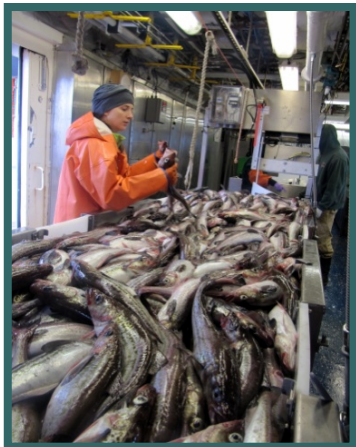


# NOAA's Teacher at Sea Program

## 2011 Year in Review



# NOAA's Teacher at Sea Program

## 2011 Year in Review

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### Overview

- 2011 NOAA Teacher at Sea Season
- Return on Investment
- Opportunities and Challenges
- Background Material



"I feel that my passion for the sciences has been re-ignited. I found myself craving more knowledge after 7 years in the classroom with stagnant curriculum. This has totally revamped my creativity and love for the natural world.....passion is contagious."  
KC Sullivan, TAS 2011



# NOAA Teacher at Sea Program

## 2011 Season



“This program enables educators to experience science rather than just reading and teaching about it. Increasing our understanding of science while acquiring new skills and knowledge, enables us to become better teachers.”  
Heather Haberman, TAS 2011



# NOAA Teacher at Sea Program

## 2011 Snapshot

- **Applications received:** 220
- **Peer reviewers:** 56
- **Berths offered to teachers by scientists:** ~70
- **Teachers sent to sea:** 33
- **NOAA ships that hosted teachers:** 11
- **Charter ships that hosted teachers:** 5
- **TAS alumni support:** 250
- **Teachers placed in NOAA labs:** 4
- **Teachers placed in NOAA field projects:** 4
- **Teachers placed in aircraft projects:** 2



"This experience was truly once-in-a-lifetime. I was a part of a research team that had a very impactful job to do. The research they were doing would impact both the ecosystems of the Gulf of Alaska and the fishing economy. I was able to perform tasks as if I was a scientist, and interact with the ship's crew, learning more and doing things outside of being a "guest scientist."

Ann Mortimer, TAS 2011



# NOAA Teacher at Sea Program

## Return on Investment



"The Teacher at Sea Program has given me hands-on experience that I can relate directly to my students' lives in this Maine coastal community. I met wonderful people, learned about scallops and their management and was an active participant in scientific research."

Kathleen Brown, TAS 2011

"I use NOAA resources in my classroom on a regular basis for hands on and data driven activities. The opportunity to see and assist in the hands on collection of that data has proven to be an immeasurable experience."

Steven Wilkie, TAS 2011



# NOAA Teacher at Sea Program

## 2011 Highlights & Outputs

- Sent 33 teachers to sea representing 21 states
- Placed 8 teachers in lab and field projects as pilot programs
- Received 12 letters of recognition by Congress and recognition in a speech by DOC Acting Deputy Secretary Blank at Brookings Institution
- 33+ media pieces published (articles, videos, radio, etc.)
- Managed the TAS alumni association (300+ active members) & supported NOAA Education by placing alumni at multiple education and science conferences
- Completed the first of two alumni workshops in New England
- Received 100% satisfaction rating in teacher participant survey

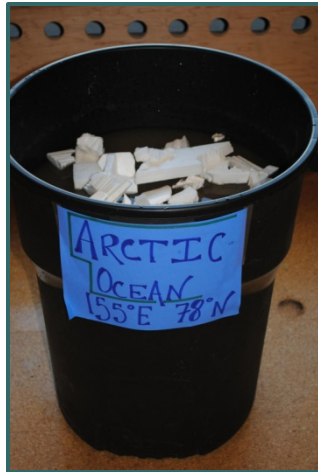


“And then I should note, at the Department of Commerce, and many, many other agencies, there are a large number of agency-specific STEM programs, to mention two that I’m particularly fond of at the Department of Commerce, NOAA, the National Oceanic and Atmospheric Administration runs a Teacher at Sea summer Program which takes science teachers and puts them on NOAA boats that are doing hydro-graphical work over the summer for a week at a time to actually experience hands on research and to bring those experiences back to the classroom.”

Rebecca Blank, Acting Deputy Secretary of Commerce

# NOAA Teacher at Sea Program

## 2011 Highlights & Outputs



- Established partnership with University of St. Francis, IN to provide 3-4 graduate credits to TAS alumni
- Implemented the use of WordPress blog platform for teacher logs (190+) & increased web traffic by 30%
- Expanded social media use via Facebook and Twitter
- Enhanced the online application system and online training system for participants
- Supported the James D. Martin Shepherd Elementary Science Fair, NOAA's Bring a Child to Work Day, & other outreach events
- Received 80+ lesson plans, 50+ presentations, 500+ photos, and numerous other educational products from alumni
- Distributed 8,000+ TAS books and other NOAA education products



# NOAA Teacher at Sea Program Partnerships

## Internal

- Sponsoring NOAA Scientists and Offices
- Office of Marine and Aviation Operations
- NOAA Office of Education & Education Council
- National Marine Sanctuaries
- NOAA Corps and ships' crew

## External

- TAS Alumni
- University of St. Francis
- Columbia University Scientist Research Program
- PolarTREC (NSF)
- Project Maury (USNA and AMS)
- Smithsonian Ocean Hall
- Cal Poly State University



"The TAS program has increased my understanding of how environmental policies are based on scientific data that's collected in the field. It has also given me a glimpse into how much teamwork and effort goes into collecting the data. I now know a lot more about shrimp and fishes in the Gulf as well as maritime careers. I learned so much from this experience, I felt like I was back in college again! "

Heather Haberman, TAS 2011



# NOAA Teacher at Sea

## Future Opportunities & Challenges

“All teachers should experience science being used, as well as their own subject in the real world. Science affects everyone, not just science teachers. Also, all teachers need to develop an appreciation for scientists who do the hard work that we get to benefit from.”

Kathleen Harrison, TAS 2011

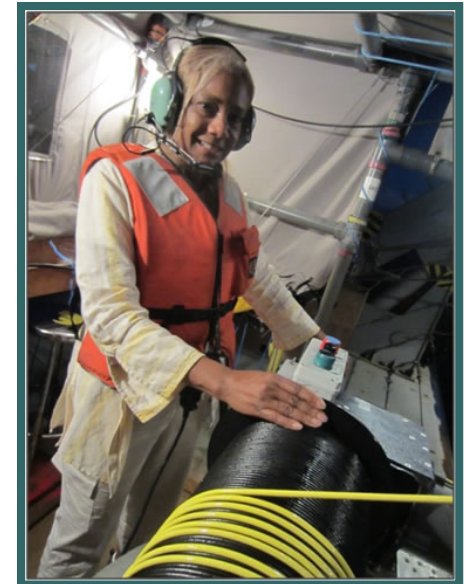


“This was an excellent program for getting hands on research, especially since I like to teach a very hands on curriculum. In short, if you are planning on teaching either about the ocean or doing a lab section, this is an extraordinarily beneficial program. “

Jason Moeller, TAS 2011

# NOAA Teacher at Sea Opportunities & Challenges

- Continuing expansion of program
  - Teacher at Sea
  - Teacher in the Lab (pilot phase)
  - Teacher in the Field (pilot phase)
  - Teacher in the Air (pilot phase)
- Further leveraging of alumni network
- Continued enhancement of program metrics
- Continued rigorous summative and formative evaluations
- Sharing program outputs and outcomes
- Continued contribution to creating a more environmentally literate public and a future workforce for NOAA



# NOAA Teacher at Sea Program

## Summary

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"I feel I have more 'tools' or resources in my toolbox in order to make my content meaningful and exciting. I will be able to incorporate this experience in ALL areas of the curriculum, which is very exciting and motivating. I don't think I have actually learned this much since my student teaching. Being in this environment for a long period of time allowed me to experience more, learn more, and now in turn, apply more. This experience and the people I met changed my life as a person and a teacher and I will be forever grateful."

Kaci Heins, TAS 2011





# NOAA Teacher at Sea Program

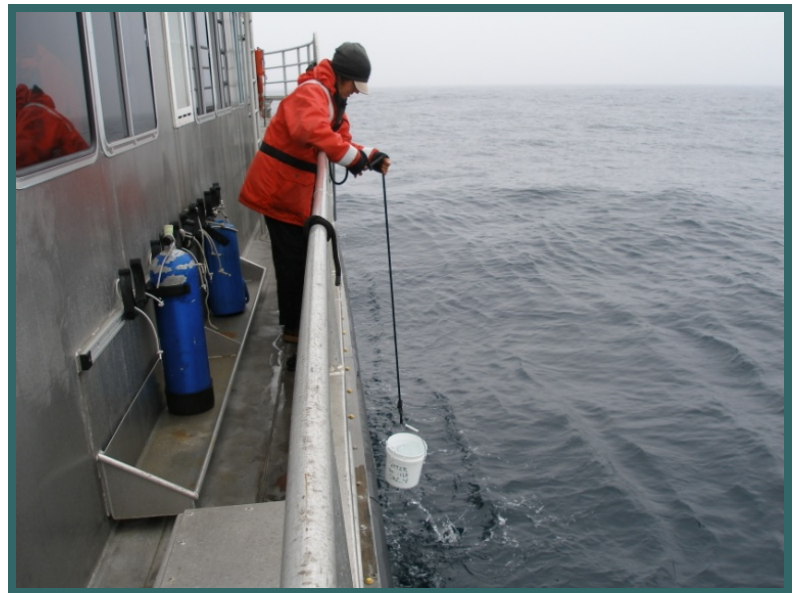
## Background Material

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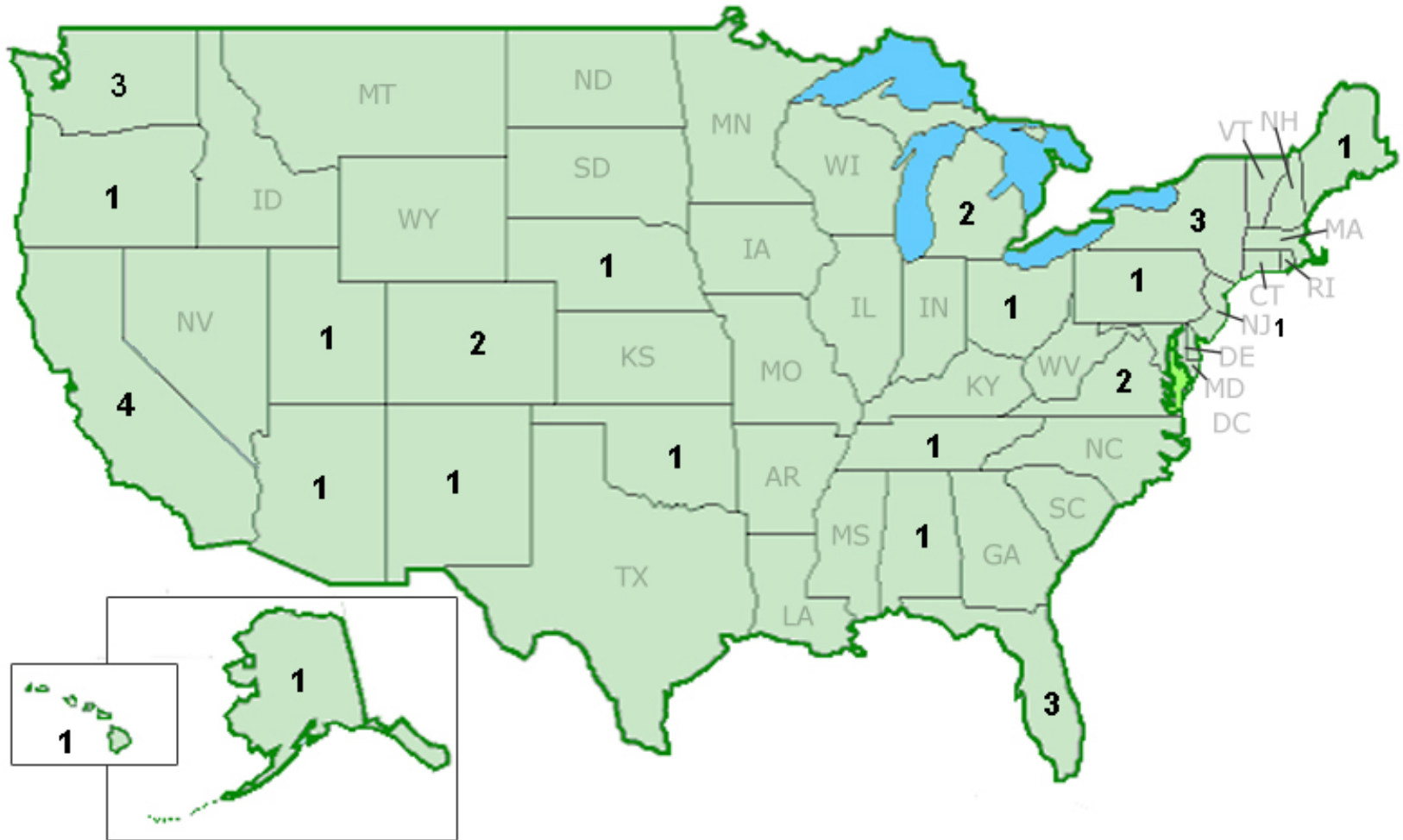
“To be effective science teachers, we need to be involved in current science research. I found TAS educational and invigorating. I can't wait to take my experience back to the classroom, and would love for my colleagues to have similar experiences.”  
Caitlin Thompson, TAS 2011

“The TAS program is a chance to experience real science at work, in its complicated, interesting, and sometimes messy form. No matter the experience, teachers get to DO science.”  
Cathrine Fox, TAS 2011



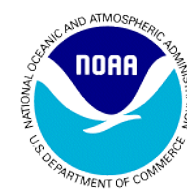
# NOAA Teacher at Sea Program

## States Represented by 2011 Class



# NOAA Teacher at Sea Program

## 2011 Participants



	Teacher Last Name	Teacher First Name	Subjects	Grades	School City	School State	Cruise	Line Office	Cruise Dates	Cruise Ports	Ship
1	Allen	Steven B	History - U.S. History, History - Civics	8th, 7th	West Palm Beach	FL	Exploring the Submerged New World Part 3 (Gulf of Mexico Project)	NOS/OER	08/09/11-08/18/11	St. Petersburg FL	R/V Bellows
2	Anderson	Maureen E	Science, Other - Health	7th, 8th	Brooklyn	NY	Bottom Longline Leg 1	NMFS/SEFSC	07/25/11-08/09/11	Pascagoula MS; Mayport FL	Oregon II
3	Artz	Anne E	Science - AP Env.Science, Science - Adv. Biology, Other - Leadership	11th, 9th, 9th - 10-12	La Jolla	CA	Surf Clam Survey Leg 2	NMFS/NEFSC	07/25/11 - 08/05/11	Woods Hole MA	Delaware II
4	Bechler	Elaine	Science - Bilogogy	9-12	Santa Rosa	CA	Cordell Bank Ecosystem Monitoring	NOS/Sanct	07/21/11-07/26/11	Sausalito CA (Bodega Bay CA)	R/V Fulmar
5	Brown	Kathleen J	Science	7th	Freeport	ME	Sea Scallop Survey Leg 2	NMFS/NEFSC	06/07/11 - 06/18/11	Woods Hole MA	Hugh R. Sharp
6	Bunker	Stephen R	Science	4th	Orem	UT	South Florida Program	OAR/AOML	10/20/11-10/24/11	Miami FL	R/V Walton Smith
7	Charuba	Walter	Science	6th, 8th	Grosse Pointe Farms	MI	Reef Fish Sampling	NMFS/SEFSC	07/18/11 - 07/29/11	Savannah GA	R/V Savannah
8	Comer	Channa	Science	9, 10	Bronx	NY	Sea Scallop Survey Leg 1	NMFS/NEFSC	05/11/11 - 05/22/11	Lewes DE	Hugh Sharp
9	Daftari	Jennifer L	Science	5th	Jay	OK	Bottom Longline Leg 2	NMFS/SEFSC	08/11/11-08/24/11	Mayport FL; Pascagoula MS	Oregon II
10	DeSchryver	Staci M	Science	12th - Some 11th take course, 9th, 10th	Aurora	CO	Pollock Acoustic Survey Leg 3	NMFS/AFSC	07/26/11-08/12/11	Kodiak AK	Oscar Dyson
11	Faist	Chris	Science	7th	San Diego	CA	Cetacean, Sea Turtle and Sea Bird Abundance Survey	NMFS/NEFSC	07/20/11-08/01/11	Woods Hole MA	Bigelow



# NOAA Teacher at Sea Program

## 2011 Participants



	Teacher Last Name	Teacher First Name	Subjects	Grades	School City	School State	Cruise	Line Office	Cruise Dates	Cruise Ports	Ship
11	Faist	Chris	Science	7th	San Diego	CA	Cetacean, Sea Turtle and Sea Bird Abundance Survey	NMFS/NEFSC	07/20/11-08/01/11	Woods Hole MA	Bigelow
12	Fine	Caitlin G	Science	Kindergarten, 2nd, 5th, 3rd, 4th	Arlington	VA	South Florida Program	OAR/AOML	08/02/11-08/06/11	Miami FL	R/V Walton Smith
13	Fox	Cathrine N	Science	9th, 10th, 11th, 12th	Mancos	CO	Pollock Acoustic Survey Leg 3	NMFS/AFSC	07/26/11-08/12/11	Kodiak AK	Oscar Dyson
14	Haberman	Heather L	Science - Biology, Environmental Science, Earth Science	9-12, 9-10, 10-12,	Scotsbluff	NE	Summer Groundfish Survey Leg 3	NMFS/SEFSC	07/06/11-07/17/11	Galveston TX; Pascagoula MS	Oregon II
15	Hams	Jackie	Oceanography, Environmental Science, Physical Geology	University	Valley Glen	CA	DYNAMO	OAR/NASA/Navy	11/05/11-12/10/11	Phuket, Thailand	R/V Revelle
16	Harrison	Kathleen C	Science - Earth Science, Biology, IB Biology, Oceanography	9th, 10th, 11th	Hampton	VA	Pollock Acoustic Survey Leg 2	NMFS/AFSC	07/04/11-07/22/11	Kodiak AK	Oscar Dyson
17	Heins	Kaci A	Science, Social Studies	6th	Flagstaff	AZ	Hydrographic Surveying	NOS/OCS	09/17/11-10/07/11	Seattle WA; Juneau AK	Rainier
18	Knippenberg	Lindsay	Einstein Fellow, NOAA Office of Education	Einstein Fellow, NOAA Office of Education	Detroit	MI	BASIS Leg 2	NMFS/AFSC	09/04/11-09/16/11	Dutch Harbor AK	Oscar Dyson
19	Moeller	Jason N	Science - All Physical Sciences, Zoology, Behavioral Sciences	Other - K-8 (Homeschool)	Knoxville	TN	Pollock Acoustic Survey Leg 1	NMFS/AFSC	06/12/11-06/30/11	Kodiak AK	Oscar Dyson
20	Mortimer	Anne E	Science - Physical Science, Science - Biology, Science - Biology Support	9th, 10th	Mount Vernon	WA	Pollock Acoustic Survey Leg 2	NMFS/AFSC	07/04/11-07/22/11	Kodiak AK	Oscar Dyson
21	Moylan	Rebecca (Becky) J	Science	8th	Honolulu	HI	Oceanographic cruise to study eddies off the Big Island	NMFS/PIFSC	07/01/11-07/14/11	Honolulu HI	Oscar Elton Sette

# NOAA Teacher at Sea Program

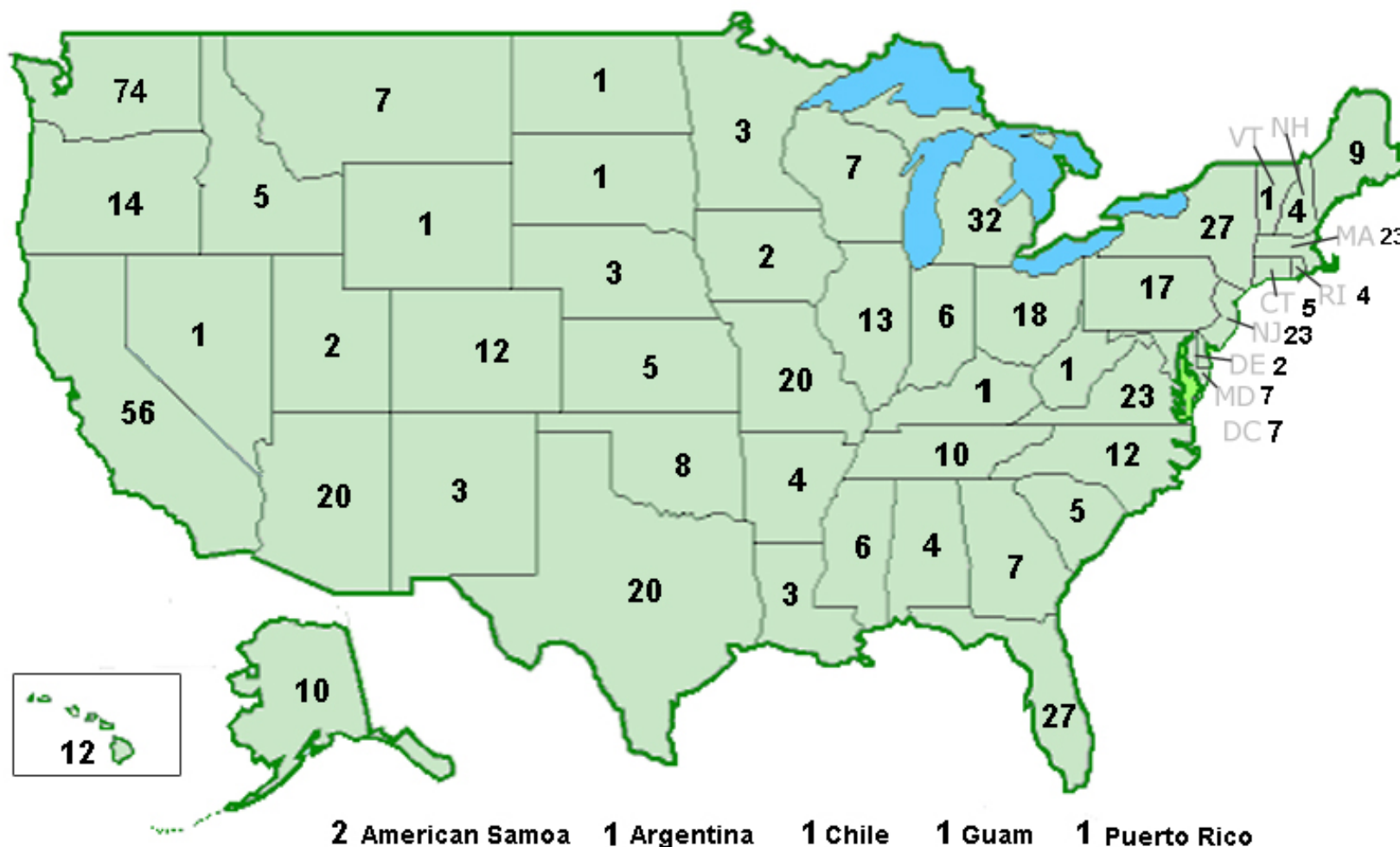
## 2011 Participants



	Teacher Last Name	Teacher First Name	Subjects	Grades	School City	School State	Cruise	Line Office	Cruise Dates	Cruise Ports	Ship
22	Orilio	Tammy	Marine Science, Regular and Honors	Other - 10th-12th, Other - 11th & 12th	Parkland	FL	Pollock Acoustic Survey Leg 1	NMFS/AFSC	06/12/11-06/30/11	Kodiak AK	Oscar Dyson
23	Pierantoni	Nathan A	Enriched Science, Gifted Elective, English - Nonfiction Reading	6th, 7th, 8th	Farmington	NM	South Florida Program	OAR/AOML	04/04/11-04/08/11	Miami FL	R/V Walton Smith
24	Rasmussen	Karen	All Subjects	3, 4	Ocean Shores	WA	OCNMS Ecosystem Survey	NOS/OCNMS	06/22/11-07/01/11	Seattle WA	R/V Tatoosh
25	Soder	Jessie L	Science, All subjects	1st-2nd, 3rd-5th	Gustavus	AK	Surf Clam Survery Leg 3	NMFS/NEFSC	08/08/11 - 08/19/11	Woods Hole MA	Delaware II
26	Stephens	Margaret T	Science - Environmental science, Other - Physical Geography	University	Philadelphia	PA	Reef Fish Sampling	NMFS/SEFSC	05/14/11/05/28/11	Mayport FL (Jacksonville)	Pisces
27	Sullivan	Kevin C	Marine Science, Environmental Science, Coastal Zone Mngmt	11th	Middletown	NJ	BASIS Leg 1	NMFS/AFSC	08/19/11-09/02/11	Kodiak AK; Dutch Harbor AK	Oscar Dyson
28	Taylor-Lehman	John W	Biology, Chemistry, Oceanography, Zoology	9th - 12th	Dresden	OH	Reef Fish Sampling	NMFS/SEFSC/	06/24/11 - 07/01/11	Savannah GA	R/V Savannah
29	Teamey	Kerry Paige	Earth Science, Material Science, Anatomy and Physiology	11th, 12th	Bronx	NY	Hydrographic Surveying	NOS/OMAO	10/31/11-11/11/11	New London CT	Thomas Jefferson
30	Thompson	Caitlin M	Integrated Science, Math - Pre-Geometry	8th, 7th	Portland	OR	Hake Acoustic Survey Leg 3	NMFS/NEFSC	08/01/11-08/14/11	Newport OR; Port Angeles WA	Bell Shimada
31	Wagner	Marian E	All subjects - 3rd-4th loop	3rd, 4th	Seattle	WA	Reef Fish Sampling	NMFS/SEFSC	08/16/11 - 08/26/11	Savannah GA	R/V Savannah
32	Wilkie	Steven	Science	11th, 12th, University	Fort Myers	FL	Summer Groundfish Leg 2	NMFS/SEFSC	06/23/11-07/4/11	Pacagoula MS; Galveston TX	Oregon II
33	Zupko	Sue A	Other - Gifted, Math - Math Team	2nd, 3rd, 4th, 5th	Huntsville	AL	Deep Sea Corals	NMFS/SEFSC	05/31/11-06/14/11	Jacksonville FL; Port Everglades FL	Pisces

# NOAA Teacher at Sea Program

## Alumni 1990 – 2011







# NOAA Teacher in the Lab/Field

## 2011 Participants (Pilot Projects)

NOAA Teacher in the Lab Pilot Project - Summer 2011				
Lab	Scientist	Teacher	Grade	Research
Alaska Fisheries Science Center, Juneau	Bonita Nelson	Lara Dzinich	Middle School	cultivating krill
Alaska Fisheries Science Center, Juneau	Bonita Nelson	Kathleen Galau	High School	cultivating krill
Earth System Research Laboratory, Boulder	Dan Wolfe	Peter Blanken	College	climate
Southwest Fisheries Science Center, La Jolla	Jeff Seminoff	Dana Tomlinson	Elementary School	green turtle
NOAA Teacher in the Field Pilot Project - Summer 2011				
Field	Scientist	Teacher	Grade	Research
Northwest Fisheries Science Center	Gary Winans	Jon Baker	High School	genetics
Northwest Fisheries Science Center	Gary Winans	Jennifer Duncan	High School	genetics
Northwest Fisheries Science Center	Gary Winans	Michele Wolski	High School	genetics
Northwest Fisheries Science Center	Gary Winans	Rachelle Carnes	High School	genetics



# NOAA Teacher at Sea Program

## Mission and Vision

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- **Mission:** to give teachers a clearer insight into our ocean planet, a greater understanding of maritime work and studies, and to increase their level of environmental literacy by fostering an interdisciplinary research experience.
- **Vision:** to be NOAA's main provider to teachers of opportunities to participate in real-world scientific research and maritime activities through teacher research experiences.
- **Overarching Goal:** NOAA's Teacher at Sea program's goals support NOAA's environmental literacy, outreach, and education goals and also support NOAA's workforce goals to recruit and retain a highly adaptable, technically competent and diverse workforce.



# NOAA Teacher at Sea Program

## Goals

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### Short-term Goals (Skills and Knowledge)

Teachers will:

- Understand how NOAA oceanic and atmospheric research is linked to National Education Science Standards and Ocean Literacy Principles.
- Understand the education and training paths that lead to NOAA-related careers.

### Mid-term Goals (Behavior and Action)

Teachers will:

- Use NOAA data and resources in classroom activities.
- Use NOAA-related career information in classroom activities, when mentoring students and when working with colleagues.

### Long-term Goals (Social, Environmental, and Economic)

In support of NOAA's mission, the Teacher at Sea Program will:

- Build an understanding of earth system science among teachers and students.
- Build a workforce for science, technology, engineering, and math careers.

Note: Goals were created using the Bennett Logic Model. External evaluation data indicates we are meeting our Short- and Mid-term Goals, and beginning to meet long-term goal.



# NOAA Teacher at Sea Program

## External Evaluation

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**In 2010 an independent evaluator finished a two-year evaluation of NOAA's Teacher at Sea Program.**

**In summary, regarding short- and mid-term goals:**

- Teachers use the Teacher at Sea experience back in the classroom (NOAA data).
- The Teacher at Sea experience impacts how teachers teach (inquiry-based).
- The Teacher at Sea experience impacts participants on a very personal level ("life-changing").
- Participants share their Teacher at Sea experiences with others (students, community members, teachers).
- Participants talked with others, including students and other teachers, about possible NOAA-related career opportunities.



# NOAA Teacher at Sea Program

## External Evaluation (continued)

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### **In summary, regarding long-term goal:**

- Data indicate that the NOAA Teacher at Sea Program is addressing its long-term goal: Build an understanding of NOAA-related sciences among teachers and students.
- Educators report that their own understanding of NOAA sciences has increased.
- In addition, the educators report that their students are more engaged in their science learning, know more about science as it applies to the world's oceans/atmosphere/climate, and have an appreciation for the relevance of scientific research.



# NOAA Teacher at Sea Program

## History & Status

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A matrix program, NOAA's Teacher at Sea Program is housed within NOAA Fisheries, receiving support from the Office of Marine and Aviation Operations and providing educational resources to all the NOAA line offices.

### OMAO Years

- 1990: Established within OMAO by NOAA Corps Officer (LT Ilene Byron)
- 2003: OMAO hired program manager
- 2004 – 2007: Program in formative years

### NMFS Years

- 2008: Program moved to NMFS for expansion
- 2008 – Present: Program operating and expanding
  - Teacher in the Lab, Teacher in the Field, and Teacher in the Air are being piloted



# NOAA Teacher at Sea Program Operations

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## Call for Applications (October – November)

- Call for applications takes place every year from 10/1 – 11/30
- Eligible candidates include full-time K-20 teachers, as well as museum and aquaria educators
- Receive an average 200 applications per year

## Selections (December – February)

- Applications reviewed by a panel of 50+ TAS alumni and NOAA employees
- Reviews follow rubric
- Number of participants determined by budget, but usually around 30
- Final selections approved by NMFS Deputy Assistant Administrator





# NOAA Teacher at Sea Program Operations (continued)

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## Placement Process (February – November)

- Ship Placement – Teachers matched with cruise based on availability, research interests, and geographical preferences
- Training – Teachers must complete online training course prior to sailing
- Deliverables – Teachers must agree to a Statement of Work but prior to sailing (Standard, but can be modified)
- Travel – Program funds and arranges for participants (at least one month before cruise)
- Communication
  - With teacher (frequent)
  - With scientist (frequent)
  - With ship XO (frequent)