

Shellfish Aquaculture Gear Management Workshop 2018

Florida Department of Agriculture and Consumer Services
Division of Aquaculture



Project Summary

The National Marine Sanctuary Foundation in coordination with NOAA Marine Debris Program provided funding to the Florida Department of Agriculture and Consumer Services, Division of Aquaculture (FDACS) to host a training workshop targeting the aquaculture industry and shellfish farmers in Cedar Key, FL. Travel funds were utilized to support diverse representation at the workshop.

Currently, there are no existing resources to educate the Cedar Key shellfish farming community on aquaculture debris issues or to organize routine cleanup events. FDACS aimed to address these resource gaps through a training workshop and an associated cleanup event. The workshop discussed the importance of environmental stewardship and provided practical management techniques to farmers, such as proper gear anchoring methods and severe-storm preparation strategies. FDACS conducted a marine debris survey in June 2018 and presented marine debris maps and information following workshop training sessions in order to organize an effective cleanup, which was held on September 15, 2018.

Date

September 12th, 2018

Location

FWC Senator
Kirkpatrick Marine Lab.
11350 SW 153rd Court,
Cedar Key, FL 32625

More Information

A full recording of the workshop and copies of all presentations are available at:
Shellfish.ifas.ufl.edu/news/videos-and-presentations-from-shellfish-aquaculture-gear-workshop/

Shellfish Aquaculture Gear
Management technical bulletin:
[FreshFromFlorida-](http://FreshFromFlorida.s3.amazonaws.com/Media%2FFiles%2FAquaculture-Files%2FShellfish-Gear-Management-01914.pdf)

da.s3.amazonaws.com/Media%2FFiles%2FAquaculture-Files%2FShellfish-Gear-Management-01914.pdf

Florida Division of Aquaculture:
FreshFromFlorida.com/Divisions-Offices/Aquaculture

Florida Marine Debris Reduction
Guidance Plan 2017:
Marinedebris.noaa.gov/sites/default/files/publications-files/FMDRGP_2017.pdf

UF/IFAS Shellfish Extension:
Shellfish.ifas.ufl.edu/



Florida Department of Agriculture and Consumer Services
Adam H. Putnam, Commissioner

Workshop Narrative

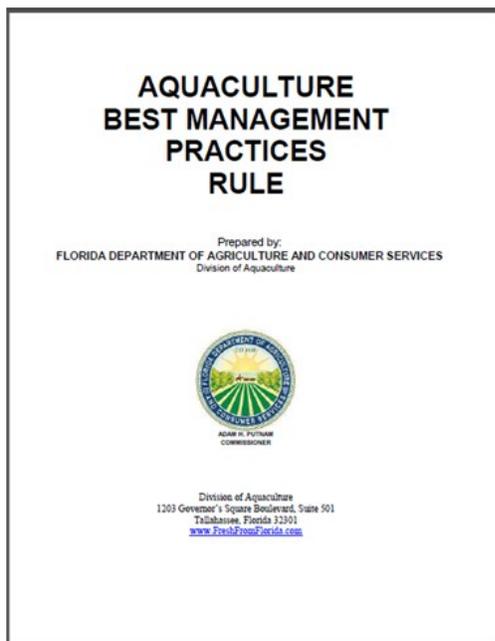
1:00 - The workshop began with an introduction by **Charlie Culpepper, FDACS: Division of Aquaculture**, and a brief overview of the agenda and meeting details. *"Shellfish aquaculture is win-win for the environment and the economy. Public perception of shellfish aquaculture will be critical in maintaining resilience of this industry as it grows in size and diversity."*

1:05 - **Lisa Marshall, Regional Director for Sen. Bill Nelson**, gave a 5-min opening statement. *"With elbow grease, science, and partnership, we have successfully kept this waterfront working. Senator Nelson will continue to work with colleagues across the aisle and the capital to ensure we have a healthy environment."* Will Kendrick, regional director for Congressman Neil Dunn was not able to attend and give opening remarks as scheduled.

1:15 - **Charles Grisafi, NOAA Marine Debris Program**, presented an overview of the global marine debris issues, including data on sources and specific hot topics. He then covered NOAA Marine Debris Program functions, current regional activities, and funding opportunities. Charles wrapped up with a description of [Florida's Marine Debris Reduction Guidance Plan](#), aquaculture debris priorities within the plan, and the upcoming revision meeting.



NOAA MDP 'Impacts of Marine Debris' fact sheet



1:30- **Charlie Culpepper, FDACS: Division of Aquaculture**, reviewed the Florida Aquaculture Policy Act, the Florida [Aquaculture Best Management Practices](#) (BMPs), and the BMPs specific to shellfish aquaculture gear and environmental protection. In order to establish a streamlined regulatory process, replace the need for numerous permits from other agencies and ensure environmental protection, FDACS enforces the BMPs. The Florida Aquaculture BMPs cover rules and regulations for all aquaculture commodity types and activities. **BMPs are required to be followed by all certified commercial Aquaculturists, are enforceable by law, and do not supersede other applicable local, state or federal regulations, unless explicitly authorized in statute.**



(Above) Charlie Culpepper, FDACS, Division of Aquaculture
(below) Dr. Bill Walton, MS-AL Sea Grant



Lease management requirements are also reiterated in the sovereignty submerged land aquaculture lease agreement. Noncompliance may result in cancellation of the lease agreement and/or the prohibition from acquiring or subletting any new sovereignty submerged land leases.

The division conducts periodic, unannounced inspections of each certified aquaculture facility, including submerged land leases, to ensure compliance with BMPs and the lease agreement (if applicable). While the BMPs cover a wide-range of topics, **the following rules are specific to shellfish aquaculture gear management and must be followed by all shellfish aquaculture farmers in the state.**

- ◆ Non-natural materials (all gear) must be anchored to the bottom.
- ◆ All culture materials shall be free of pollutants.
- ◆ Bags/trays/nets should be removed from the water during cleaning.
- ◆ The aquaculturist is responsible for proper disposal of all materials used.
- ◆ The aquaculturist must remove all gear 60 days after termination of a lease.
- ◆ The leaseholder's identification information must be attached to floating gear and off-bottom structures.
"This helps public understand that aquaculture gear is not trash, it has a purpose and can be retrieved."

1:40 – Dr. Bill Walton, Mississippi-Alabama Sea Grant, gave a presentation on oyster aquaculture gear management. Highlights from that presentation are summarized below.

- ◆ **Never skimp on anchoring** and buy a larger anchor than you think you need because the weather will be worse than you expected.
- ◆ **Reduce and manage chafing**, use like to like materials (ex: metal on metal).
- ◆ **Tagged gear is good for positive public perception.** *"If you are willing to add your name to gear, you will be responsible for it. Tagging and tracking gear also adds protection from theft."*
- ◆ **Don't overload gear:** Some suppliers overestimate the number of oysters or clams you can grow in each bag/cage to make them appear more efficient and affordable, but overstocked gear does not behave the way it is intended to. Do not overstock your gear.
- ◆ **Hold periodic shoreline cleanups to show the public that the aquaculture industry cares.** Weigh collected debris to demonstrate that aquaculture gear is a small portion of the total marine debris collected.
- ◆ **Dispose of gear properly** at the end of its life span.
- ◆ **Storm Preparation**
 - ◆ **Draft a written storm plan and hold storm drills annually for your employees.**
 - ◆ **If possible, make decisions early** (about 3 days before storm hits).
 - ◆ **Sinking gear takes longer than anticipated;** have your crew practice sinking a line of cages to estimate how long it will take.
 - ◆ **Floating gear tips:** check knots and lines, check cage doors, make sure bags are not overstocked, keep oysters on site (not out of the water).
 - ◆ **Suspended gear tips:** check pilings, make sure basket doors are closed, lower the lines to the lowest position on the anchor post to be out of wind and wave action.

Following Dr. Walton's presentation, **Jeff and Reid Tilley, Oyster Boss LLC.**, discussed their farm design and size, and then answered a series of questions from Dr. Walton and the audience regarding their experience with oyster gear management. Questions centered around common mistakes made, manufacturing preferences, tagging options and costs, and gear maintenance strategies.

Question and Answer highlights are presented below:

Q: Have you found manufacturers to adapt gear to conditions unique to this region (Bill Walton)?

A: Ketcham has designed cages that have removable floats, and Oyster Boss helped with gear modifications for that design (Reid Tilley).

Q: What are some of the biggest mistakes you have made with oyster gear (Bill Walton)?

A: For me, it was not putting caps back on gear floats once submerged and allowing sand to get in. This makes getting your gear back off the bottom post-storm very difficult (Bill Walton).

A: If you are in an area with freshwater, sink your crop into saltier water for respiration (Bob Rheault).

A: Using clips made for different cages and not evenly distributing attachments on floating bags. Also keep all gear that does not need to be submerged floating so that it does not foul and create chaffing on other cages (Reid Tilley).

Q How do you feel about helping other farmers, who are not as diligently managing their gear you are, cleanup their gear (audience)?

A: *"We are all one big family out there on the water."* People don't always do the right thing. We, as a company, want to have a good reputation on the water, we try to help our fellow Aquaculturists. We need a cleanup day just for the farmers (Jeff Tilley).

A: It is also a threat to my own farm if others' gear is loose and causes damage (Reid Tilley).

Q: What are your decision points in preparation of storms (Bill Walton)?

A: Family comes first, then the farm. You have to respect that. Even if the storm model is a little bit off, you have to make your decisions at least a few days prior. Having the right gear to get the cages back up off the bottom helps. Four or five days prior to storm: Assess and inspect your active gear. Three or four days prior to storm, start sinking your cages. We have watched four-foot waves wash over our gear without damage because they are maintained and anchored properly (Jeff Tilley).

A: Have a dedicated crew who knows how to prepare correctly. Invest in maintenance of your equipment and when storms come, you can have confidence that everything will make it. Tag the gear - if we do lose something, we can recover it quickly (Reid Tilley)

A: At some point, there is nothing more you can do. The forces of nature are easily underestimated, so prepare the best you can to prevent damage (Bob Rheault).

Q: How much does tagging cost each year (Charles Grisafi)?

A: The tags that Oyster Boss uses are about \$0.60/each. We have around 400 cages, so for Oyster Boss, its cost about \$250 to tag everything and our tags generally last more than a year. I suggest investing in engraved or raised-printing tags rather than ink, as it will wear off and get fouled quickly in the water (Reid Tilley).

Following the panel discussion, Jeff and Reid Tilley also brought an actual oyster cage with them, and gave an overview of anchoring, stocking, and floatation details to interested farmers during the workshop break.



Jeff and Reid Tilley show off their preferred oyster cage design.



Leslie Sturmer
UF/IFAS Shellfish Extension

2:40 – Leslie Sturmer, UF/IFAS Shellfish Extension, gave a presentation on the evolution of clam aquaculture gear, and how the industry has adapted and changed gear preferences to meet real-world management challenges throughout the decades. Notably, Leslie described the purpose of the clam cover nets (to prevent predation by cownose ray schools and black drum), material options (metal ‘chicken’ wire, high-density polyethylene plastic and net coatings), and current efforts to mitigate cover net losses. The Cedar Key Aquaculture Association funds two commercial dumpsters on the island which are for cover net disposal only. In partnership with FDACS and Florida State University, UF/IFAS is pursuing a biodegradable cover net research project, which has the potential to permanently solve the cover net debris issue.

Bobby Witt of Scale Key Clams, Craig Parks of B&E Seafood, and Joe Cannon of the Cedar Key Aquaculture Association discussed their clam gear management techniques. The panel discussion focused on individual preferences for predator protection and the strengths and weaknesses of each gear option. The panel also discussed storm preparation options and all agreed that adding an **additional layer of tie-down rope** can greatly reduce gear loss during a severe weather event. Following a back and forth discussion, the audience and panelists unanimously agreed that a bi-annual, industry led cleanup is a good idea and that farmers are willing and able to participate in a routine cleanup event. Contentious clam processors also acknowledged they could do a better job of **voluntarily policing the farmers from which they buy product**, and inquire about gear disposal practices as part of purchasing their clam products.



Clam farmers discuss predator protection options.



Dr. Bob Rheault, Director of the East Coast Shellfish Growers Association

3:30 – Dr. Bob Rheault, Director of the East Coast Shellfish Growers Association, gave a presentation on the national shellfish aquaculture industry, the importance of shellfish lease stewardship, common public perception issues, and case studies of debris management problems and strategies from other areas of the U.S. Highlights from Dr. Rheault’s presentation are summarized below:

On the East Coast, shellfish aquaculture is a \$165M industry. Oyster production has doubled in the last five years. There is still space to learn and invent new technologies to improve aquaculture.

“Plastic debris is the next battleground.”

Beach cleanups are now a required element of Army Corp permitting in WA, OR, and CA.

“The west coast is now fighting an uphill public acceptance battle.”

The **public is starting to push back on adding more plastic** to the marine environment via aquaculture.

3:30 – Dr. Bob Rheault, Exec. Director of the East Coast Shellfish Growers Association (*continued*)

There is **limited scientific evidence of the impacts of microplastics** to shellfish as of yet. The amount of microplastics you may consume from shellfish consumption is 'dwarfed' by the amount of microplastics ingested due to household dust. Regardless of the truth, **public perception matters most!** *"If people think there is plastic in their oysters, they will not eat them."*

The Pacific Shellfish Grower's Association conducts biannual beach cleanups, they identify main sources of debris and target what needs to be tagged.

"It will be much easier and less expensive to deal with plastic on the front-end and focus on prevention instead of cleaning it up later." Plastic reduction should be source reduction; we need to do the right thing before plastics are banned in the shellfish industry. If the industry doesn't solve this issue, regulations will come down. Minimize sources of plastic, seek non-plastic alternatives where possible.

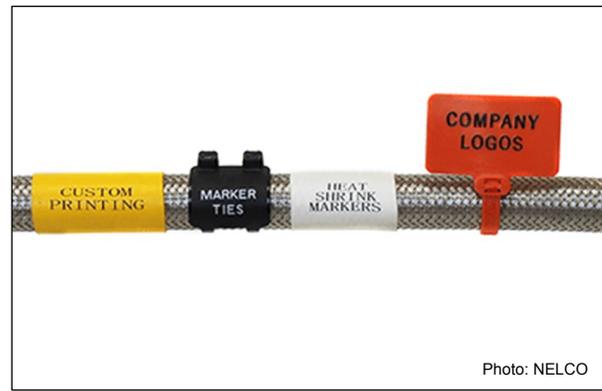
Implement proactive BMPs to prevent reactive regulations:

- ◆ Conduct shoreline surveys
- ◆ Host cleanups
- ◆ Mandate labeling of gear
- ◆ Fund gear disposal dumpsters.
- ◆ Improve public education: Show legislators the positives of shellfish aquaculture, use educational signs and kiosks, and work with non-profit environmental groups.
- ◆ Encourage experimentation with new gear types.
- ◆ Foster a strong local farmer association.

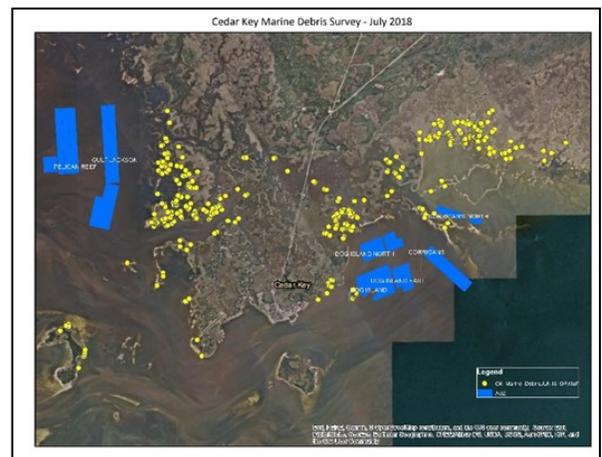
"Plastic debris is the next battleground, and public perception is key to maintaining industry growth and market expansion. With proactive measures, the shellfish aquaculture industry can get a positive public spin on this issue and be part of the solution not the problem."

4:15 – Mark DeHaven, FDACS: Division of Aquaculture, gave a summary of past division debris surveys and cleanup efforts, and reviewed the July 2018 survey of shellfish gear debris which he conducted in Cedar Key.

Highlights from his discussion are summarized below. We used airboats to collect GPS coordinates for each piece of marine debris. Marine debris hotspots were found around the aquaculture use zones (high-density lease parcel areas where a majority of shellfish farms are located). After the first survey (2014), groups cleaned up the gear via a state removal contract (~\$25,000), and one year later, it was back (2015). We have conducted three more surveys (2015, 2016, 2018), and the debris levels remain consistent each year. **City cleanups and the International Coastal Cleanup have made an impact, but the debris has not gone away.** Nearly 100% of the aquaculture debris is plastic cover netting, not many oyster cages because farmers want those back (oyster cages are valuable, cover net is not). **Participants must have local knowledge of the environment and durable vessels** which may be damaged in the removal process. *"Debris is not in easily accessible places, there is muck up to your waist, rocks, and fringing oyster bars. It is extremely hard to ask the local community to clean it up as it a hard work and these areas can damage your boat."*



(Above) Examples of shellfish aquaculture gear tags.
(Below) Cedar Key Aquaculture Debris Survey Map July 2018





Heath Davis, Mayor of Cedar Key

4:30 – Heath Davis, Mayor of Cedar Key /Cedar Key Aquaculture Association board member/Chair of the Florida Shellfish Aquaculture Association /shellfish aquaculture farmer, gave closing remarks and discussed current issues and activities of the industry.

“Aquaculture is not the biggest producer of marine debris, but we are the most visible. We know marine debris is an issue and we want to fix it. When we do get it completely fixed, we will not just pick up our (aquaculture) stuff, we will be picking up everything.”

Following Heath Davis’ remarks, **Chris Topping, owner of Clamtastic, LLC./Cedar Key Aquaculture Association board member**, discussed previous removal efforts, industry involvement with cleanups, and the logistics of the upcoming cleanup event on 9/15. **The workshop ended at 5:00pm** following a closing statement from Charlie Culpepper.

9/15 International Coastal Cleanup Day Event

Charlie Culpepper attended and participated in the cleanup event in Cedar Key on the Saturday following the workshop. The event organizers (UF/IFAS) reported the workshop was a real success in terms of attendance, industry participation and local buy-in. The International Coastal Cleanup Event on 9/15 had over 150 volunteers, and the aquaculture debris dumpsters were being utilized all day. Several clam farmers were present with airboats to access and clean hard to reach, shallow areas. These dumpsters are available for a 2-week period to allow farmers to collect and dispose of gear over a much longer time than just the single day event. **Some 80,000 lbs. of cover net had already been collected and disposed of in these bins as of 9/18/18.** Funded by the Cedar Key Aquaculture Association., two aquaculture debris dumpsters are Permanently in place and available to local clam farmers year round.



Aquaculture debris dumpster funded by the Cedar Key Aquaculture Association.

Workshop Speakers

Speaker	Affiliation	Email Address
Charlie Culpepper	FDACS, Division of Aquaculture	charlie.culpepper@freshfromflorida.com
Lisa Marshall	U.S. Senator Bill Nelson’s Office	lisa_marshall@billnelson.senate.gov
Charles Grisafi	NOAA Marine Debris Program	charles.grisafi@noaa.gov
Leslie Sturmer	University of Florida/IFAS	lnst@ufl.edu
Craig Parks	B & E Seafood	N/A
Chad O’Steen	Cedar Key Aquaculture Farms	N/A
Joe Cannon	Cedar Key Aquaculture Association	N/A
Bob Rheault	East Coast Shellfish Growers Association	bob@ecsga.org
Mark DeHaven	FDACS, Division of Aquaculture	mark.dehaven@freshfromflorida.com
Heath Davis	Mayor of Cedar Key	hdavis@drummondbank.com
Chris Topping	Clamtastic, LLC	clamtastic2000@yahoo.com

Attendance Record

Name	Affiliation	Email Address
Joey Stewart	S.A.L.T., aquaculture student	steven.stewart@levyk12.org
Joseph Allen	S.A.L.T., aquaculture student	joseph.allen@levyk12.org
Nicolas Kain	S.A.L.T., aquaculture student	nickkaindl@gmail.com
Trey Stanfield	S.A.L.T., aquaculture student	stanfield21trey@gmail.com
Trace Epperson	S.A.L.T., aquaculture student	trace.Epperson@gamil.com
Pete Stefani	S.A.L.T., aquaculture student	stefani.pete@gmail.com
Sam Parks	S.A.L.T., aquaculture student	samuel.parks@gmail.cm
Zander Stanley	S.A.L.T., aquaculture student	zander.stanley@levyk12.org
Ashley Cook	U.S. Senator Marco Rubio's Office	ashley_cook@rubio.senate.gov
Lisa Marshall	U.S. Senator Bill Nelson's Office	Lisa_Marshall@billneslon.senate.gov
Vernis Wray	Farmer	gardwar42@gmail.com
Garret Warren	Farmer	N/A
Dana Bethea	NOAA NMFS PRD	dana.bethea@noaa.gov
Rich Matinowski	NOAA NMFS SERO	rich.malinowski@noaa.gov
Nicolette Mariano	Oyster Boss, Eastpoint	oysterboss.nicolette@gmail.com
Jeffery Tilley	Oyster Boss, Eastpoint	lostcreektalley@gmail.com
Reid Tilley	Oyster Boss, Eastpoint	reidkennethtilley@gmail.com
Anthony Hinkle	Clamtastic Seafood	N/A
Trisha Green	FDEP FCO BBSAP	trisha.green@dep.state.fl.us
Jamie Letendre	FDEP FCO BBSAP	jamie.letendre@dep.state.fl.us
John H. Burney	Sebastian	glareout@gmail.com
Sue Colson	Cedar Key Chamber of Commerce	N/A
Rose Cantwell	Cedar Key Aquaculture Association	cantwellrr@bellsouth.net
Rachel Wetherington	S.A.L.T., teacher	rachel.wetherington@levyk12.org
Jeff Roberts	Farmer, Boat Run Oyster	jwroberts813@gmail.com
Jess Beck-Stimpert	NOAA Fisheries SERO	jess.beck@noaa.gov
Serina Rocco	FDACS, Division of Aquaculture	Serina.Rocco@FreshFromFlorida.com
Rick Abbot	Farmer	N/A
Kal Knickerbocker	FDACS, Division of Aquaculture	Kal.Knickerbocker@FreshFromFlorida.com
Carolina Panoff	Seaventure Clam Co.	carolina@seaventuresgroup.com
Jill Fleiger	FDACS, Division of Aquaculture	Jill.Fleiger@FreshFromFlorida.com
Denise Walsh	FDACS, Division of Aquaculture	Denise.Walsh@FreshFromFlorida.com
Carrie Jenkins	FDACS, Division of Aquaculture	Carrie.Jenkins@FreshFromFlorida.com
Marcy Cocknell	FDACS, Office of the Commissioner	N/A
Kieley Hurff	FDACS, Division of Aquaculture	Kieley.Hurff@FreshFromFlorida.com
Jackie Harrell	FDACS, Division of Aquaculture	Jackie.Harrell@FreshFromFlorida.com
Francesca Innocenti	None Shown	N/A
S. Filipowich	None Shown	N/A
Demi Fox	NOAA MDP NERC	demi.fox@noaa.gov
Sarah Latshaw	NOAA MDP	sarah.latshaw@noaa.gov
Sherry Lippiatt	NOAA MDP	sherry.lippiatt@noaa.gov
Caitlin Wessel	NOAA MDP	caitlin.wessel@noaa.gov
Paul Zajicek	National Aquaculture Asso., Director	paul@thenaa.net
Barry Hurt	FL Aquaculture Review Council	bhurt@tampabay.rr.com
Andriana Leiva	Texas Parks and Wildlife	adriana.leiva@tpwd.texas.gov
David Cowie	Farmer	dsc.cowie60@gmail.com

The proceedings results and conclusions, as well as any views or opinions expressed herein, are those of the speakers/panelists and do not necessarily reflect the views of NOAA or the Department of Commerce.