9	4	2
Value	61	24	10	4	1
Overall	70	20	8	2	0

# Species Diversification in FL Aquaculture: Nursery and Growout of the Sunray Venus Clam

- Funded by Florida Sea Grant, L/LR-A-45, **2008-10**
  - John Scarpa, Harbor Branch Oceanographic Institute at FAU
  - Leslie Sturmer, UF IFAS Cooperative Extension Service
  - LeRoy Creswell, UF Florida Sea Grant
  - **Chuck Adams, UF IFAS Food and Resource Economics**



# Tested Market Perception of Cultured Sunray Venus Clams at Sushi Restaurants

- Shellstock provided to 4 sushi restaurants
  - Ave. 2.7" SL, 1.1" SW, 42 g TWt (11/lb)
- Served raw – sushi, sashimi, seviche, half-shell
- 101 surveys completed by patrons
  - Detect grittiness? **No-81%**
  - Would you order product again? **Yes-83%**
  - Would you recommend product? **Yes-91%**



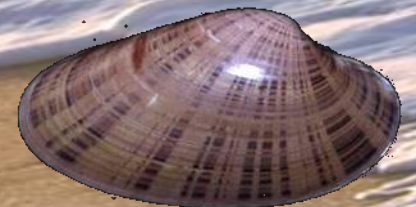
## Attribute Ratings

	Excellent	Very Good	Good, Fair, Poor
	. . . . % of all respondents for each attribute . . . .		
<b>Appearance</b>	60	24	16
<b>Taste</b>	44	31	25
<b>Texture</b>	45	25	30
<b>Tenderness</b>	43	32	25
<b>Value</b>	53	20	27
<b>Size</b>	40	29	31
<b>Color</b>	56	24	20
<b>Overall</b>	43	33	24
<i>Non-Asian consumers</i>	51	30	19
<i>Asian consumers</i>	32	27	32

Overall Excellent and Very Good attribute ratings **(76%)** by consumers, chefs, and managers

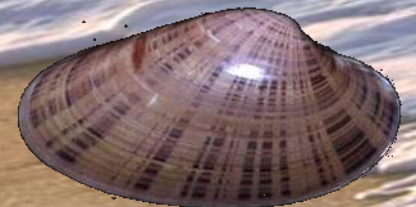
# Eliminating Barriers to Commercial Production of Sunray Venus Clams in Florida

- Funded by Florida Sea Grant, L/LR-A-46, **2010-12**
  - John Scarpa, Harbor Branch Oceanographic Institute at FAU
  - Leslie Sturmer, UF IFAS Cooperative Extension Service
  - **Chuck Adams, UF IFAS Food and Resource Economics**
  - **Steve Otwell, UF IFAS Food Science and Human Nutrition**
  - Rex Ellis, UF IFAS Soil and Water Science
  - Todd Osborne, UF IFAS Soil and Water Science
  - Mark Clark, UF IFAS Soil and Water Science



# Rational and Objectives

- Determining product attributes in the wholesale distribution system will help guide the development of local, regional, and national markets.
  - Define the sensory and nutritional profiles of cultured sunray venus clams.
  - Examine product attributes of sunray venus with respect to wholesale market and product distribution standards for molluscan shellfish.



# Determining the Sensory and Nutritional Profiles of Cultured Sunray Venus Clams



- Conducted at the UF Aquatic Food Products Lab
- Trained seafood sensory panel

## Sensory Profile:

Attribute	Profile
Appearance	Very plump, fully covered clams, predominantly light color meat. Attractive external shell, peach to orange color tones.
Aroma	Moderate briny and metallic aroma
Basic Flavors	Salty, with moderate umami
Flavor and Aftertastes	Seaweed was the predominant flavor accompanied by strong metallic.
Textures	Firm texture

Nutrition Facts	
Serving Size 4 oz (113g)	
Servings Per Container	
Amount Per Serving	
<b>Calories 45</b>	<b>Calories from Fat 5</b>
% Daily Value*	
<b>Total Fat 0.5g</b>	<b>1%</b>
Saturated Fat 0g	0%
Trans Fat 0g	
<b>Cholesterol 20mg</b>	<b>7%</b>
<b>Sodium 640mg</b>	<b>27%</b>
<b>Total Carbohydrate 2g</b>	<b>1%</b>
Dietary Fiber 0g	0%
Sugars 0g	
<b>Protein 8g</b>	
Vitamin A 8%	• Vitamin C 2%
Calcium 10%	• Iron 30%
Vitamin B12 40%	• Zinc 6%
Copper 4%	
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
Calories: 2,000 2,500	
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

Low-fat source of protein  
 Low cholesterol  
 High in minerals and vitamins



# Examining Product Attributes of Sunray Venus Clams with Respect to Wholesale Market Standards for Molluscan Shellfish



## ALSO IN THIS SERIES

- ▶ Consumer Acceptance of Cooked and Raw Clams
- ▶ Sensory Profile
- ▶ Aquaculture Production Potential
- ▶ Nutritional Profile

In preparation for shipping to the marketplace, sunray venus clams are mounted, packaged in net bags, and tagged by the individual.

## SHELF LIFE ASSESSMENT

Shelf life of any food is defined as the maximum length of time a given product is suitable for human consumption. Molluscan shellfish (dormant) are typically shipped as live shellstock and adequate shelf life is an important product attribute. For mollusks, shelf life is the time from when the clams are harvested from the water

until they are no longer fit to eat. The shelf life of the sunray venus clam was documented during the summer and winter to account for the influence of water temperature at harvest. In this study, harvested sunray venus clams were transported at 72°F for 6-10 hours prior to being placed in refrigerated storage, which was maintained at 4



After harvest, sunray venus clams are packed for shipping.

- Shellfish wholesale dealers (n=33) were sent
  - Informational fact sheets
  - Samples of cultured sunray venus clams
  - Product attribute survey
- Survey responses compiled to provide information on
  - Appearance
  - Condition
  - Shelf life
  - Size preference
  - Sensory attributes
  - Handling methods
  - Volume/frequency for future orders
  - Potential pricing



# Examining Product Attributes of Sunray Venus Clams with Respect to Wholesale Market Standards for Molluscan Shellfish

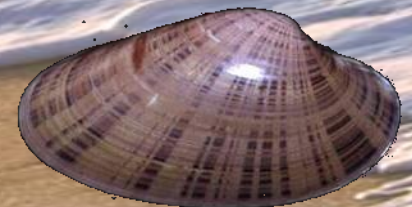
## ○ Survey Results: *Who was Surveyed?*

* <b>Type:</b>	Dist'r (74%)	Retl'r (17%)	Rst/Brkr/Othr (9%)	
* <b>Region:</b>	SE (49%)	WC (24%)	NE (15%)	M Atl (12%)
* <b>Sales:</b>	≥\$10M (53%)	\$10-5M (7%)	< \$1M (40%)	
* <b>% Sales:</b>	Moll (38%)	Crus (38%)	Finfish (33%)	Othr (14%)

\* **Importance of mollusks in product line ...** 1 (yes) → 5 (no)

Oysters (2.17) Clams (2.28) Scllps (2.48) Mssls (2.96) Other (4.35)

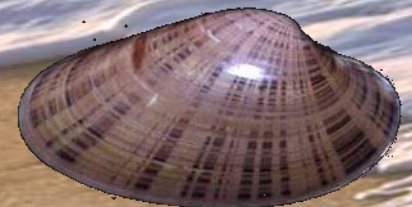
\* **Condition of product upon arrival ...** 1 (poor) → 10 (good) ... 9.2 ave



# Examining Product Attributes of Sunray Venus Clams with Respect to Wholesale Market Standards for Molluscan Shellfish

## ○ Survey Results: *Observations* (1 bad ... 8 good)

- \* **Shell Appearance:** 7.3
- \* **Meat Color:** 7.1
- \* **Taste:** Raw (5.4)                      Cooked (6.6)
- \* **Texture:** 5.1
  
- \* **Detection of grit?**              No (50%)    Some (47%)    Excessive (3%)
- \* **Notice shell color change?**      Yes (75%)      No (25%)



# Examining Product Attributes of Sunray Venus Clams with Respect to Wholesale Market Standards for Molluscan Shellfish

## ○ Survey Results:

### \* Meat Yield Description:

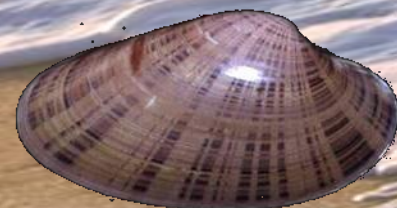
*As Expected (56%)      More ... (44%)      Less ... (0%)*

### \* Shell thickness:

*Just right (71%) Thin (20%)                      Thick (9%)*

### \* Shelf Life:

*Acceptable (90%)                      Unacceptable (10%)*



# Examining Product Attributes of Sunray Venus Clams with Respect to Wholesale Market Standards for Molluscan Shellfish

## ○ Survey Results:

\* **Size Preference?** 15/16", 7/8", 13/16", 3/4" (SW)

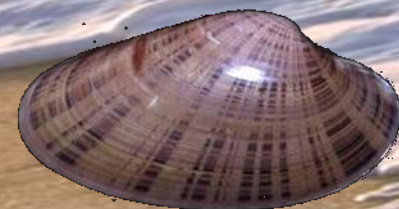
*No strong preference for size other than that shipped*

*But ... may vary by type of buyer ... region of country*

\* **Potential Market Demand?** 88% ... "could sell" or "high"

\* **Attributes to Market -** Taste (27%) Shell app. (22%) Yield (15%)  
Meat Color (12%) Texture (11%)

\* **Price "willing" to pay?** \$0.183 ... delivered to place of business





Chuck Adams (above), Leslie Sturmer and John Stevely (right) interviewed over 250 buyers at the *Fresh from Florida* Pavilion during the 2011 International Boston Seafood Show.

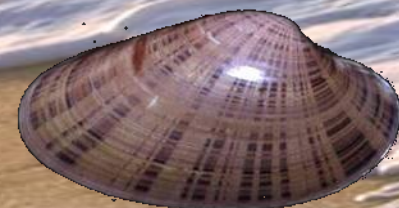
Chef Peter Stefani (above) of The Island Room in Cedar Key served sunray venus clams to thousands of attendees.

# Examining Product Attributes of Sunray Venus Clams with Respect to Wholesale Market Standards for Molluscan Shellfish

## ○ Survey Results: 239 completed surveys

Broker (4), Dl'r/Dst'r (115), Rst (23), Rtl'r (14), Public (70)

<b>Favorably Rated?</b>	Yes (205)	No (2)	
<b>Standout Attributes?</b>	Taste (179)	Texture (132)	
Shell Appearance (80)	Grit (38)	Meat Color (37)	
<b>Purchase?</b>	Yes (192)	No (5)	NR (42)



# **Examining Product Attributes of Sunray Venus Clams with Respect to Wholesale Market Standards for Molluscan Shellfish**

**“This is something different”**

**“Great flavor ... nice!”**

**“Clean, no grit”**

**“Sweet ... different”**

**“Delicious ... high end, guys!”**

**“Meaty for a clam”**

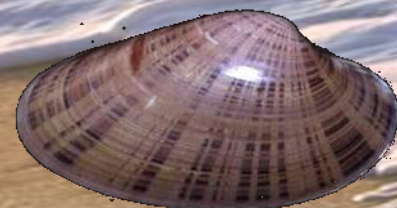
**“Will sell like hotcakes”**

**“Will buy now!”**

**“You’s guys are gonna kill us”**

**“Target upper end of market”**

**“Very marketable”**





# Summary / Recommendations?

- **Latent market exists**
- **How to position in market? Pricing?**
- **Fine tune ... shipping methods, shelf life characteristics, storage**
- **Market segmentation (by size, market sector, product form)**

