



## NOAA's Teacher at Sea Program Gulf of Mexico Region Alumni Workshop Report: May 2017



*(L-R) Lollie Garay, Jason Moeller, Jenn Annetta, Liz Nyman, John Clark, Cassie Kautzer, Mary Patterson, Bhavna Rawal, Elizabeth Eubanks, Alex Eilers, Emily Susko, Jenny Goldner, Kathy Schroeder, Dana Clark, Alicia Gillean, Mark Silverman, Jennifer Petro, Trevor Hance, and Sue Zupko*



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## Workshop Goals and Content

NOAA's Gulf of Mexico Region Teacher at Sea Alumni (GOM TASA) Workshop was held on May 5-7, 2017 in Pascagoula, Mississippi at NOAA's National Marine Fisheries Service Southeast Fisheries Science Center (SEFSC). Seventeen Teacher at Sea Alumni (TASA) from the region (AL, AR, FL, KS, MO, MS, OK, TN, and TX) attended this two and a half day professional development workshop in order to strengthen oceanographic content knowledge, build partnerships with NOAA scientists, gain knowledge about NOAA resources, and build an alumni network in their region.

### Workshop Goals:

The goals of the alumni workshop are aligned with selected NOAA Teacher at Sea Program's goals.

- Increase teachers' understanding of earth system science.
- Build working relationships among teachers, emphasizing collective participation of groups of teachers.
- Build partnerships between NOAA scientists and teachers in the Gulf of Mexico region.
- Use NOAA data and resources in classroom activities.
- Use NOAA-related career information in classroom activities, when mentoring students and when working with colleagues.

### Workshop Content:

**Alumni Poster Presentations** – Teachers created and printed presentation slides prior to the workshop. Upon arrival, slides were mounted on tri-fold boards and TASA presented their posters to each other.

#### Slide content included:

- **Background Information:** name, address, phone number, url, teaching assignment/experience, reason applied, year sailed, name of ship, where sailed and for how long
- **Ship and Research Goals:** description of ship, the type of research that was being conducted on the mission, and teacher's role
- **At Sea Experience:** description of people met at sea, daily experiences, science content and lessons learned, unique experiences, and pictures of memorable moments
- **Products:** list and description of products created as a result of NOAA's TAS program (lessons, presentations, student projects, curriculum, new courses, community activities, videos, books, etc.)
- **Professional Benefits:** description of how NOAA's TAS program benefitted the educator
- **Highlights:** any additional information regarding the program (Congressional recognition, conferences, improved student test scores, media coverage, etc.)

## **NOAA's SEFSC Presentations:**

### **Overview of Southeast Fisheries Science Center Mississippi Laboratories –**

Karen Mitchell, Branch Chief – Resource Surveys and SEFSC Vessel Coordinator

<https://www.sefsc.noaa.gov/labs/mississippi/>

The Mississippi Laboratories research activities are in response to resource management, environmental, and utilization needs and are by design inherently responsive to various legislative and fishing industry needs throughout the southeast region. They are also the home port of NOAA Ships *Gordon Gunter*, *Oregon II*, and *Pisces*, which conduct scientific surveys of the health and abundance of fishery resources and marine mammals.

### **Southeast Turtle Program –**

Melissa Cook, Research Fishery Biologist

<https://www.sefsc.noaa.gov/species/turtles/>

Scientists research sea turtles to support the conservation and recovery of threatened and endangered sea turtle species by:

- conducting population assessments
- researching stock structure (age and genetics)
- assessing sea turtle mortality, strandings, and unusual events
- revising stock assessment reports for populations of sea turtles in the western North Atlantic Ocean
- participating in research to reduce the bycatch of sea turtles
- conducting in-water studies to evaluate population trends and habitat requirements
- participating in technology transfer of successful bycatch reduction measures

### **Groundfish Surveys –**

Andre DeBose, Research Fishery Biologist

<https://www.sefsc.noaa.gov/labs/mississippi/surveys/groundfish.htm>

Scientists monitor inter-annual estimates of relative abundance for demersal species occurring in the northern and western Gulf of Mexico.

- Two bottomfish surveys and one small pelagic survey are performed each year.
- Shrimp/Bottomfish Surveys are designed to provide a time-series useful for monitoring trends in resource abundance
- All species are sorted then counted, weighed, sexed and sexual stage is assessed
- A CTD (Conductivity Temperature Depth instrument) is used at all sampling locations to record environmental data

### **Shark Longline Surveys –**

Kristin Hannan, Fishery Biologist

<https://www.sefsc.noaa.gov/labs/mississippi/surveys/longline.htm>

Scientists conduct longline surveys to monitor inter-annual variability of shark populations off the Atlantic coast and the Gulf of Mexico. Sampling for both regions is conducted along the continental shelf in depths 5-200 fathoms (9 - 366 meters)

- The survey utilizes commercial-type longline gear
- A CTD is deployed at each station to collect environmental data
- Select species are retained for age and reproductive analysis
- Length, weight, and sex of each animal captured are recorded
- A landing sling is used for animals too large to bring on deck
- Finclips are retained to develop a database for DNA analysis
- Sharks are tagged to monitor movements and growth rates

### **Reef Fish Surveys –**

Ryan Caillouet and Matt Campbell, Fishery Biologists

<https://www.sefsc.noaa.gov/labs/mississippi/surveys/reeffish.htm>

Scientists provide an index of the relative abundances of fish species associated with topographic features (banks, ledges) located on the continental shelf of the Gulf of Mexico in the area from Brownsville, Texas to Dry Tortugas, Florida.

- Sampling is conducted using video camera arrays, fish traps and vertical longlines
- Videos are randomly selected for review to determine estimates of abundance
- Fish traps are used to assess age, fecundity and growth studies

### **Marine Mammal Surveys –**

Keith Mullin, Research Fishery Biologist

<https://www.sefsc.noaa.gov/labs/mississippi/surveys/marinemammal.htm>

Scientists assess the stock structure, distribution and abundance of marine mammals in the U.S. Atlantic, Gulf of Mexico, and Caribbean Sea.

The large-scale surveys utilize ships and aircraft for:

- Visual sampling
- Passive Acoustic Monitoring
- Sperm whale dive interval protocol
- Biopsy sampling

Smaller scale surveys utilize small vessel for:

- Photographic Identification
- Biopsy sampling



## **Plankton Surveys –**

Glenn Zapfe, Research Fishery Biologist

<https://www.sefsc.noaa.gov/labs/mississippi/surveys/plankton.htm>

Scientists sample fish eggs, larvae and juveniles, their zooplankton predators and prey, and measure the physical properties of their pelagic habitat in order to provide a time series of fishery-independent estimates of relative abundance, as well as, ecosystem-relevant data on early life history and ecology, habitat, and recruitment characteristics of both fishery and non-fishery species

- Sampling is conducted with bongo nets, neuston nets, CUFES (Continuous Underway Fish Egg Sampler), MOCNESS (Multiple Opening/Closing Net and Environmental Sensing System), and Methot trawls.
- Water properties and chlorophyll concentration are assessed at each station using a standard CTD cast and benchtop fluorometry
- Plankton samples are preserved at sea and returned to the laboratory for analysis.

## **Harvesting Systems Unit –**

John Mitchell – Research Fishery Biologist, Drew Hopper – Captain R/V *Caretta*, and Kendall Falana – Fishery Methods and Equipment Specialist

[https://www.sefsc.noaa.gov/labs/mississippi/harvesting\\_systems.htm](https://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm)

The Harvesting Systems Unit is a team of fishery biologists and gear specialists performing research into critical issues of fisheries resource management as it relates to commercial and recreational fishing gear. Unit staff possess a working knowledge of the mechanics, design, and operation of various types of commercial and scientific sampling gear including shrimp and fish trawls, longlines, traps and gillnets. The unit has developed specialized SCUBA diving techniques as a means of studying active fishing gear and the behavior of marine fauna in relation to working gear. Many of the unit's accomplishments are the result extensive testing and evaluation of new gear concepts in partnership with commercial fishing industries in the Southeast U.S. region.

## **Turtle Hurdle –**

LaGena Fantroy, Outreach Coordinator

[http://sero.nmfs.noaa.gov/outreach\\_education/index.html](http://sero.nmfs.noaa.gov/outreach_education/index.html)

<http://www.nmfs.noaa.gov/pr/species/turtles/teds.html>

One of the major threats to sea turtles in the marine environment is bycatch, injury, and mortality during fishing operations. A "Turtle Excluder Device" is a grid of bars with an opening either at the top or the bottom of the trawl net. The grid is fitted into the neck of a shrimp trawl.

Small animals such as shrimp pass through the bars and are caught in the bag end of the trawl. When larger animals, such as sea turtles and sharks, are captured in the trawl, they strike the grid bars and are ejected through the opening.

The “Turtle Hurdle” is a life-size Turtle Excluder device that allows people to navigate through the net as a turtle would.

**Shark Dissection –**

Kristin Hannan, Fishery Biologist

TASA dissected Atlantic sharpnose and blacktip sharks in order to learn more about the species. Select specimens are retained for age, reproductive analysis, and additional data collection.

**NOAA R/V *Caretta* trip to Petit Bois Island –**

Andre DeBose – Research Fishery Biologist, Kristin Hannan – Fishery Biologist, Brandi Noble – Fishery Biologist, Drew Hopper - Captain R/V *Caretta*, and Kendall Falana – Fishery Methods and Equipment Specialist

TASA sailed on a NOAA research vessel to a nearby barrier island. On the way, the crew demonstrated an exclusion net designed to reduce bycatch. Teachers identified and sorted the catch, then recorded sample catch data. On the island, teachers and scientists combined learning with environmental stewardship, working together to clean up trash and debris as they explored island habitats.

**Alumni Lesson Share –**

Each TASA brought one lesson plan to share with the group related to ocean or atmospheric science, or careers. Next Generation Science Standards were included in the lessons, as well as NOAA data and resources.



<b>Participants</b>		
<b>Teacher at Sea Alumnus</b>	<b><i>Ship</i></b>	<b>School/Institution</b>
<a href="#"><u>Sue Zupko</u></a> (AL)	<i>Pisces; Henry B. Bigelow</i>	Weatherly Heights Elementary School
<a href="#"><u>Cassie Kautzer</u></a> (AR)	<i>Fairweather</i>	Hellstern Middle School
<a href="#"><u>John Clark</u></a> (FL)	<i>Henry B. Bigelow</i>	Deltona High School
<a href="#"><u>Elizabeth Eubanks</u></a> (FL)	<i>David Starr Jordan</i>	From the Ground Up Community Garden
<a href="#"><u>Jennifer Petro</u></a> (FL)	<i>Pisces</i>	Everitt Middle School
<a href="#"><u>Kathy Schroeder</u></a> (FL)	<i>Oscar Dyson</i>	Palmetto Ridge High School
<a href="#"><u>Mark Silverman</u></a> (FL)	<i>Liberty Star</i>	South Dade Senior High School
<a href="#"><u>Alicia Gillean</u></a> (OK)	<i>Hugh R. Sharp</i>	Jenks West Intermediate School
<a href="#"><u>Jenny Goldner</u></a> (OK)	<i>Oregon II</i>	Jay Upper Elementary School
<a href="#"><u>Alex Eilers</u></a> (TN)	<i>David Starr Jordan</i>	Pink Palace Museum
<a href="#"><u>Jason Moeller</u></a> (TN)	<i>Oscar Dyson</i>	Adventure Science Center

<b>Participants</b>		
<b>Teacher at Sea Alumnus</b>	<b><i>Ship</i></b>	<b>School/Institution</b>
<a href="#"><u>Dana Clark</u></a> (TX)	<i>Fairweather</i>	Irma Rangel Young Women's Leadership School
<a href="#"><u>Lollie Garay</u></a> (TX)	<i>Hugh R. Sharp</i>	Redd School
<a href="#"><u>Trevor Hance</u></a> (TX)	<i>Hugh R. Sharp</i>	Laurel Mountain Elementary School
<a href="#"><u>Liz Nyman</u></a> (TX)	<i>Pisces</i>	Texas A&M Galveston
<a href="#"><u>Mary Patterson</u></a> (TX)	<i>Rainier</i>	Hopper Middle School
<a href="#"><u>Bhavna Rawal</u></a> (TX)	<i>Walton Smith</i>	Westside High School and Houston Community College
<b>Gulf of Mexico TASA Invited but Unable to Attend</b>		
<b>Teacher at Sea Alumnus</b>	<b><i>Ship</i></b>	<b>School/Institution</b>
<a href="#"><u>Virginia Warren</u></a> (AL)	<i>Hugh R. Sharp; Oscar Dyson</i>	Breitling Elementary School
<a href="#"><u>Marsha Skoczek</u></a> (KS)	<i>Pisces</i>	Olathe North High School
<a href="#"><u>Laurie Degenhart</u></a> (MO)	<i>Delaware II</i>	Rockwood Summit High School
<a href="#"><u>Bill Henske</u></a> (MO)	<i>Nancy Foster</i>	Maplewood Richmond Heights Middle School

Gulf of Mexico TASA Invited but Unable to Attend		
Teacher at Sea Alumnus	Ship	School/Institution
<a href="#"><u>Nicolle Von Der Heyde</u></a> (MO)	<i>Pisces</i>	Northwest Middle School
<a href="#"><u>Jeannine Foucault</u></a> (MS)	<i>Pisces</i>	Lewisburg Middle/High School
<a href="#"><u>Mechelle Shoemake</u></a> (MS)	<i>Oregon II</i>	South Jones Elementary School
<a href="#"><u>Suzanne Acord</u></a> (TX)	<i>Oscar Elton Sette</i>	Sharpstown International School
<a href="#"><u>Cathrine Prenot</u></a> (TX)	<i>Oscar Dyson; Bell M. Shimada</i>	Estacado High School

<b>Alumni Workshop Staff and Support</b>	
Jennifer Hammond	NOAA's Teacher at Sea Program Office
Jennifer Annetta	NOAA's Teacher at Sea Program Office
Emily Susko	NOAA's Teacher at Sea Program Office
Karen Mitchell	NOAA National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC)
Kristin Hannan	NOAA NMFS SEFSC
Brandi Noble	NOAA NMFS SEFSC
Andre DeBose	NOAA NMFS SEFSC
LaGena Fantroy	NOAA NMFS SEFSC
Melissa Cook	NOAA NMFS, SEFSC
Glenn Zapfe	NOAA NMFS, SEFSC
John Mitchell	NOAA NMFS, SEFSC
Matthew Campbell	NOAA NMFS, SEFSC
Ryan Caillouet	NOAA NMFS, SEFSC
Drew Hopper	NOAA NMFS, SEFSC
Kendall Falana	NOAA NMFS, SEFSC
Keith Mullin	NOAA NMFS, SEFSC
Allison Alexander	National Marine Sanctuary Foundation
Lynn Wisniewski	National Marine Sanctuary Foundation

# Agenda



## NOAA Gulf of Mexico Teacher at Sea Alumni Workshop

May 5-7, 2017

NOAA Southeast Fisheries Science Center Pascagoula Lab

### Day 1 - Friday, May 5, 2017

**8:30** – TASA Poster Session

**10:15** – Overview of NOAA's Southeast Fisheries Science Center: *Karen Mitchell – Branch Chief – Resource Surveys and SEFSC Vessel Coordinator*

**10:45** – Sea Turtle Presentation: *Melissa Cook, Research Fishery Biologist*

**11:05** – Groundfish Presentation: *Andre DeBose, Research Fishery Biologist*

**11:30** – Shark/Longline Presentation: *Kristin Hannan, Fishery Biologist*

**1:00** – Turtle Hurdle: *LaGena Fantroy, Outreach Coordinator*

**1:30** – Harvesting Presentation: *John Mitchell - Research Fishery Biologist, Drew Hopper – Captain R/V Caretta, and Kendall Falana – Fishery Methods and Equipment Specialist*

**1:45** – Shark Dissection: *Kristin Hannan, Fishery Biologist*

**3:00** – Reef Fish Presentation: *Matt Campbell and Ryan Caillouet, Fishery Biologists*

**3:30** – Mammal Presentation: *Keith Mullin, Research Fishery Biologist*

**4:00** – Plankton Presentation - Plankton Lab: *Glenn Zapfe, Research Fishery Biologist*

**4:30 – 5:00** – Discussion and Wrap-Up



## **NOAA Gulf of Mexico Teacher at Sea Alumni Workshop**

### **Day 2, Saturday, May 6, 2017**

**8:00** – Depart on R/V *Caretta*: *Andre DeBose, Kristin Hannan, Brandi Noble, Kendall Falana, and Captain Drew Hopper*

**8:30** – Trawl Net Demonstration and Catch Sort/ Identification

**10:00** – Travel to Petit Bois Island

**12:00** – Tour Island; Beach Clean-up

**2:30** – Head back to dock

**4:00** – End of Day

### **Day 3, Sunday, May 7, 2017**

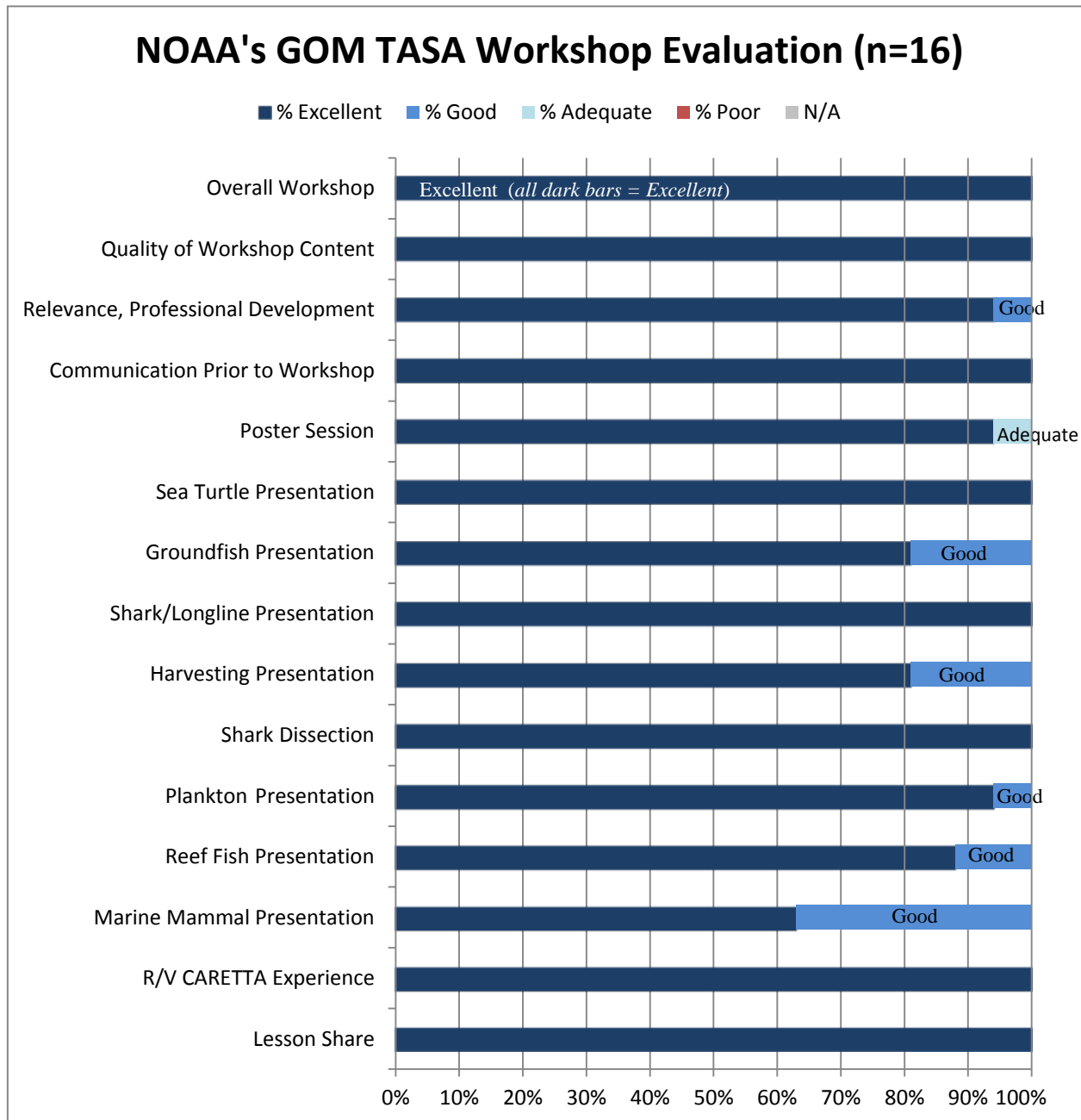
**8:00** – Lesson Share with Grade Level Groups

**10:00 – 11:00** – Gulf of Mexico Regional TASA Discussion and Next Steps; Forms and Evaluation

## Evaluation Data

### Results from NOAA's Gulf of Mexico Region TASA Workshop Evaluation (n=16)

Participants were asked to select from – excellent, good, adequate, poor or N/A for the following items:





**When asked if alumni plan to incorporate content, activities, and experiences from the workshop into their curriculum:**

100% said that they plan to incorporate content, activities, and experiences into their curriculum.

**Those alumni who said that they plan to incorporate workshop content into their curriculum explained that they would do so in the following ways:**

- Staff development and hands-on presentations to schools. Incorporate NOAA TAS resources into curriculum writing for various sources.
- Shark dissections at the science center. Gained a lot of information that can be used for our live science guest presentations. I will be doing TEDs for sure.
- There are several lessons that my colleagues shared that I'm excited to incorporate into my classroom.
- I plan to do a "Sea Life" family night. I will teach lessons that correlate with what I learned. The students will create presentations based on what they learned. Skpe with NOAA scientists.
- I really want to incorporate more shark dissections in the classroom. It was great working with Kristin and gaining more information. Glad you shared "Did You Know" resource – will definitely use!
- I will share my marine work and photos with the marine science teachers. I plan to incorporate some of what I learned into my physics class – the TED, circle hook, and tensile strength hook are all great examples of applied physics principles.
- I plan to take this now outside of my classroom. I'm thinking of a science family night using some of these lessons to do activities at stations – ocean acidification, oil spill simulation....My mind is in overdrive!
- I plan to develop a study of the Gulf of Mexico as part of my summer camp curricula this year.
- Involve Science Honor Society with some of the opportunities I learned about.
- Connect with scientists I met and partner them with students and teachers in local workshops.

**Open-Ended Questions:**

**1. What was the most valuable part of the workshop?**

- All of it! Very relevant to current and future classroom content that I teacher. Networking with other TASA is so valuable to share experiences, expertise, ideas and passion for teaching.
- Poster presentations from every TASA, the *Caretta* experience, and trash pick-up at the island.
- Learning about the fisheries and marine life present in the Gulf! AND of course being out on the R/V *Caretta* – what a wonderful hands-on experience!
- Connections to scientists and TASA
- Meeting the other teachers and NOAA personnel was the most valuable to me. This type of networking is very valuable and somewhat rear for teachers.

- Since I was on a hydrography trip, it was valuable for me to experience the fishing side. I learned so much from the presentations and the activities aboard *Caretta*. My mind is churning with ways to incorporate this into my classroom.
- For me it was either the sea turtle items (especially the Turtle Hurdle) and the shark dissection. We do an occasional dissection at the science center, and I learned a lot for doing those in the future.
- Lesson sharing and networking! Listening to other's presentations and what they're doing is invaluable! The ability to connect and collaborate with others means so much for finding innovative ways to integrate portions of this program.
- Loved the hands-on parts of the workshop!

## 2. How could this workshop have been improved?

- I loved the outreach TED opportunity (Turtle Hurdle), where we could crawl through the net. It would have been nice to see more of those outreach type programs.
- Would have liked to have been able to view plankton samples under a scope.
- More time during the poster session.
- Take home a directory of each participant with picture, contact information, and TAS mission.
- Help matching pictures from fish survey with the common names of those species.
- Interactions with other TASA regions via Skype or National TASA workshop.
- More days! The workshop was great!
- More opportunities to collaborate.
- List of resources directly related to Gulf of Mexico.
- Even more hands-on with NOAA scientists.

## Additional Comments:

- I can't thank NOAA TAS for all you've done for me, my students, and my community. Thank you for treating us like professionals. This workshop was a breath of fresh air.
- Thank you for the chance to learn about the other missions NOAA is involved in. Really makes me want to go back out. Thank you for the chance to meet our wonderful alumni and make new friends!
- Great idea bringing regional teachers together! I hope you will consider a follow-up workshop. Networking with colleagues is always a valuable practice. Thank you for your hard work putting this together!
- Love this idea of building teacher TAS geographic groups.
- The Teacher at Sea program is amazing!
- Paying for a sub is huge. Thanks for that. It's the only way I could have come. The lesson plan share is fabulous. Always want hands-on activities which have been tested and we know are reliable.

## Appendix: Photos



*Kathy Schroeder presents her TAS experience poster to fellow TASA*



*Interested TASA look on as Kristin Hannan shares shark specimens*





*(Back row L-R) John Clark, Sue Zupko, Mark Silverman, Kathy Schroeder, Lollie Garay, Alicia Gillean, Elizabeth Eubanks, Mary Patterson, Cassie Kautzer, Dana Clark, Bhavna Rawal, Elizabeth Nyman, Jenny Goldner, Jenn Annetta, Trevor Hance (Front Row L-R) Jason Moeller, Jennifer Petro, Alex Eilers, and Emily Susko*



*Elizabeth Eubanks makes it through the Turtle Hurdle*





*John Mitchell informs the group about NOAA's Harvesting Systems Unit*



*Lollie Garay looks carefully at plankton samples*





*TASA aboard R/V Caretta*



*Sorting catch aboard R/V Caretta*





*Andre DeBose assists with fish identification*



*Island beach clean-up*





*TASA on Petit Bois Island (Back row l-r) Jason Moeller, Jennifer Petro, Kathy Schroeder, John Clark, Dana Clark, Trevor Hance (Front row l-r) Sue Zupko, Mark Silverman, Lollie Garay, Alex Eilers, Cassie Kautzer, and Alicia Gillean*



*(L-R) Lollie Garay, Mary Patterson, and Dana Clark share lesson plans and classroom ideas*