NOAA’s Teacher at Sea Program
2011 Year in Review
NOAA’s Teacher at Sea Program
2011 Year in Review

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

“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

“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
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 3 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
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
“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
“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

“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

“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
# NOAA Teacher at Sea Program
## 2011 Participants

<table>
<thead>
<tr>
<th>Teacher Last Name</th>
<th>Teacher First Name</th>
<th>Subjects</th>
<th>Grades</th>
<th>School City</th>
<th>School State</th>
<th>Cruise</th>
<th>Line Office</th>
<th>Cruise Dates</th>
<th>Cruise Ports</th>
<th>Ship</th>
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<tbody>
<tr>
<td>1 Allen</td>
<td>Steven B</td>
<td>History - U.S. History, History - Civics</td>
<td>8th, 7th</td>
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<td>FL</td>
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<td>St. Petersburg FL</td>
<td>R/V Bellows</td>
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<td>2 Anderson</td>
<td>Maureen E</td>
<td>Science, Other - Health</td>
<td>7th, 8th</td>
<td>Brooklyn</td>
<td>NY</td>
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<td>07/25/11-08/09/11</td>
<td>Pascagoula MS; Mayport FL</td>
<td>Oregon II</td>
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<tr>
<td>3 Artz</td>
<td>Anne E</td>
<td>Science - AP Env.Science, Science - Adv. Biology, Other - Leadership</td>
<td>11th, 9th, 9th-10-12</td>
<td>La Jolla</td>
<td>CA</td>
<td>Surf Clam Survey Leg 2</td>
<td>NMFS/NEFSC</td>
<td>07/25/11-08/05/11</td>
<td>Woods Hole MA</td>
<td>Delaware II</td>
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<tr>
<td>4 Bechler</td>
<td>Elaine</td>
<td>Science - Biology</td>
<td>9-12</td>
<td>Santa Rosa</td>
<td>CA</td>
<td>Cordell Bank Ecosystem Monitoring</td>
<td>NOS/Sanct</td>
<td>07/21/11-07/26/11</td>
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<tr>
<td>5 Brown</td>
<td>Kathleen J</td>
<td>Science</td>
<td>7th</td>
<td>Freeport</td>
<td>ME</td>
<td>Sea Scallop Survey Leg 2</td>
<td>NMFS/NEFSC</td>
<td>06/07/11-06/18/11</td>
<td>Woods Hole MA</td>
<td>Hugh R. Sharp</td>
</tr>
<tr>
<td>6 Bunker</td>
<td>Stephen R</td>
<td>Science</td>
<td>4th</td>
<td>Orem</td>
<td>UT</td>
<td>South Florida Program</td>
<td>OAR/AOML</td>
<td>10/20/11-10/24/11</td>
<td>Miami FL</td>
<td>R/V Walton Smith</td>
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<tr>
<td>7 Charuba</td>
<td>Walter</td>
<td>Science</td>
<td>6th, 8th</td>
<td>Grosse Pointe Farms</td>
<td>MI</td>
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<td>R/V Savannah</td>
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<td>8 Comer</td>
<td>Channa</td>
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<td>Bronx</td>
<td>NY</td>
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<td>05/11/11-05/22/11</td>
<td>Lewes DE</td>
<td>Hugh Sharp</td>
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<tr>
<td>9 Daftari</td>
<td>Jennifer L</td>
<td>Science</td>
<td>5th</td>
<td>Jay</td>
<td>OK</td>
<td>Bottom Longline Leg 2</td>
<td>NMFS/SEFSC</td>
<td>08/11/11-08/24/11</td>
<td>Mayport FL; Pascagoula MS</td>
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<tr>
<td>10 DeSchryver</td>
<td>Staci M</td>
<td>Science</td>
<td>12th - Some 11th take course, 9th, 10th</td>
<td>Aurora</td>
<td>CO</td>
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<tr>
<td>11 Faist</td>
<td>Chris</td>
<td>Science</td>
<td>7th</td>
<td>San Diego</td>
<td>CA</td>
<td>Cetacean, Sea Turtle and Sea Bird Abundance Survey</td>
<td>NMFS/NEFSC</td>
<td>07/20/11-08/01/11</td>
<td>Woods Hole MA</td>
<td>Bigelow</td>
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<td>Teacher Last Name</td>
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<td>Subjects</td>
<td>Grades</td>
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<td>Cruise Ports</td>
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<td>Chris</td>
<td>Science</td>
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<td>07/20/11-08/01/11</td>
<td>Woods Hole MA</td>
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<tr>
<td>12 Fine</td>
<td>Caitlin G</td>
<td>Science</td>
<td>Kindergarten, 2nd, 5th, 3rd, 4th</td>
<td>Arlington</td>
<td>VA</td>
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<td>OAR/AOML</td>
<td>08/02/11-08/06/11</td>
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<td>13 Fox</td>
<td>Cathrine N</td>
<td>Science</td>
<td>9th, 10th, 11th, 12th</td>
<td>Mancos</td>
<td>CO</td>
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<td>07/26/11-08/12/11</td>
<td>Kodiak AK</td>
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<tr>
<td>14 Haberman</td>
<td>Heather L</td>
<td>Science</td>
<td>9-12, 9-10, 10-12</td>
<td>Scotsbluff</td>
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<td>07/06/11-07/17/11</td>
<td>Galveston TX; Pascagoula MS</td>
<td>Oregon II</td>
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<tr>
<td>15 Hams</td>
<td>Jackie</td>
<td>Oceanography, Environmental Science, Earth Science</td>
<td>University</td>
<td>Valley Glen</td>
<td>CA</td>
<td>DYNAMO</td>
<td>OAR/NASA/Nav</td>
<td>11/05/11-12/10/11</td>
<td>Phuket, Thailand</td>
<td>R/V Revelle</td>
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<tr>
<td>16 Harrison</td>
<td>Kathleen C</td>
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<td>Earth Science, Biology, IB Biology, Oceanography</td>
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<td>NMFS/AFSC</td>
<td>07/04/11-07/22/11</td>
<td>Kodiak AK</td>
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<tr>
<td>17 Heins</td>
<td>Kaci A</td>
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<td>6th</td>
<td>Flagstaff</td>
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<td>Hydrographic Surveying</td>
<td>NOS/OCS</td>
<td>09/17/11-10/07/11</td>
<td>Seattle WA; Juneau AK</td>
<td>Rainier</td>
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<tr>
<td>18 Knippenberg</td>
<td>Lindsay</td>
<td>Einstein Fellow, NOAA Office of Education</td>
<td>Einstein Fellow, NOAA Office of Education</td>
<td>Detroit</td>
<td>MI</td>
<td>BASIS Leg 2</td>
<td>NMFS/AFSC</td>
<td>09/04/11-09/16/11</td>
<td>Dutch Harbor AK</td>
<td>Oscar Dyson</td>
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<tr>
<td>19 Moeller</td>
<td>Jason N</td>
<td>Science</td>
<td>All Physical Sciences, Zoology, Behavioral Sciences</td>
<td>Knoxville</td>
<td>TN</td>
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<td>NMFS/AFSC</td>
<td>06/12/11-06/30/11</td>
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<tr>
<td>21 Moylan</td>
<td>Rebecca (Becky) J</td>
<td>Science</td>
<td>8th</td>
<td>Honolulu</td>
<td>HI</td>
<td>Oceanographic cruise to study eddies off the Big Island</td>
<td>NMFS/PIFSC</td>
<td>07/01/11-07/14/11</td>
<td>Honolulu HI</td>
<td>Oscar Elton Sette</td>
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</tbody>
</table>
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<table>
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<tr>
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<th>Cruise Ports</th>
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<tbody>
<tr>
<td>Orilio Tammy</td>
<td>22</td>
<td>Marine Science, Regular and Honors</td>
<td>Other - 10th-12th, Other - 11th &amp; 12th</td>
<td>Parkland</td>
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<td>06/12/11-06/30/11</td>
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<td>Oscar Dyson</td>
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<tr>
<td>Pierantoni Nathan A</td>
<td>23</td>
<td>Enriched Science, Gifted Elective, English - Nonfiction Reading</td>
<td>6th, 7th, 8th</td>
<td>Farmington</td>
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<td>South Florida Program</td>
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<td>04/04/11-04/08/11</td>
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<td>Rasmussen Karen</td>
<td>24</td>
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<td>Ocean Shores</td>
<td>WA</td>
<td>OCNMS Ecosystem Survey</td>
<td>NOS/OCNMS</td>
<td>06/22/11-07/01/11</td>
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<td>R/V Tatoosh</td>
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<tr>
<td>Soder Jessie L</td>
<td>25</td>
<td>Science, All subjects</td>
<td>1st-2nd, 3rd-5th</td>
<td>Gustavus</td>
<td>AK</td>
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<td>08/08/11-08/19/11</td>
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<td>Delaware II</td>
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<tr>
<td>Stephens Margaret T</td>
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<td>Science - Environmental science, Other - Physical Geography</td>
<td>University</td>
<td>Philadelphia</td>
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<td>NMFS/SEFSC</td>
<td>05/14/11-05/28/11</td>
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<td>Sullivan Kevin C</td>
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<td>Middletown</td>
<td>NJ</td>
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<td>Kodiak AK; Dutch Harbor AK</td>
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<td>Taylor-Lehman John W</td>
<td>28</td>
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<td>9th - 12th</td>
<td>Dresden</td>
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<td>06/24/11-07/01/11</td>
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<td>Thompson Caitlin M</td>
<td>30</td>
<td>Integrated Science, Math - Pre-Geometry</td>
<td>8th, 7th</td>
<td>Portland</td>
<td>OR</td>
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<td>NMFS/NEFSC</td>
<td>08/01/11-08/14/11</td>
<td>Newport OR; Port Angeles WA</td>
<td>Bell Shimada</td>
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<td>Wagner Marian E</td>
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<td>WA</td>
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<td>Huntsville</td>
<td>AL</td>
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<td>05/31/11-06/14/11</td>
<td>Jacksonville FL; Port Everglades FL</td>
<td>Pisces</td>
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## NOAA Teacher in the Lab/Field 2011 Participants (Pilot Projects)

### NOAA Teacher in the Lab Pilot Project - Summer 2011

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<th>Lab</th>
<th>Scientist</th>
<th>Teacher</th>
<th>Grade</th>
<th>Research</th>
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<tbody>
<tr>
<td>Alaska Fisheries Science Center, Juneau</td>
<td>Bonita Nelson</td>
<td>Lara Dzinich</td>
<td>Middle School</td>
<td>cultivating krill</td>
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<tr>
<td>Alaska Fisheries Science Center, Juneau</td>
<td>Bonita Nelson</td>
<td>Kathleen Galau</td>
<td>High School</td>
<td>cultivating krill</td>
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<td>Earth System Research Laboratory, Boulder</td>
<td>Dan Wolfe</td>
<td>Peter Blanken</td>
<td>College</td>
<td>climate</td>
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<tr>
<td>Southwest Fisheries Science Center, La Jolla</td>
<td>Jeff Seminoff</td>
<td>Dana Tomlinson</td>
<td>Elementary School</td>
<td>green turtle</td>
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<td><strong>Sub Total</strong></td>
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### NOAA Teacher in the Field Pilot Project - Summer 2011

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<th>Research</th>
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</thead>
<tbody>
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<td>Northwest Fisheries Science Center</td>
<td>Gary Winans</td>
<td>Jon Baker</td>
<td>High School</td>
<td>genetics</td>
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<tr>
<td>Northwest Fisheries Science Center</td>
<td>Gary Winans</td>
<td>Jennifer Duncan</td>
<td>High School</td>
<td>genetics</td>
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<td>Northwest Fisheries Science Center</td>
<td>Gary Winans</td>
<td>Michele Wolski</td>
<td>High School</td>
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<tr>
<td>Northwest Fisheries Science Center</td>
<td>Gary Winans</td>
<td>Rachelle Carnes</td>
<td>High School</td>
<td>genetics</td>
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</tbody>
</table>
NOAA Teacher at Sea Program
Mission and Vision

- **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

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

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.
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

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

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)

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)