

# Annual Scientist Survey 2008 Report



*Conducted by*  
**COSEE Networked Ocean World**  
*and the*  
**American Society of Limnology and Oceanography**

**COSEE**  
CENTERS FOR OCEAN SCIENCES  
EDUCATION EXCELLENCE

by  
Chris Parsons  
COSEE NOW Evaluator  
November 2008

This project was funded by the National Science Foundation (Awards #0730719 & 0731046)

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# COSEE NOW with ASLO Annual Scientist Survey 2008 Report

## Executive Summary

COSEE NOW (Networked Ocean World) is dedicated to providing a virtual collaborative space (community center) where Ocean Observing System (OOS) scientists and Education and Public Outreach (EPO) professionals can interact with one another, as well as other COSEE NOW audiences. Since 2004 we (formerly as COSEE Mid-Atlantic) have conducted an annual online scientist survey to gather data on the education involvement, practices and needs of scientists at current and future ocean observing systems. Our goal is to improve the exchange of data and teaching practices between scientists and educators.

In early 2008 we partnered with ASLO (American Society of Limnology and Oceanography), which enabled us to use their membership email list to contact scientists (we thank ASLO for their assistance). We sent email invitations to approximately 3500 members and received 669 usable responses, for a response rate of about 19%. Below are results highlights for respondents indicating they were scientists or researchers (n = 453). For greater detail, see the full report.

- Most of the scientist respondents worked for academic institutions (75%) in the United States (69%) and in the aquatic science field of oceanography (63.5%). Most were members of ASLO (93% of all scientists, 94% of OOS scientists and 88% of grad students).
- When asked if they were currently involved in public education/outreach (which includes U.S. K-16 education, as well as the public, policy makers and other community groups) 71% of all scientists indicated yes and 72% of OOS scientists indicated yes.
- When asked if they were required by funding to conduct public education/outreach, 51.5% of all scientists indicated yes and 57% of OOS scientists indicated yes.
- Funding for scientist respondents' engagement in education/outreach in the United States came from the federal government (58%), academic institutions (30%), volunteering/personal commitment (18%) and state/local governments (8%). For OOS scientists, the results were federal government (71%), academic institutions (27%), state/local governments (13%) and volunteering/personal commitment (7%). For international respondents, the main funders were academic institutions (49%), national government (38%) and volunteering/personal commitment (14%).
- When asked if they were engaged in education/outreach, OOS scientists and non-OOS scientists were equally involved (72% and 71% respectively); however, when asked which activities they were currently involved in, OOS scientists indicated greater involvement (higher percentages) than other scientists for all of the listed education activities except teaching at the college level (and that was only two percent lower). Top responses were:
  - teach science at the college level (68% of all scientists; 66% of OOS scientists; 55% of grad students)
  - contribute data, content or other services to a public website (48% of all scientists; 61% of OOS scientists; 19% of grad students)
  - present to the public or managers/policy makers at community meetings (44% of all scientists; 56% of OOS scientists; 14% of grad students)
  - contribute to/advice the media on science content, issues, stories (39% of all scientists; 55% of OOS scientists; 7% of grad students)
  - judge science fairs or other science competitions (38% of all scientists; 49.5% of OOS scientists; 36% of grad students)
  - present/talk to K-12 students in the classroom (34% of all scientists; 49.5% of OOS scientists; 48% of grad students).

- When asked what they viewed as the greatest public benefit to having scientists / researchers involved in education / outreach, the top three choices of all scientists were: “increasing public’s understanding of science” (80%), “providing accurate information” (61%) and “focusing attention on environmental issues” (60%). These were also the top responses of OOS scientists although percentages differed.
- Greatest barriers to getting scientists / researchers involved in education / outreach were: “lack of time” (79%), “lack of financial support” (53%) and “no acknowledgement by institution / agency for such work” (38%). These were also the top responses of OOS scientists although percentages differed.
- When asked what they thought the greatest obstacles were to the public’s understanding of aquatic sciences (an open-ended question), the top response categories for U.S. respondents were: weak / lacking public background information or knowledge (31%), poor or faulty science communication on the part of scientists, the media’s lack of attention and / or poor scientific reporting and the need to present scientific information simply and accurately (each 17%). These were also the top responses of OOS scientists although percentages differed. These were the top responses for international scientists, although the ranking was slightly different.
- When asked what assistance they needed to get more involved or do a better job at public education / outreach, the top responses were more funding (40%), more time (26%) and institution recognition / support, including funding, tenure and training (21%). These were also the top responses of OOS scientists although percentages differed.
- When asked how important ocean observing systems will be to the future of ocean science research over the next 10 years, 57% of all scientists indicated very important and 31% important; of OOS scientists, 74% indicated very important and 21% important.
- Regarding COSEE NOW’s current goals, in particular the virtual community center under development (see full report for a description), in response to a series of questions to OOS-affiliated respondents:
  - 67% of OOS scientists indicated yes, they think there is a need for such a center (78% of grad students indicated yes)
  - 60% of OOS scientists indicated yes, they think such a center could help them with their education / outreach activities (76% of grad students indicated yes)
  - 51% of OOS scientists indicated yes, they think they would use such a center (75% of grad students indicated yes).
- When asked which audience(s) they would be most interested in engaging / collaborating with in such a center, the top three for OOS scientists were: other scientists (83%), K-16 teachers (62.5%) and coastal or ocean managers / policy makers (61%).
- The greatest barriers to using such a virtual community center was overwhelmingly lack of time (74%).
- When asked about their use (viewing) of and contributing (responding / posting) to various technology-based means of communication, most OOS scientists indicated they used daily or weekly e-mail listservs (65.5% for OOS scientists vs. 80% for grad students), followed by Wikis / Wikipedia (39% of OOS scientists vs. 49% of grad students). Grad students were more engaged in using video / picture sharing (46% grad students vs. 17% OOS scientists) and using social networks (46% grad students vs. 11% OOS scientists), as well as contributing to such networks (35% grad students vs. 9.5% OOS scientists). Other means of communication listed were used or contributed to by less than 30% of respondents.
- Question 23 asked respondents about their funding for education / outreach. Appendix 6 compares the results of scientists who said they received some NSF funding to those who didn’t mention NSF (U.S. only). For the most part the two groups were very similar; however, we did find some differences:

- 100% of NSF-funded scientists indicated they were involved in education/outreach as opposed to 70% of other scientists. 90% of NSF-funded scientists said they were required to do so, as opposed to 50% of other scientists.
- When asked to check off which education/outreach activities they were currently involved in, NSF-funded scientists indicated greater involvement (higher percentages) than other scientists for many of the listed education activities, in particular those that involved K-16 audiences.
- We also found that when asked what assistance they need to get more involved in or do a better job at public education/outreach, NSF-funded scientists were more interested in getting help with funding and less interested in being matched up with educators/education projects than other scientists were. This may be related to NSF-funded scientists' greater involvement with education/outreach.
- When asked if the COSEE NOW virtual community center would help them with their education/outreach activities, 80% of NSF-funded scientists said yes as opposed to 52% of other scientists. And, when asked if they would use such a center, 68% of NSF-funded scientists said yes as opposed to 49% of other scientists.
- When asked which audience(s) they would be most interested in engaging/collaborating with in such a center, the top three responses for NSF-funded scientists differed from those of other scientists. They were: K-16 teachers (91% for NSF scientists vs. 66% for other scientists); other scientists (72% for NSF scientists vs. 83% for other scientists); K-16 students (65% for NSF scientists vs. 54% for other scientists); and informal educators (65% for NSF scientists vs. 63% for other scientists).

## Conclusions

These results have helped inform the development of COSEE NOW's virtual community center. Although scientists are positive about the possibilities and supportive, we always view these results with some caution. Survey respondents are voluntary and self-selected and so may bring some bias to these data. We know we have a great deal of work ahead to get our virtual community center up and running and show that the concept works.

In terms of trends over our five years of surveying scientists, we have seen steady increases in the number of ocean observing systems that are operational and some increase in support for scientists' involvement in education. We were surprised this year when we asked for the first time about funding support that scientists' third top response (18%) was that they volunteered their time.

In terms of consistencies, the percentage of observatory scientists who said they are involved in education has remained fairly stable. Ocean observatory scientists are not more engaged in education/outreach than other scientists (percentages are nearly equal); however, they're doing more activities than other scientists.

Scientists continue to say they need help with public education. When asked what assistance they need, the top responses were consistently related to more funding and staffing, but also greater institution recognition (funding, tenure, training) for education/outreach activities.

As COSEE NOW, we will soon be engaging scientists and educators in our virtual community center. We hope that that effort, along with our annual scientist surveys, will further our efforts of working with the scientific community in improving public education.

## COSEE NOW with ASLO Annual Scientist Survey 2008 Report

### Overview

One of the National Science Foundation's main goals for funding COSEE (Centers for Ocean Sciences Education Excellence) is to promote dialog and partnerships between research scientists and educators. A great deal of research has been conducted on the science literacy and teaching practices of K-12 classroom teachers. Much less is known about scientists' involvement in public education. *Note: We have defined the term "public education" in our survey and so in this report to include education and outreach efforts for kindergarten through grade 16 (U.S. K-16) classroom teachers and students, the general public, community groups, and coastal managers and decision makers.*

COSEE NOW (Networked Ocean World) is dedicated to providing a virtual collaborative space (community center) where Ocean Observing System (OOS) scientists and Education and Public Outreach (EPO) professionals can interact with one another and other COSEE NOW audiences.

The purpose of our annual scientist survey is to gather data on the education involvement, practices and needs of scientists at current and future ocean observing systems to improve the exchange of data and teaching practices between scientists and classroom teachers. As COSEE Mid-Atlantic, we conducted this survey annually from 2004 to 2007 with the assistance of ORION (Ocean Research Interactive Observatory Networks), and we thank them for their past assistance. As COSEE NOW in 2008, we partnered with ASLO (American Society of Limnology and Oceanography), which enabled us to use their membership email list to contact scientists, and we thank ASLO for their assistance with this year's survey.

This report focuses primarily on the results of the 2008 survey because, as COSEE NOW, we have changed our survey goals, and so changed many survey questions, including the way scientists could identify themselves. In addition, we solicited responses from a different email list. This precludes us from drawing sound conclusions by comparing 2008 results to previous years' results (although we offer some comparisons to a few past survey items in Appendix 5).

### Methods

To survey scientists, we developed an online survey (via SurveyMonkey.com) and sent an invitational email to scientists and others on ASLO's membership email list. We kept the survey live from January 23 to Feb. 18, 2008. As with past surveys, we offered as an incentive entry into a drawing for a gift card. This year the incentive was a \$300 gift card if they completed the survey by February 1, and a \$250 gift card after that date.

The table below shows the number of respondents and response rates for each of our annual surveys (for comparison). We've estimated the response rate based on the number of email solicitations divided by the number of respondents. This is an estimate due to possible duplications or inaccuracies on email lists.

**Annual Scientist Survey Respondent Data**

Survey	# on Email List (approx.)	Total Respondents	Estimated Response Rate	Researcher/Scientist Respondents
2004	318	100	31%	80
2005	285	48	17%	48
2006	350	98	28%	89
2007	435	134	31%	98
2008	3500	669	19%	453

This year instead of comparing results by years, we are comparing by respondent groups. We asked respondents to indicate their main job / role as related to the aquatic sciences. For this report, the *All Scientists* category (n = 453) includes those who identified themselves as “Researcher/Scientist” or “Scientist and Educator” (a new category based on past write-in responses). Given COSEE NOW’s focus on observing systems, we have a separate category of *OOS Scientists* (n = 144), which includes those scientists who identified themselves as affiliated with an ocean observing system (another question on the survey).

Because of the relatively large number of graduate students responding to the survey, we are reporting their responses separately from the already mentioned scientists categories as *Grad Students* (n = 163). An *Others* category (n = 65) includes those who identified themselves as administrators, managers, educators/teachers, technicians or other. The educator/teacher group was too small to pull out as a separate group for comparison. We are not reporting differences between ASLO members and non-members because 95% of respondents indicated that they are or have been ASLO members.

In addition to the main report’s comparison categories described above, we’ve added several appendices that compare responses by other respondent groups. These are included for the various audiences and readers that COSEE NOW serves.

- In Appendix 4 you’ll find a comparison of results between OOS-affiliated scientists and other scientists.
- In Appendix 5 you’ll find comparative results on some survey items from our past five annual scientist surveys.
- In Appendix 6 you’ll find a comparison of results between NSF-funded scientists and other scientists.



## Results

For most questions with closed response choices (i.e., multiple choice or rating scale), we are reporting frequencies and percentages. For questions requiring open-ended responses (which are noted), we have organized and tallied responses based on categories and are reporting only the top response categories.

### 1. Type of Institution/Agency.

Response Choices	All Scientists (n=453)		OOS Scientists (n=144)		Grad Students (n=162)		Others (n=65)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
academic	341	75%	103	71.5%	152	94%	47	72%
government	62	14%	24	17%	3	2%	10	15%
non-profit	30	7%	12	8%	3	2%	6	9%
business/ for profit	10	2%	2	1%	2	1%	1	1.5%
other	10	2%	3	2%	2	1%	1	1.5%

### 2. Where is your institution's home?

Of total respondents, from the U.S. = 489 or 74%; from other countries, n = 168 or 26%

Response Choices	All Scientists (n=453)		OOS Scientists (n=144)		Grad Students (n=160)		Others (n=65)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
United States	311	69%	102	72%	135	84%	59	91%
Another Country	142	31%	39	28%	25	16%	6	9%

See Appendix 2 for all home countries.

### 3. Your Institution/Agency Name (optional)

See Appendix 3.

### 4. Your main job/role as related to aquatic sciences is....

Response Choices	All Scientists (n=453)		OOS Scientists (n=144)		Grad Students (n=163)		Others (n=65)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Researcher / Scientist	275	61%	93	65%	15	9%	—	—
Scientist and Educator	171	38%	49	34%	6	4%	—	—
Other Scientist	7	1.5%	2	1%	1	1%	—	—
Student	—	—	—	—	137	84%	—	—
Director / Administrator / Manager	—	—	—	—	—	—	38	58.5%
Teacher / Educator	—	—	—	—	3	2%	23	35%
Engineer / Technician	—	—	—	—	1	1%	4	6%

5. Your current career stage is....

Response Choices	All Scientists (n=453)		OOS Scientists (n=144)		Grad Students (n=163)		Others (n=65)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Undergrad student	0	0%	0	0%	8	5%	0	0%
Graduate student	21	5%	7	5%	153	94%	4	6%
Early career working professional	156	34%	43	30%	0	0%	9	14%
Mid-career working professional	166	37%	51	35%	0	0%	28	43%
Late career working professional	87	19%	35	24%	0	0%	20	31%
Retired	16	3.5%	6	4%	0	0%	3	5%
Other	7	1.5%	2	1%	2	2%	1	1.5%

6. Do you consider your aquatic science field as....

Response Choices	All Scientists (n=452)		OOS Scientists (n=144)		Grad Students (n=163)		Others (n=65)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
oceanography	287	63.5%	110	76%	120	74%	34	53%
limnology	147	32.5%	34	24%	29	18%	27	42%
other	73	16%	21	15%	25	15%	8	12.5%

7. Are you currently involved in public education/outreach?

Instructions to Respondents...Note: We're using the term "education/outreach" throughout this survey to cover public education and/or outreach efforts for teachers and students (U.S. grades K-16: kindergarten through college), general public, community groups, and coastal or ocean managers and policy makers.

Response Choices	All Scientists (n=453)		OOS Scientists (n=143)		Grad Students (n=163)		Others (n=64)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
yes	322	71%	103	72%	94	58%	50	78%
no	107	24%	34	24%	56	34%	11	17%
not sure/ don't know	22	5%	6	4%	13	8%	3	5%

8. When you think about the next ten years, how important are coastal or ocean observatories/observing systems to the future of ocean science research? (check one)

Response Choices	All Scientists (n=452)		OOS Scientists (n=144)		Grad Students (n=163)		Others (n=64)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
very important	257	57%	106	74%	98	60%	37	58%
important	141	31%	30	21%	53	32.5%	19	30%
somewhat important	36	8%	8	6%	10	6%	4	6%
not very important	3	1%	0	0%	0	0%	1	2%
not important	0	0%	0	0%	0	0%	0	0%
don't know	15	3%	0	0%	2	1%	3	5%

**9. Are you affiliated with a current or future coastal or ocean observatory/observing system (in fresh or salt water)? (check one)**

Response Choices	All Scientists (n=452)		OOS Scientists (n=144)		Grad Students (n=163)		Others (n=65)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
no	275	61%	0	0%	98	60%	39	60%
yes	144	32%	144	100%	41	25%	23	35%
not sure/ don't know	33	7%	0	0%	24	15%	3	5%

Note: #9 was a filter question requiring a response and, depending on the response, directed respondents to questions designed only for them. Respondents answering "yes" to #9 were guided to answer Questions #10 thru 18, which were related to ocean observing systems and COSEE NOW's current project goals. Respondent answering "no" or "not sure" to #9 were skipped over the OOS questions and continued with question #19. Due to the filtering, All Scientists and OOS Scientists were the same group and so the All Scientist category is not reported for the OOS set of questions.

**QUESTIONS ASKED of OOS AFFILIATED RESPONDENTS ONLY**

For a comparison of responses of OOS Scientists to all other Scientists, see Appendix 4

**10. Your observatory/observing system name (current or future) is... (if no name, type none)**  
See Appendix 3.

**11. Is your ocean observatory/observing system up and running (that is, collecting data)?**

Response Choices	OOS Scientists (n=144)		Grad Students (n=40)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
yes	84	59%	26	65%	11	50%
no	32	22.5%	5	12.5%	4	18%
most of the time	21	15%	3	7.5%	5	23%
not sure/ don't know	5	3.5%	6	15%	2	9%

**12. COSEE-NOW is working on developing a virtual "community center" where scientists, educators, policy makers and the public can exchange information, collaborate and share education/outreach techniques, such as lesson plans, visualized data or media presentations, that relate to coastal and ocean research, in particular using observing systems data.**

Given this description, please answer the following questions.

(check a response for each question)

**Do you think there is a need for a virtual center as described above?**

Response Choices	OOS Scientists (n=143)		Grad Students (n=41)		Others (n=23)	
	Frequency	%	Frequency	%	Frequency	%
yes	96	67%	32	78%	12	52%
maybe	33	23%	7	17%	7	30%
don't know, need more information	12	8%	2	5%	2	9%
no	2	1%	0	0%	2	9%

**Do you think such a center could help you with your education/outreach activities?**

Response Choices	OOS Scientists (n=141)		Grad Students (n=41)		Others (n=23)	
	Frequency	%	Frequency	%	Frequency	%
yes	84	60%	31	76%	9	39%
maybe	40	28%	7	17%	10	43.5%
no	9	6%	0	0%	2	9%
don't know, need more information	8	6%	3	7%	2	9%

**Do you think you would use such a virtual center?**

Response Choices	OOS Scientists (n=142)		Grad Students (n=40)		Others (n=23)	
	Frequency	%	Frequency	%	Frequency	%
yes	73	51%	30	75%	10	43%
maybe	51	36%	8	20%	9	39%
don't know, need more information	11	8%	2	5%	2	9%
no	7	5%	0	0%	2	9%

**13. Given the description of the virtual center above, which audience(s) do you think you would be most interested in engaging with/collaborating with?**

*(check a response for each)*

*Note: Respondents could respond by selecting yes, no, maybe or don't know/need more information. We are reporting only "yes" and "maybe" responses here because the "no" and "not sure/need more information" responses were consistently near 10% or less.*

**#13. Summary Table: Yes responses**

**This table shows the results for those who responded "yes."**

Audiences	OOS Scientists (n=144)		Grad Students (n=41)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
scientists	118	83%	38	93%	14	64%
K-16 teachers	85	62.5%	34	85%	13	59%
coastal or ocean managers/ policy makers	83	61%	31	79.5%	16	73%
informal educators (at aquariums or in communities, etc.)	73	56%	33	85%	13	59%
the public	68	52%	23	60.5%	11	50%
K-16 students	68	51%	26	67%	7	33%
education managers/ policy makers	62	48%	21	57%	11	52%
anyone else?	14	—	3	—	5	—

**#13. Summary Table: Maybe responses**

This table shows the results for those who responded "maybe."

Audiences	OOS Scientists (n=144)		Grad Students (n=41)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
education managers/ policy makers	50	39%	15	40.5%	8	38%
informal educators (at aquariums or in communities, etc.)	46	35%	6	15%	6	27%
the public	43	33%	15	39.5%	5	23%
coastal or ocean managers/ policy makers	41	30%	7	18%	2	9%
K-16 students	35	26%	12	31%	11	52%
K-16 teachers	29	21%	5	12.5%	6	27%
scientists	16	11%	2	5%	6	27%

**14. Given this virtual community center as described, what would be your greatest barrier(s) to using it? (check all that apply to you)**

Response Choices	OOS Scientists (n=144)		Grad Students (n=41)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
lack of time	106	74%	28	68%	16	73%
challenges collaborating in a virtual space	40	28%	15	37%	8	36%
not sure how or what to contribute	39	27%	19	46%	8	36%
technology (connection) issues	26	18%	8	19.5%	2	9%
prefer face-to-face over virtual interactions	25	17%	5	12%	4	18%
technology familiarity issues	21	15%	9	22%	3	14%
challenges collaborating with teachers	20	14%	6	15%	2	9%
concerns about privacy	18	12.5%	7	17%	3	14%
nothing to gain from it	15	10%	3	7%	2	9%
lack of interest	12	8%	2	5%	1	4.5%
challenges collaborating with scientists	10	7%	3	7%	2	9%
don't know, need more information	21	15%	4	10%	4	18%
other	20	14%	4	10%	2	9%

Note: Some respondents offered more than one response. As a result the total equals more than 100%.

15. To help us design the communication features of this virtual center, tell us about your use of these Internet-based means of communication (professional or personal) over the past year. Note: By “use” we mean reading, viewing or subscribing, but not contributing (which we'll ask about next).

(check one response for each — if you don't know what it is, check “use never”)

#15. Summary Table. The combined percentage responding “use daily”/“use weekly” for each of the listed features.

Features	OOS Scientists (n=142)		Grad Students (n=40)		Others (n=21)	
	Frequency	%	Frequency	%	Frequency	%
E-mail listservs	89	65.5%	32	80%	16	73%
Wikis (i.e., Wikipedia)	54	39%	20	49%	8	38%
Internet voice / video conferencing (i.e., Skype)	35	25%	6	15%	2	9%
Online calendars (i.e., Google Calendar)	30	21%	12	30%	6	27%
Instant messaging or IM (i.e., AIM)	26	19%	13	32.5%	2	9%
Online purchases (i.e., Amazon.com)	26	19%	5	12.5%	3	14%
Video or picture sharing (i.e., YouTube, Flickr)	23	17%	17	46%	5	23%
Product reviews (i.e., Travelocity, Amazon.com)	23	17%	5	12.5%	5	20%
Message boards	19	14%	8	20.5%	2	10%
RSS or Web feeds	19	14%	7	18%	3	14%
Social networks (i.e., MySpace, Facebook)	15	11%	18	46%	0	0%
Blogs	13	9%	4	10%	3	14%
Online interest groups (i.e., Yahoo! Groups)	11	8%	6	15%	0	0%
Professional networks (i.e., LinkedIn, TappedIn, Nature Network)	11	8%	4	10%	2	9%
Podcasts	9	7%	4	10%	3	14%
Online auctions (i.e., ebay)	6	4%	2	5%	0	0%
Chat rooms	4	3%	0	0%	0	0%
Social bookmarking or folksonomy (i.e., del.icio.us)	1	1%	0	0%	0	0%

Note: A few respondents chose no answer for individual items and so the n above is an overall, however, it may be one or two less for some individual items.

**#15. Summary Table. The combined percentage responding “use rarely”/“use never” for each of the listed features.**

Features	OOS Scientists (n=142)		Grad Students (n=40)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
Social bookmarking or folksonomy (i.e., del.icio.us)	130	96%	39	97.5%	22	100%
Chat rooms	122	90%	36	90%	20	91%
Social networks (i.e., MySpace, Facebook)	110	80%	11	28%	20	91%
Online auctions (i.e., ebay)	107	78%	25	62%	20	91%
Online interest groups (i.e., Yahoo! Groups)	103	74%	28	70%	20	91%
Blogs	99	71%	29	72.5%	18	82%
RSS or Web feeds	98	73%	23	59%	16	73%
Professional networks (i.e., LinkedIn, TappedIn, Nature Network)	97	70%	29	72.5%	17	77%
Instant messaging or IM (i.e., AIM)	97	70%	21	52.5%	19	86%
Online calendars (i.e., Google Calendar)	95	68%	21	52.5%	16	73%
Podcasts	94	70%	24	62.5%	15	71%
Message boards	89	65%	21	54%	15	75%
Video or picture sharing (i.e., YouTube, Flickr)	72	53%	8	22%	13	59%
Internet voice / video conferencing (i.e., Skype)	68	49%	23	59%	13	59%
Product reviews (i.e., Travelocity, Amazon.com)	39	28%	11	27.5%	7	33%
Wikis (i.e., Wikipedia)	36	26%	6	15%	8	38%
Online purchases (i.e., Amazon.com)	26	19%	6	15%	6	27%
E-mail listservs	21	15.5%	2	5%	0	0%

*Note: A few respondents chose no answer for individual items and so the n above is an overall, however, it may be one or two less for some individual items.*

16. Now tell us about your contribution to these Internet-based means of communication (professional or personal) over the past year. Note: By “contribution” we mean responding, sending, posting, producing, etc., not just reading/viewing.  
(check one response for each — if you don't know what it is, check “contribute never”)

#16. Summary Table. The combined percentage responding “contribute daily”/“contribute weekly” for each of the listed features.

Features	OOS Scientists (n=140)		Grad Students (n=40)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
E-mail listservs	35	25%	11	17.5%	5	23%
Internet voice / video conferencing (i.e., Skype)	30	21.5%	6	15%	1	4.5%
Online calendars (i.e., Google Calendar)	29	21%	7	17.5%	5	23%
Instant messaging or IM (i.e., AIM)	20	14%	12	30%	2	9%
Social networks (i.e., MySpace, Facebook)	13	9.5%	14	35%	0	0%
Message boards	10	7%	1	3%	0	0%
Online purchases (i.e., Amazon.com)	7	5%	2	5%	1	4.5%
Wikis (i.e., Wikipedia)	6	4%	0	0%	1	4.5%
Online interest groups (i.e., Yahoo! Groups)	5	4%	3	7.5%	0	0%
Blogs	5	4%	2	5%	0	0%
Product reviews (i.e., Travelocity, Amazon.com)	3	2%	1	3%	0	0%
Professional networks (i.e., LinkedIn, TappedIn, Nature Network)	3	2%	0	0%	0	0%
Chat rooms	2	1.5%	1	2.5%	0	0%
RSS or Web feeds	2	1.5%	1	2.5%	0	0%
Video or picture sharing (i.e., YouTube, Flickr)	1	1%	2	5%	1	4.5%
Social bookmarking or folksonomy (i.e., del.icio.us)	1	1%	0	0%	0	0%
Online auctions (i.e., ebay)	0	0%	0	0%	0	0%
Podcasts	0	0%	0	0%	0	0%

Note: A few respondents chose no answer for individual items and so the n above is an overall, however, it may be one or two less for some individual items.



#16. Summary Table. The combined percentage responding “contribute rarely”/“contribute never” for each of the listed features.

Features	OOS Scientists (n=140)		Grad Students (n=40)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
Social bookmarking or folksonomy (i.e., del.icio.us)	132	94%	40	100%	22 (never)	100%
Podcasts	132	94%	38 (never)	95%	20	91%
RSS or Web feeds	129	92%	38 (never)	95%	20	91%
Blogs	128	91%	35	87.5%	21	95%
Product reviews (i.e., Travelocity, Amazon.com)	124	89%	30	75%	20	91%
Chat rooms	124	89%	28	70%	21	95%
Wikis (i.e., Wikipedia)	123	88%	38	95%	20	91%
Online auctions (i.e., ebay)	122	87%	35	87.5%	20	91%
Professional networks (i.e., LinkedIn, TappedIn, Nature Network)	120	86%	35	87.5%	20	91%
Online interest groups (i.e., Yahoo! Groups)	120	86%	32	80%	22	100%
Video or picture sharing (i.e., YouTube, Flickr)	116	83%	25	62.5%	17	77%
Message boards	115	82%	32	80%	20	91%
Social networks (i.e., MySpace, Facebook)	113	81%	17	42.5%	21	95%
Instant messaging or IM (i.e., AIM)	103	74%	24	60%	19	86%
Online calendars (i.e., Google Calendar)	102	73%	27	67.5%	17	77%
Internet voice / video conferencing (i.e., Skype)	84	60%	28	70%	15	68%
Online purchases (i.e., Amazon.com)	82	59%	22	55%	15	68%
E-mail listservs	70	50%	21	52.5%	10	45%

Note: A few respondents chose no answer for individual items and so the n above is an overall, however, it may be one or two less for some individual items.

17. To help us design for virtual community interactions, tell us which of these devices you use and how regularly over the past year.  
(check one response for each item)

#17. Summary Table. The combined percentage responding “use daily”/“use weekly” for each of the listed devices.

Devices	OOS Scientists (n=141)		Grad Students (n=40)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
Computer at work with Internet access	138 (daily)	98%	40	100%	22 (daily)	100%
Computer at home with Internet access	133	94%	36	90%	20	91%
Cell phone	104	76%	38	97%	14	67%
Computer/laptop (away from work or home) with Internet access	88	63%	27	67.5%	11	50%
iPod or MP3 audio player	56	40%	24	60%	7	32%
TiVo (or similar product)	22	16%	7	17.5%	5	23%
Gamebox with Internet access (i.e., Xbox Live)	2	1%	2	5%	0	0%
Slingbox (or similar product)	2	1%	0	0%	0	0%
Smartphone with wireless Internet (i.e., BlackBerry, iPhone, Treo)	16	12%	3	7.5%	2	9%
PDA with wireless Internet	15	11%	0	5%	0	0%

Note: A few respondents chose no answer for individual items and so the n is an overall, however, it may be one or two less for some individual items.

#17. Summary Table. The combined percentage responding “use rarely”/“use never” for each of the listed devices.

Devices	OOS Scientists (n=141)		Grad Students (n=40)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
Slingbox (or similar product)	136	98%	40	100%	22 (never)	100%
Gamebox with Internet access (i.e., Xbox Live)	134	97%	35	87.5%	19 (never)	86%
Smartphone with wireless Internet (i.e., BlackBerry, iPhone, Treo)	118	85%	36	90%	20 (never)	91%
TiVo (or similar product)	112 (never)	83%	32	80%	17 (never)	77%
PDA with wireless Internet	111	82%	37	92.5%	22 (never)	100%
iPod or MP3 audio player	58	42%	10	25%	12	55%
Cell phone	28	20%	1	3%	7	33%
Computer/laptop (away from work or home)with Internet access	13	9%	7	17.5%	4	18%
Computer at home with Internet access	5	3.5%	4	10%	1	4.5%
Computer at work with Internet access	2	1%	0	0%	0	0%

Note: A few respondents chose no answer for individual items and so the n is an overall, however, it may be one or two less for some individual items.

**18. At what connection speed do you usually access the Internet/Web at each of these locations? (check one response for each)**

**from home**

Response Choices	OOS Scientists (n=142)		Grad Students (n=40)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
moderate (DSL/ cable)	97	70%	33	85%	17	81%
fast (T1 or better)	29	21%	5	13%	2	9.5%
slow (dial-up)	13	9%	1	3%	2	9.5%

**from work**

Response Choices	OOS Scientists (n=142)		Grad Students (n=40)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
fast (T1 or better)	107	76%	26	65%	20	91%
moderate (DSL/ cable)	31	22%	14	35%	2	9%
slow (dial-up)	3	2%	0	0%	0	0%

**on the road**

Response Choices	OOS Scientists (n=142)		Grad Students (n=40)		Others (n=22)	
	Frequency	%	Frequency	%	Frequency	%
moderate (DSL/ cable)	91	75%	31	86%	16	80%
fast (T1 or better)	19	16%	3	8%	2	10%
slow (dial-up)	12	10%	2	6%	2	10%

**END of QUESTIONS ASKED of OOS AFFILIATED RESPONDENTS ONLY**

**19. Are you currently a member of ASLO (American Society of Limnology & Oceanography)?**  
(check one)

Total of all respondents responding "yes" or "no, not currently but have been" = 637 or 95%.

Instructions to Respondents...This question is a filter to make sure you're directed only to questions that are relevant to you. The survey software may skip over some questions and so the question numbering may not be sequential.

Response Choices	All Scientists (n=450)		OOS Scientists (n=142)		Grad Students (n=162)		Others (n=64)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
yes	419	93%	133	94%	143	88%	58	91%
no, not currently but have been	19	4%	6	4%	8	5%	2	3%
no, never have been	12	3%	3	2%	10	6%	3	5%
not sure/ don't know	0	0%	0	0%	1	1%	1	2%

Note: #19 was a filter question that required a response. Respondents answering "yes" or "no, not currently" to #19 continued with question #20. Respondent answering "no, never have been" or "not sure" to #19 were skipped over the membership-related questions and continued with question #31.

**QUESTIONS ASKED of ASLO MEMBERS ONLY**

**20. To which of these other professional societies/organizations do you belong?**

(check as many as apply)

ASLO members indicating they belonged to other organizations = 411 or 67%

Choices	All Scientists (n=309)		OOS Scientists (n=109)		Grad Students (n=67)		Others (n=39)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
AGU (American Geophysical Union)	170	55%	65	60%	36	54%	13	33%
TOS (The Oceanographic Society)	74	24%	40	37%	15	22%	13	33%
ERF (Estuarine Research Federation)	70	23%	28	26%	13	19%	9	23%
SIL (International Society of Limnology)	62	20%	17	16%	5	7.5%	7	18%
ESA (Ecological Society of America)	53	17%	14	13%	10	15%	13	33%
NABS (North American Benthological Society)	27	9%	6	5.5%	5	7.5%	6	15%
MTS (Marine Technology Society)	12	4%	11	10%	3	4.5%	3	8%
ECSA (Estuarine and Coastal Sciences Association)	5	2%	5	5%	1	1.5%	0	0%

**21. Are you currently involved in public education/outreach?**

*Instructions to Respondents...Note: We're using the term "education/outreach" throughout this survey to cover public education and/or outreach efforts for teachers and students (U.S. grades K-16: kindergarten through college), general public, community groups, and coastal or ocean managers and policy makers.*

Response Choices	All Scientists (n=438)		OOS Scientists (n=139)		Grad Students (n=150)		Others (n=60)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
yes	313	71.5%	97	70%	89	59%	45	75%
no	104	24%	33	24%	53	35%	12	20%
not sure / don't know	21	5%	9	6.5%	8	5%	3	5%

*Note: #21 was a filter question that required a response. The next set of questions pertained specifically to education/outreach activities for ASLO members. Respondents answering "yes" to #21 continued to Question #22. Respondents answering "no" or "not sure" to #21 were skipped over the education/outreach questions and continued with question #25.*

**QUESTIONS ASKED of ASLO MEMBERS INVOLVED IN ED/OUTREACH ONLY**

**22. Are you required to conduct education/outreach as part of your funding?**

Response Choices	All Scientists (n=309)		OOS Scientists (n=96)		Grad Students (n=87)		Others (n=44)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
yes	159	51.5%	55	57%	24	28%	28	64%
no	140	45%	38	40%	58	67%	15	34%
not sure / don't know	10	3%	3	3%	5	6%	1	2%

23. Who/what provides your funding for education/outreach?

**U.S. Respondents n = 278**

Response Categories	All Scientists (n=184)		OOS Scientists (n=55)		Grad Students (n=49)		Others (n=43)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
U.S. Government (all agencies)	107	58%	39	71%	10	20%	25	58%
NSF	78	42%	25	45%	10	20%	9	21%
NOAA	23	13%	13	24%	0	0%	7	16%
Sea Grant	12	7%	4	7%	0	0%	4	9%
Academic Institution (college, university, etc.)	55	30%	15	27%	22	45%	11	26%
Unfunded volunteer/ personal commitment	33	18%	4	7%	22	45%	2	5%
State/Local Government	14	8%	7	13%	3	6%	11	26%
Misc. Grants	11	6%	4	7%	1	2%	4	9%
Private Foundation/ Donors	8	4%	2	4%	2	4%	4	9%
Employer	5	3%	0	0%	0	0%	2	5%
For-profit	3	2%	1	2%	0	0%	0	0%
Non-profit	1	1%	0	0%	1	2%	3	7%

Note: For a comparison of responses of NSF-funded Scientists to all other Scientists, see Appendix 6

**International Respondents n = 82**

Response Categories	All Scientists (n=71)		OOS Scientists (n=21)		Grad Students (n=5)		Others (n=4)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Academic Institution (college, university, etc.)	35	49%	7	33%	1	25%	4	80%
National Government	27	38%	11	52%	2	50%	2	40%
Unfunded volunteer/ personal commitment	10	14%	3	14%	1	25%	0	0%
Misc. Grants	9	13%	3	14%	0	0%	0	0%
Local Government	4	6%	1	5%	0	0%	0	0%
Private Foundation/ Donors	2	3%	0	0%	0	0%	1	20%
Employer	2	3%	1	5%	0	0%	0	0%
For-profit	3	4%	1	5%	0	0%	0	0%
Non-profit	0	0%	0	0%	0	0%	0	0%

Note: This was an open-ended question and some respondents offered more than one response. As a result the total equals more than 100%. Only the top responses are reported here.

**24. From this list of education/outreach activities, with which are currently involved?**  
(check all that apply)

Response Choices	All Scientists (n=309)		OOS Scientists (n=95)		Grad Students (n=86)		Others (n=43)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
teach science at the college level: undergraduate (U.S. grades 13-16) or graduate	209	68%	63	66%	47	55%	27	63%
contribute data, content or other services to a public website	148	48%	58	61%	16	19%	19	44%
present to the public or managers/policy makers at community meetings	136	44%	53	56%	12	14%	24	56%
contribute to/advice media on science content, issues or stories	121	39%	52	55%	6	7%	19	44%
judge science fairs or other science competitions	117	38%	47	49.5%	31	36%	22	51%
present/talk to K-12 students in the classroom	106	34%	47	49.5%	41	48%	15	35%
work on projects developing programs or materials for the public or managers/policy makers	96	31%	44	46%	5	6%	19	44%
consult on projects developing programs or materials for K-12 teachers and students	86	28%	34	36%	15	17%	15	35%
conduct lab/field experiences for K-12 students	79	26%	29	30.5%	25	29%	11	26%
involve the public or managers/policy makers in research	64	21%	31	33%	4	5%	9	21%
present at K-12 teacher workshops or meetings	60	19%	28	29.5%	12	14%	11	26%
manage or coordinate an education/outreach program	57	18%	23	24%	6	7%	17	39.5%
conduct lab/field experiences for the public or managers/policy makers	55	18%	21	22%	8	9%	9	21%
involve K-12 students in research	52	17%	17	18%	11	13%	8	19%
conduct lab/field experiences for K-12 teachers	47	15%	21	22%	8	9%	11	26%
involve K-12 teachers in research	40	13%	17	18%	4	5%	10	23%
provide funding for science educators/education specialists to work with teachers and/or the public	30	10%	16	17%	0	0%	14	33%
none of the above	2	1%	1	1%	2	2%	2	5%
other	37	12%	10	10.5%	13	15%	0	0%

***Continued: QUESTIONS ASKED of ALL ASLO MEMBERS (not just those involved in E&O)***

**25. What do you view as the greatest public benefit to having scientists/researchers involved in education/outreach? (check all that apply)**

Response Choices	All Scientists (n=433)		OOS Scientists (n=137)		Grad Students (n=147)		Others (n=57)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
increasing public's understanding of science	346	80%	115	84%	119	81%	50	88%
providing accurate information	264	61%	93	68%	75	51%	37	65%
focusing attention on environmental issues	260	60%	92	67%	82	56%	35	61%
assisting with management, policy & decision making	228	53%	90	66%	66	45%	32	56%
increasing public's appreciation of science	229	53%	78	57%	83	56.5%	37	65%
presenting the benefits and relevance of research	204	47%	77	56%	65	44%	28	49%
serving as a model and motivator for teachers & students	168	39%	58	42%	72	49%	25	44%
other	12	3%	5	4%	8	5%	3	5%

*Note: Some respondents offered more than one response. As a result the total equals more than 100%.*

**26. What's the greatest barrier to getting scientists/researchers involved in education/outreach? (check all that apply)**

Response Choices	All Scientists (n=431)		OOS Scientists (n=136)		Grad Students (n=146)		Others (n=57)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
lack of time	341	79%	108	79%	105	72%	41	72%
lack of financial support	227	53%	80	59%	71	49%	29	51%
no acknowledgment by the institution/agency for such work	162	38%	58	43%	48	33%	17	30%
lack of staff	125	29%	50	37%	21	14%	11	19%
not sure what the public, teachers and students needs	95	22%	36	26.5%	48	33%	18	32%
not sure how to get involved	93	22%	34	25%	57	39%	16	28%
scientists aren't interested	74	17%	37	27%	28	19%	11	19%
the public's not interested	26	6%	8	6%	20	14%	4	7%
other	24	6%	8	6%	6	4%	5	9%

*Note: Some respondents offered more than one response. As a result the total equals more than 100%.*



**27. Have you ever visited these sections of the ASLO website? (check a response for each)**

**Science Education**

Response Choices	All Scientists (n=405)		OOS Scientists (n=134)		Grad Students (n=143)		Others (n=56)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
no	210	52%	60	45%	85	61%	28	54%
yes	147	36%	52	39%	42	30%	18	35%
not sure	48	12%	22	16%	13	9%	6	11.5%

**Public Policy**

Response Choices	All Scientists (n=415)		OOS Scientists (n=134)		Grad Students (n=143)		Others (n=56)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
no	256	62%	74	55%	103	72%	32	57%
yes	95	23%	33	25%	27	19%	16	29%
not sure	64	15%	27	20%	13	9%	8	14%

**28. If yes, how useful have you found each section? (check a response for each)**

**Science Education**

Response Choices	All Scientists (n=291)		OOS Scientists (n=104)		Grad Students (n=103)		Others (n=35)	
	Frequency	%*	Frequency	%*	Frequency	%*	Frequency	%*
very useful	19	11%	7	10%	6	12%	3	15%
useful	85	49%	28	42%	31	63%	14	70%
not very useful	13	7%	6	9%	3	6%	1	5%
not sure / don't remember	57	33%	26	39%	9	18%	2	10%
haven't used	117	—	37	—	54	—	15	—

\*Note: Percentages calculated based on those who responded and said they had used these sections.

**Public Policy**

Response Choices	All Scientists (n=283)		OOS Scientists (n=101)		Grad Students (n=100)		Others (n=36)	
	Frequency	%*	Frequency	%*	Frequency	%*	Frequency	%*
very useful	12	9%	3	7%	5	15%	2	12%
useful	48	35.5%	16	30%	11	33%	7	41%
not very useful	13	10%	7	13%	3	9%	2	12%
not sure / don't remember	62	46%	27	51%	14	42%	6	35%
haven't used	148	—	48	—	67	—	19	—

\*Note: Percentages calculated based on those who responded and said they had used these sections.

**29. If yes, which pages have you visited or used? (check all that you have visited)**

Response Choices	All Scientists (n=174)		OOS Scientists (n=59)		Grad Students (n=55)		Others (n=27)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Image Library	95	55%	35	59%	24	44%	14	52%
Teaching Tools	73	42%	22	37%	12	22%	11	41%
Aquatic Science Policy Updates & Action Alerts	66	38%	24	41%	22	40%	14	52%
Outreach Activities	46	26%	19	32%	19	34.5%	10	37%
More about Limnology	43	25%	16	27%	10	18%	3	11%
Web-based Courses	43	25%	13	22%	10	18%	9	33%
Topical News Pages (e.g., Ocean Commission, Wetlands, etc.)	33	19%	18	30.5%	10	18%	9	33%
Related [Education] Links	28	16%	14	24%	11	20%	6	22%
Policy Careers & Fellowships	24	14%	11	19%	18	33%	2	7%
Education Sub-Committee	24	14%	8	14%	8	14.5%	6	22%
How to Get Involved in Policy	17	10%	6	10%	11	20%	1	4%
Policy Links	14	8%	6	10%	7	13%	1	4%

Note: Some respondents offered more than one response. As a result the total equals more than 100%.

**30. Which of these offerings by ASLO (or suggested others) would assist you with education/outreach? (check all that apply)**

Response Choices	All Scientists (n=399)		OOS Scientists (n=125)		Grad Students (n=131)		Others (n=53)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Understanding the effective use of models/ demonstrations	138	35%	44	35%	44	34%	12	23%
Education listserv focused on funding for education/ outreach	130	33%	43	34%	63	48%	17	32%
Orientation to inquiry/ hands-on science	131	33%	36	29%	54	41%	20	38%
Introduction/ review of the National Science Standards	97	24%	32	26%	31	24%	10	19%
Education listserv focused on professional development	85	21%	35	28%	44	34%	8	15%
Nothing at this time	118	30%	33	26%	27	21%	21	40%
Other	15	4%	5	4%	8	6%	4	7.5%

Note: Some respondents offered more than one response. As a result the total equals more than 100%.

**END of QUESTIONS ASKED of ASLO MEMBERS ONLY**

**31. What do you think is/are the greatest obstacle(s) to the public's understanding of aquatic sciences?**  
**U.S. Respondents n = 393**

Response Categories	All Scientists (n=246)		OOS Scientists (n=80)		Grad Students (n=89)		Others (n=52)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
weak/lacking public background information	77	31%	29	36%	22	25%	18	35%
science communication: not engaging, few charismatic speakers, no strategic plan	43	17%	17	21%	23	26%	6	12%
need public info presented simply and accurately	42	17%	14	18%	10	11%	7	13%
media: lack of attention, poor accuracy, focus on sound bites or drama	42	17%	11	14%	11	12%	9	17%
poor science education in schools and/or by teachers	36	15%	7	9%	18	20%	12	23%
weak public understanding of relevance/importance	32	13%	10	13%	23	26%	10	19%
lack of public interest, focus	31	13%	10	13%	8	9%	7	13%
lack of public exposure to scientists, content and/or environments	23	9%	8	10%	15	17%	4	8%
scientists lack time/support	11	4%	2	3%	5	6%	2	4%

**International Respondents n = 132**

Response Categories	All Scientists (n=109)		OOS Scientists (n=33)		Grad Students (n=12)		Others (n=9)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
science communication: not engaging, few charismatic speakers, no strategic plan	29	27%	13	39%	4	33%	3	33%
weak/lacking public background information	27	25%	6	18%	3	25%	4	44%
media: lack of attention, poor accuracy, focus on sound bites or drama	23	21%	5	15%	0	0%	1	11%
need public info presented simply and accurately	21	19%	7	21%	2	17%	2	22%
lack of public interest, focus	20	18%	4	12%	0	0%	0	0%
weak public understanding of relevance/importance	13	12%	2	6%	4	33%	0	0%
lack of public exposure to scientists, content and/or environments	9	8%	4	12%	0	0%	1	11%
scientists lack time/support	9	8%	4	12%	1	8%	4	44%
poor science education in schools and/or by teachers	7	6%	2	6%	1	8%	0	0%

*Note: This is an open-ended question. Only the top responses are reported here and due to multiple responses, the total equals more than 100%.*

**32. What assistance do you need to get more involved in or do a better job at public education/outreach?**

*U.S. Respondents n = 357*

Response Categories	All Scientists (n=228)		OOS Scientists (n=74)		Grad Students (n=76)		Others (n=47)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
more funding and/or help getting funding	91	40%	29	39%	31	41%	18	38%
more time	60	26%	20	27%	18	24%	21	45%
institution recognition/ support (funds, tenure, training)	49	21%	12	16%	21	28%	4	9%
match-making (with educators, opportunities, paid/unpaid jobs, funding sources)	29	13%	6	8%	18	24%	3	6%
staff or funding for staff	16	7%	7	9%	1	1%	5	11%
help presenting/adapting/visualizing scientific info	13	6%	7	9%	4	5%	3	6%
database of materials/examples/tools	13	6%	4	5%	5	7%	0	0%
info on what works and what doesn't	8	4%	2	3%	4	5%	2	4%
funder commitment & accountability	9	4%	2	3%	2	3%	0	0%
training: forums, meeting workshops, online	4	2%	1	1%	4	5%	1	2%

*International Respondents n = 129*

Response Categories	All Scientists (n=103)		OOS Scientists (n=31)		Grad Students (n=11)		Others (n=9)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
more time	33	32%	11	35%	1	9%	3	33%
more funding and/or help getting funding	29	28%	10	32%	2	18%	1	11%
match-making (with educators, opportunities, paid/unpaid jobs, funding sources)	24	23%	3	10%	2	18%	2	22%
institution recognition/ support (funds, tenure, training)	21	20%	7	23%	4	36%	1	11%
help presenting/adapting/visualizing scientific info	14	14%	7	23%	1	9%	1	11%
staff or funding for staff	12	12%	4	13%	1	9%	0	0%

*Note: This is an open-ended question. Only the top responses are reported here and due to multiple responses, the total may equal more than 100%.*

**33. Would you like any of the following from us? (check all you'd like)**

Response Choices	All Scientists (n=351)		OOS Scientists (n=113)		Grad Students (n=139)		Others (n=46)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Entry in the drawing for the gift card	295	84%	89	79%	131	94%	39	85%
A copy of <i>Education and Public Outreach— A Guide for Scientists</i>	224	64%	72	64%	80	58%	27	59%
A copy of the results of this survey	193	55%	69	61%	58	42%	29	63%
Someone from ASLO to contact you about your education/ outreach needs	18	5%	8	7%	11	8%	1	2%
Someone from COSEE NOW to contact you about your education/ outreach needs	15	4%	6	5%	6	4%	0	0%
Other	3	1%	3	3%	2	1%	2	4%

**34 & 35. Your E-mail Address & Name**

*Not included in this report to assure anonymity.*

**Conclusions**

These results have helped inform the development of COSEE NOW's virtual community center. Although scientists are positive about the possibilities and supportive, we always view these results with some caution. Survey respondents are voluntary and self-selected and so may bring some bias to these data. We know we have a great deal of work ahead to get our virtual community center up and running and show that the concept works.

In terms of trends over our five years of surveying scientists, we have seen steady increases in the number of ocean observing systems that are operational and some increase in support for scientists' involvement in education. We were surprised this year when we asked for the first time about funding support that scientists' third top response (18%) was that they volunteered their time.

In terms of consistencies, the percentage of observatory scientists who said they are involved in education has remained fairly stable. Ocean observatory scientists are not more engaged in education/ outreach than other scientists (percentages are nearly equal); however, they're doing more activities than other scientists.

Scientists continue to say they need help with public education. When asked what assistance they need, the top responses were consistently related to more funding and staffing, but also greater institution recognition (funding, tenure, training) for education/ outreach activities.

As COSEE NOW, we will soon be engaging scientists and educators in our virtual community center. We hope that that effort, along with our annual scientist surveys, will further our efforts of working with the scientific community in improving public education.

## **APPENDICES**

**APPENDIX 1**  
**SURVEY INSTRUMENT**

*This report includes all of the questions asked on the 2008 Scientist Survey.  
For a copy of any of our survey instruments, contact  
Chris Parsons at [cp@word-craft.com](mailto:cp@word-craft.com)*

## APPENDIX 2

### 2. Where is your institution's home?

Argentina (5)  
Australia (8)  
Austria  
Belgium (2)  
Brazil (3)  
Canada (41)  
Chile  
China  
Croatia  
Czech Republic (3)  
Denmark (4)  
Finland  
France (10)  
Germany (10)  
Indonesia  
Israel (3)  
Italy (4)  
Japan (5)  
Latvia  
Malawi  
Malaysia  
Mexico (2)  
Monaco  
Netherlands (7)  
New Zealand (3)  
Nicaragua  
Norway (4)  
Peru  
Portugal (2)  
Puerto Rico (2)  
Republic of South Africa (2)  
Scotland (2)  
Slovenia (EU)  
Spain (9)  
Sweden (14)  
Switzerland (3)  
Taiwan  
Turkey  
United Kingdom (4)  
United States (489)  
Unknown (7)



### APPENDIX 3 ACKNOWLEDGMENTS

We graciously thank all those from the following institutions and/or agencies (*listed alphabetically each year*) who responded to our survey. The data they provided have been insightful and invaluable.

#### **In 2008**

Acadia University  
Agency for Consultation and Research in Oceanography  
Anis Water Resources Institute/Grand Valley State Univ.  
Arizona State University  
Auburn University  
Auckland University  
Auke Bay Marine station  
AZTI-Tecnalia  
Battelle Memorial Institute  
Battelle/Pacific Northwest National Laboratory  
Bigelow Laboratory for Ocean Sciences  
Bionavitas, Inc  
Bridgewater State College  
Brigham Young University  
California Polytechnic State University  
California Regional Water Quality Control Board  
Cal State University Monterey Bay  
California State University Northridge  
Canakkale Onsekiz Mart University  
Cary Institute of Ecosystem Studies (formerly IES)  
Catholic University of Leuven  
Central Connecticut State University  
Centre for Ecology and Hydrology  
Centre National de la Recherche Scientifique  
Centre of Marine Sciences  
Charles University, Faculty of Science  
Chesapeake Research Consortium  
Christian-Albrechts University  
CLARKSON UNIVERSITY  
Clemson University  
CNRS UMR LOG - Université du Littoral  
Coastal Carolina University  
College of Charleston  
College of Marine and Earth Studies, University of Delaware  
College of Oceanic & Atmospheric Sciences: Oregon State University  
College of William & Mary - VIMS  
Community College of Baltimore Co.  
CONICET  
Consejo Superior de Investigaciones Científicas  
Cornell University  
CSIC  
CSIRO  
Danish Institute for Fisheries Research  
Dauphin Island Sea Lab  
DELTARES  
Denison University  
Department of Ecology and Environmental Science, Umeå  
Department of Marine Science and Technology IPB  
Department of Systems Ecology, Stockholm University  
Dept of Ecology, Lund Univ, Sweden  
Dept of Ecology/Limnology, Lund University

Desert Research Institute  
DHI - Water, Environment, Health  
Dos Mares  
Drexel University  
Duke University  
Duke University Marine Laboratory  
Earth & Ocean Sciences  
Eawag  
Eckerd College  
Environment Canada  
Estacion de Fotobiologia Playa Union  
Federal University of Rio de Janeiro  
Finnish Institute of Marine Research  
FIT  
Flinders University  
Florida Atlantic University  
Florida Environmental Research Institute  
Florida International University  
Franklin and Marshall College  
Freshwater Research  
FWC  
Geogbenthos Lab-Instituto de Geociencias  
Geological Institute, University of Neuchâtel  
Georgia Institute of Technology  
Georgia Southwestern State University  
Georgia Tech  
Georgian Court University  
German Federal Institute of Hydrology (BfG)  
Graduate School of Oceanography, University of Rhode Island  
Grand Valley State University  
Greenwood County Government  
Griffith University  
GSO, Univ. of Rhode Island  
gso/uri  
Hamline University  
Hampton University  
Harvard University  
Haskin Shellfish Research Laboratory, Rutgers University  
Hatfield Marine Science Center, Oregon State University  
HDR Engineering  
Hydrospheric Atmospheric Research Center, Nagoya University  
Idaho State University  
IFM-GEOMAR  
ifremer  
IMEDEA  
INSTAAR  
Institut de Ciències del Mar-CSIC  
Institut de Recherche pour le Développement (IRD)  
Institute for Exploratio,  
Institute for Polar Ecology  
Institute of Hydrobiology AS CR  
Institute of Microbiology  
Institute of Ocean Sciences  
International Arctic Research Center  
International Atomic Energy Agency  
Israel Oceanographic & Limnological Research  
James Madison University  
Japan Sea National Fisheries Research Institute

*Kanazawa University*  
*Kent State University*  
*Kentucky Division of Water*  
*Laboratoire d'oceanographie de Villefranche*  
*Large Lakes Observatory, U of MN and U of Mzuzu, Malawi*  
*Leibniz-Institute of Freshwater Ecology and Inland Fisheries*  
*Louisiana Department of Wildlife and Fisheries*  
*Louisiana State University*  
*Louisiana State University and LUMCON*  
*Loyola University Chicago*  
*Maine Maritime Academy*  
*Manhattan College*  
*Marine Biology Station, NIB, Piran, Slovenia*  
*Marist College*  
*MassDEP*  
*MBARI/Monterey Bay Aquarium Research Institute*  
*McGill University*  
*Memorial University*  
*Memorial University of Newfoundland*  
*Miami University*  
*Michigan State University*  
*Michigan Technological University*  
*MIT/WHOI Joint Program in Oceanography/Applied Ocean Science and Engineering*  
*Mohave Community College*  
*Monterey Bay Aquarium*  
*Moss Landing Marine Labs*  
*Mote Marine Laboratory*  
*Mount Holyoke College*  
*msu*  
*Nanjing Institute of Geography and Limnology, CAS*  
*NASA/GSFC*  
*National Center for Atmospheric Research*  
*National Institutes of Health*  
*National Research Council*  
*National Research Council (Consiglio Nazionale delle Ricerche)*  
*National Taiwan University*  
*National University of Mar del Plata*  
*NCSU Center for Marine Sciences and Technology*  
*Nelson Mandela Metropolitan University*  
*Netherlands Institute of Ecology (NIOO-CEME)*  
*Netherlands Institute of Ecology/Utrecht University/Gent University*  
*NIOO-CEME*  
*NOAA*  
*NOAA Fisheries*  
*NOAA Great Lakes Environmental Research Lab*  
*NOAA NMFS Northeast Fisheries Science Center*  
*Northeastern University*  
*Northwest Missouri State University*  
*NOVA Southeastern University's Oceanographic Center*  
*NRL*  
*NZ National Institute for Water & Atmospheric Research*  
*OCEANA*  
*Odum School of Ecology / University of Georgia*  
*OHSU*  
*Old Dominion University*  
*Onondaga County Dept of Water Environment Protection*  
*Oral Roberts Univ.*  
*Oregon Health & Science University*

Oregon State University  
Pacific Northwest National Lab  
Parks Canada  
PBS&J  
Penn State University  
Pennsylvania State University  
Peruvian Marine Research Institute  
Plymouth State University  
Prince William Sound Science Center  
Princeton University/Geophysical Fluid Dynamics Laboratory  
Queen's University  
Quinnipiac University  
Rhodes University  
Rochester Institute of Technology  
ROFFS  
Roger Williams University  
Romberg Tiburon Center, San Francisco State Univ  
Rookery Bay NERR  
Royal Netherlands Institute for Sea Research  
Rutgers University/IMCS  
Ryerson University  
San Diego State University  
Saskatchewan Watershed Authority  
School of Oceanogr., Univ. of Washington  
Scottish Association for Marine Sciences  
Scripps Institution of Oceanography-UCSD  
Sea Education Association  
SeaGrant Fellow- Senator Barbara Boxer  
Sequoia Scientific, Inc.  
SETI Institute  
SMAST  
Smithsonian Institution  
SoMAS SUNY Stony Brook  
South Australian Research and Development Institute  
South Florida Water Management  
Southeastern Universities Research Association  
Southern California Coastal Water Research Project  
Southwestern College  
Spanish Council of Scientific Research  
St. Olaf College  
Stanford University  
State Univ. of New York College at Oneonta  
State University of New York, College of Environmental Science and Forestry  
Stazione Zoologica A. Dohrn  
Stockholm University  
Stony Brook University  
Stroud Water Research Center  
SUNY College at Oneonta  
SUNY Environmental Science and Forestry (at NCEAS this year)  
Swedish University of Agricultural Sciences  
Tel Hai Academic College, MIGAL  
Texas A&M at Galveston, Department of Oceanography  
Texas A&M University at Corpus Christi  
Texas Parks & Wildlife Department  
The Australian National University  
The Chinese University of Hong Kong  
The Evergreen State College  
The Institute of Geographic Sciences and Natural Resources Research, CAS

The Ohio State University  
The University of Queensland  
The University of Texas - Pan American  
The University of Texas at El Paso  
Trent  
Tulane University  
UC Clermont College  
UC Davis Tahoe Environmental Research Center  
UGA-MI  
Umea University  
UNCW  
Univ. di Siena  
Univ. of Wisconsin-Milwaukee Great Lakes WATER Institute  
Universidad Autónoma de San Luis Potosí  
Universidad de Oviedo  
UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO  
Universidad Nacional de Mar del Plata  
Universidade Estadual de Santa Cruz  
Universidade Federal Fluminense (Fluminense Federal University)  
Universite de la Mediterranee - CNRS  
Université de Moncton  
Université de Montreal  
Université du Québec a Rimouski  
Université du Québec à Rimouski (UQAR) et institut des sciences de la mer (ISMER)  
Université Laval  
Université Paris6  
University of Aberdeen  
University of Alaska Fairbanks  
University of Arizona  
University of Bergen, Department of Biology  
University of British Columbia  
University of California  
University of California, Berkeley  
University of California, Irvine  
University of California, Los Angeles  
UCLA/COSEE-West  
University of California, Riverside  
University of California, San Diego  
University of California, Santa Barbara  
University of California, Santa Cruz  
University of Cologne  
University of Colorado  
University of Connecticut  
University of Copenhagen  
University of Delaware  
University of East Anglia  
University of Essex  
University of Florida  
University of Georgia  
University of Girona  
University of Hawaii  
University of Hawaii - The Hawaii Institute of Marine Biology  
University of Hawaii at Manoa  
University of Illinois  
University of Latvia  
University of Madeira  
University of Maine  
University of Maryland

University of Maryland at College Park  
University of Maryland Center for Environmental Science  
University of Maryland Center for Environmental Science/Chesapeake Biological Laboratory  
University of Miami  
University of Miami/RSMAS  
University of Michigan  
University of Michigan-Dearborn  
University of Minnesota  
University of Minnesota, Duluth  
U of Minnesota-Duluth (NRRI)  
University of Missouri  
University of New Brunswick  
University of New Hampshire  
University of New Mexico  
University of North Carolina  
University of North Carolina at Chapel Hill  
University of North Carolina Charlotte  
University of North Carolina Wilmington  
University of Northern Iowa  
University of Orleans  
University of Oslo  
University of Puerto Rico, Mayagüez Campus  
University of Rhode Island  
University of Rhode Island Graduate School of Oceanography  
University of South Carolina  
University of South Florida  
University of Southampton  
University of Southern California  
University of Tasmania  
University of Tennessee  
University of Victoria  
University of Washington  
University of Washington, School of Oceanography  
University of West Florida  
University of Winnipeg  
University of Wisconsin  
University of Wisconsin-Milwaukee  
University of Wyoming  
University of Zagreb, Division of Biology  
Uppsala Universitet  
UPRM  
US Fish and Wildlife Service  
US Geological Survey/USGS  
US National Park Service  
USC Wrigley Institute for Environmental Studies  
USDA  
UT Austin Marine Science Institute  
Utah State University  
Va Dept of Environmental Quality  
Vermont Agency of Natural Resources  
Versar Inc.  
Villanova University  
Virginia Institute of Marine Science / Eastern Shore Laboratory  
Virginia Institute of Marine Science/VIMS  
Vrije Universiteit Amsterdam  
Wellesley College  
Woods Hole Oceanographic Institution/WHOI

**In 2008, Participating Ocean Observatories (as noted in the survey)**

Your observatory / observing system name (current or future) is...

A NOAA Microbial Observatory  
Aguilar Cuhel Comprehensive EcoSystem Studies  
Alaska Ocean Observing System  
Alg@line  
American Whitewater  
AOOS  
Arsenic circulation in hydrosphere  
Auke bay Marine Station  
Australian Earth Observation Network  
BATS, BIOS  
Bermuda Atlantic Times Series study site  
Biological Field station  
Blanes Bay Microbial Observatory  
Bodega Ocean Observing Node  
CalCOFI  
Calfuco-UACH  
Cariaco Basin  
Caribbean Regional Association (CaRA)  
CBOS  
CCE LTER  
census of marine life  
Chesapeake Bay Environmental Observatory  
Chesapeake Bay Monitoring Program  
Chesapeake Bay Observing System  
CMOP  
Coastal Observation and Analysis  
Coastal Ocean Observing Center  
CORMP.org (Coastal Ocean Research & Monitoring Program)  
Delaware Estuary Watershed to Ocean Observing System  
Eilat monitoring  
Environmental Sample Processor (ESP)  
ESONET  
European Biodiversity Data Base  
FLCOOS  
GCE-LTER  
GLEON (global lake ecological observatory network, gleon.org)  
GLEON, WATERs, CUAHSI  
GLOS  
GLUCOS (L. Michigan)  
GoMOOS/IOOS  
Great Lakes  
Hawaii Ocean Observing System  
Hawaii Ocean Time-series  
Hawaiian Undersea Listening Array (HULA)  
<http://nest.su.se/Models/BEDonWeb/>  
<http://www.mymobilebay.com/>  
IEP  
IML (institut MAurice Lamontagne  
INSTITUTO DE CIENCIAS DEL MAR Y LIMNOLOGÍA  
INSU  
ISMO  
Jellyfish blooms in Catalan sea  
Lake Champlain Long Term Water Quality and Biological Monitoring program  
Lake Madeline/Offatts Bayou Urban Benthic Observatory  
Lake Partner Program in Ontario (for inland lakes)

Lake Tahoe Environmental Research Center  
Lamprey River Hydrologic Observatory  
Large Lakes Observatory  
LEO-15  
LISICOS  
LISSICOS Long Island Sound/My Sound  
LOBO  
Long Bay Ecosystem Management Program  
Long-term Observation and Research of the East China Sea  
LUMCON and Hypoxia  
Lunenburg Bay  
MACOORA-CBOS  
MARCOOS  
MareChiara station  
Marine Observatory of the Basque Coast  
MARS  
Martha's Vineyard Coastal Observatory  
MCR-LTER  
Monterey Bay Aquarium (we monitor incoming seawater for various parameters)  
Mozingo monitoring  
Narragansett Bay  
NEON  
Neptune Canada  
neracoos  
NOAA/NERRS SWMP  
none (SECOORA)  
None/ Red Tide  
none/CORIE  
North Pond Subsurface Observatory (Mid-Atlantic Ridge)  
Northeast Fisheries Science Center Operational Oceanography programs  
NOW  
Observatoire du Domaine Côtier, IUEM, France  
Observatoire général du Saint-Laurent (OGSL)  
oceanographic observation of coastal waters  
Old Woman Creek National Estuarine Research Reserve  
OOI  
OOI Endurance Array  
ORCOOS  
Palmer LTER  
PORTS and COMPS  
Portsmouth Harbor Tracking and Observatory Project  
Raunefjord, western Norway  
Real Time Monitoring Station with Texas Com. on Env. Qual.  
RECON  
RSN  
San Pedro Ocean-time Series Station  
Santa Barbara Channel, Bermuda Atlantic Times Series Station  
Santa Monica Bay Observatory  
SCCOOS & CeNCOOS  
SCCOS  
SCIMPI  
Secchi Dip-In and Ohio Citizen's Lake and Monitoring Program  
SECORA, FICOOS, GCOOS  
Self-Help Monitoring, WiDNR  
Sewage Outfall Impacts on Coral Reef Environments  
SIMO  
SO COOL  
SOMLIT and DCE



South Australian Integrated Marine Observing System  
Southern California Coastal Ocean Observation System  
Station ALOHA/HOTS  
SURA Distributed Coastal Laboratory  
Time series in Northern Spain (<http://www.seriestemporales-ieo.net/>)  
U.S. EPA South Florida Water Quality Protection Program / Coral Reef Monitoring Project  
UNCW Coastal Ocean Research and Monitoring Program (CORMP)  
VCR LTER  
VENUS  
Virginia Estuarine and Coastal Observing System  
Wallops Coastal Ocean Observing Laboratory/MARCOOS  
WATERS

**APPENDIX 4**  
**OCEAN OBSERVING SYSTEMS SCIENTISTS & OTHER SCIENTISTS**  
**A COMPARISON OF RESPONSES**

N = 453

This appendix offers comparative responses of OOS Scientists (scientists affiliated with a coastal or ocean observing system) and Not OOS Scientists (scientists not affiliated with such observing systems) based on responses to Question #9.

**1. Type of Institution/Agency.**

Response Choices	OOS Scientists (n=144)		Not OOS Scientists (n=308)	
	Frequency	%	Frequency	%
academic	103	71.5%	237	77%
government	24	17%	38	12%
non-profit	12	8%	18	6%
business / for profit	2	1%	8	3%
other	3	2%	7	2%

**2. Where is your institution's home.**

*Of total respondents, from the U.S. = 489 or 74%; from other countries, n = 168 or 26%*

Response Choices	OOS Scientists (n=141)		Not OOS Scientists (n=308)	
	Frequency	%	Frequency	%
United States	102	72%	209	68%
Another Country	39	28%	98	32%

**3. Your Institution/Agency Name (optional)**

*See Full Report*

**4. Your main job/role as related to aquatic sciences is....**

Response Choices	OOS Scientists (n=144)		Not OOS Scientists (n=308)	
	Frequency	%	Frequency	%
Researcher / Scientist	93	65%	181	59%
Scientist and Educator	49	34%	122	40%
Director / Administrator / Manager	—	—	—	—
Engineer / Technician	—	—	—	—
Teacher / Educator	—	—	—	—
Student	—	—	—	—
Other	2	1%	5	2%

**5. Your current career stage is....**

Response Choices	OOS Scientists (n=144)		Not OOS Scientists (n=308)	
	Frequency	%	Frequency	%
Undergrad student	0	0%	0	0%
Graduate student	7	5%	14	4.5%
Early career working professional	43	30%	113	37%
Mid-career working professional	51	35%	114	37%
Late career working professional	35	24%	52	17%
Retired	6	4%	10	3%
Other	2	1%	5	2%

**6. Do you consider your aquatic science field as....**

Response Choices	OOS Scientists (n=144)		Not OOS Scientists (n=308)	
	Frequency	%	Frequency	%
oceanography	110	76%	177	58%
limnology	34	24%	112	36.5%
other	21	15%	52	17%

**7. Are you currently involved in public education/outreach?**

*Instructions to Respondents...Note: We're using the term "education/outreach" throughout this survey to cover public education and/or outreach efforts for teachers and students (U.S. grades K-16: kindergarten through college), general public, community groups, and coastal or ocean managers and policy makers.*

Response Choices	OOS Scientists (n=143)		Not OOS Scientists (n=308)	
	Frequency	%	Frequency	%
yes	103	72%	218	71%
no	34	24%	73	24%
not sure / don't know	6	4%	16	5%

**8. When you think about the next ten years, how important are coastal or ocean observatories/observing systems to the future of ocean science research? (check one)**

Response Choices	OOS Scientists (n=144)		Not OOS Scientists (n=308)	
	Frequency	%	Frequency	%
very important	106	74%	151	49%
important	30	21%	111	36%
somewhat important	8	6%	28	9%
not very important	0	0%	3	1%
not important	0	0%	0	0%
don't know	0	0%	15	5%

**9. Are you affiliated with a current or future coastal or ocean observatory/observing system (in fresh or salt water)? (check one)**

Response Choices	OOS Scientists (n=144)		Not OOS Scientists (n=308)	
	Frequency	%	Frequency	%
yes	144	100%	0	0%
no	0	0%	275	89%
not sure/ don't know	0	0%	33	11%

Note: #9 was a filter question requiring a response and, depending on the response, directed respondents to questions designed only for them. Respondents answering "yes" to #9 were guided to answer Questions #10 thru 18, which were related to ocean observing systems and COSEE NOW's current project goals. Respondent answering "no" or "not sure" to #9 were skipped over the OOS questions and continued with question #19.

**QUESTIONS #10 to 18 were ASKED of OOS AFFILIATED RESPONDENTS ONLY (and so results are not included because there are no comparative data)**

**19. Are you currently a member of ASLO (American Society of Limnology & Oceanography)? (check one)**

Total of all respondents responding "yes" or "no, not currently but have been" = 637 or 95%.

Instructions to Respondents...This question is a filter to make sure you're directed only to questions that are relevant to you. The survey software may skip over some questions and so the question numbering may not be sequential.

Response Choices	OOS Scientists (n=142)		Not OOS Scientists (n=308)	
	Frequency	%	Frequency	%
yes	133	94%	286	93%
no, not currently but have been	6	4%	13	4%
no, never have been	3	2%	9	3%
not sure/ don't know	0	0%	0	0%

Note: #19 was a filter question that required a response. Respondents answering "yes" or "no, not currently" to #19 continued with question #20. Respondent answering "no, never have been" or "not sure" to #19 were skipped over the membership-related questions and continued with question #31.

**QUESTIONS ASKED of ASLO MEMBERS ONLY**

**20. To which of these other professional societies/organizations do you belong?**

*(check as many as apply)*

Choices	OOS Scientists (n=109)		Not OOS Scientists (n=200)	
	Frequency	%	Frequency	%
AGU (American Geophysical Union)	65	60%	105	52.5%
TOS (The Oceanographic Society)	40	37%	34	17%
ERF (Estuarine Research Federation)	28	26%	42	21%
SIL (International Society of Limnology)	17	16%	45	22.5%
ESA (Ecological Society of America)	14	13%	39	19.5%
MTS (Marine Technology Society)	11	10%	1	0.5%
NABS (North American Benthological Society)	6	5.5%	21	10.5%
ECSA (Estuarine and Coastal Sciences Association)	5	5%	0	0%

**21. Are you currently involved in public education/outreach?**

*Instructions to Respondents...Note: We're using the term "education/outreach" throughout this survey to cover public education and/or outreach efforts for teachers and students (U.S. grades K-16: kindergarten through college), general public, community groups, and coastal or ocean managers and policy makers.*

Response Choices	OOS Scientists (n=139)		Not OOS Scientists (n=299)	
	Frequency	%	Frequency	%
yes	97	70%	216	72%
no	33	24%	71	24%
not sure/ don't know	9	6.5%	12	4%

*Note: #21 was a filter question that required a response. The next set of questions pertained specifically to education/outreach activities for ASLO members. Respondents answering "yes" to #21 continued to Question #22. Respondents answering "no" or "not sure" to #21 were skipped over the education/outreach questions and continued with question #25.*

**QUESTIONS ASKED of ASLO MEMBERS INVOLVED IN ED/OUTREACH ONLY**

**22. Are you required to conduct education/outreach as part of your funding?**

Response Choices	OOS Scientists (n=96)		Not OOS Scientists (n=213)	
	Frequency	%	Frequency	%
yes	55	57%	104	49%
no	38	40%	102	48%
not sure/ don't know	3	3%	7	3%

**23. Who/what provides your funding for education/outreach?**

***U.S. Respondents n = 278***

<b>Response Categories</b>	<b>OOS Scientists (n=55)</b>		<b>Not OOS Scientists (n=129)</b>	
	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>
U.S. Government (all agencies)	39	71%	68	53%
NSF	25	45%	53	41%
NOAA	13	24%	10	8%
Sea Grant	4	7%	8	6%
Academic Institution (college, university, etc.)	15	27%	40	31%
State/Local Government	7	13%	7	5%
Unfunded volunteer/ personal commitment	4	7%	29	22%
Misc. Grants	4	7%	7	5%
Private Foundation/ Donors	2	4%	6	5%
For-profit	1	2%	2	2%
Employer	0	0%	5	4%
Non-profit	0	0%	1	1%

***International Respondents n = 82***

<b>Response Categories</b>	<b>OOS Scientists (n=21)</b>		<b>Not OOS Scientists (n=50)</b>	
	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>
National Government	11	52%	16	32%
Academic Institution (college, university, etc.)	7	33%	28	56%
Unfunded volunteer/ personal commitment	3	14%	7	14%
Misc. Grants	3	14%	6	12%
Local Government	1	5%	3	6%
For-profit	1	5%	2	4%
Employer	1	5%	1	2%
Private Foundation/ Donors	0	0%	2	4%
Non-profit	0	0%	0	0%

*Note: This was an open-ended question and some respondents offered more than one response. As a result the total equals more than 100%. Only the top responses are reported here.*

**24. From this list of education/outreach activities, with which are currently involved?**  
(check all that apply)

Response Choices	OOS Scientists (n=95)		Not OOS Scientists (n=214)	
	Frequency	%	Frequency	%
teach science at the college level: undergraduate (U.S. grades 13-16) or graduate	63	66%	146	68%
contribute data, content or other services to a public website	58	61%	90	42%
present to the public or managers/policy makers at community meetings	53	56%	83	39%
contribute to/advise media on science content, issues or stories	52	55%	69	32%
judge science fairs or other science competitions	47	49.5%	70	33%
present/talk to K-12 students in the classroom	47	49.5%	59	28%
work on projects developing programs or materials for the public or managers/policy makers	44	46%	52	24%
consult on projects developing programs or materials for K-12 teachers and students	34	36%	52	24%
involve the public or managers/policy makers in research	31	33%	33	15%
conduct lab/field experiences for K-12 students	29	30.5%	50	23%
present at K-12 teacher workshops or meetings	28	29.5%	32	15%
manage or coordinate an education/outreach program	23	24%	34	16%
conduct lab/field experiences for the public or managers/policy makers	21	22%	34	16%
conduct lab/field experiences for K-12 teachers	21	22%	26	12%
involve K-12 students in research	17	18%	35	16%
involve K-12 teachers in research	17	18%	23	11%
provide funding for science educators/education specialists to work with teachers and/or the public	16	17%	14	6.5%
none of the above	1	1%	1	0.5%
other	10	10.5%	27	13%

***Continued: QUESTIONS ASKED of ALL ASLO MEMBERS (not just those involved in E&O)***

**25. What do you view as the greatest public benefit to having scientists/researchers involved in education/outreach? (check all that apply)**

Response Choices	OOS Scientists (n=137)		Not OOS Scientists (n=296)	
	Frequency	%	Frequency	%
increasing public's understanding of science	115	84%	231	78%
providing accurate information	93	68%	171	58%
focusing attention on environmental issues	92	67%	168	57%
assisting with management, policy & decision making	90	66%	138	47%
increasing public's appreciation of science	78	57%	151	51%
presenting the benefits and relevance of research	77	56%	127	43%
serving as a model and motivator for teachers & students	58	42%	110	37%
other	5	4%	7	2%

*Note: Some respondents offered more than one response. As a result the total equals more than 100%.*

**26. What's the greatest barrier to getting scientists/researchers involved in education/outreach? (check all that apply)**

Response Choices	OOS Scientists (n=136)		Not OOS Scientists (n=295)	
	Frequency	%	Frequency	%
lack of time	108	79%	233	79%
lack of financial support	80	59%	147	50%
no acknowledgment by the institution/agency for such work	58	43%	104	35%
lack of staff	50	37%	75	25%
scientists aren't interested	37	27%	37	12.5%
not sure what the public, teachers and students needs	36	26.5%	59	20%
not sure how to get involved	34	25%	59	20%
the public's not interested	8	6%	18	6%
other	8	6%	16	5%

*Note: Some respondents offered more than one response. As a result the total equals more than 100%.*

**QUESTIONS #27 to 30 focused on ASLO Member Issues and are not included here**  
*See Full Report for Results*



**31. What do you think is/are the greatest obstacle(s) to the public's understanding of aquatic sciences?**

Response Categories	OOS Scientists (n=114)		Not OOS Scientists (n=242)	
	Frequency	%	Frequency	%
weak/lacking public background information	35	31%	69	29%
science communication: not engaging, few charismatic speakers, no strategic plan	30	26%	42	17%
need public info presented simply and accurately	21	18%	42	17%
media: lack of attention, poor accuracy, focus on sound bites or drama	16	14%	49	20%
lack of public interest, focus	15	13%	37	15%
weak public understanding of relevance/importance	13	11%	33	14%
lack of public exposure to scientists, content and/or environments	12	11%	20	8%
poor science education in schools and/or by teachers	9	8%	34	14%
scientists lack time/support	6	5%	14	6%

*Note: This is an open-ended question. Only the top responses are reported here and due to multiple responses, the total may equal more than 100%.*

**32. What assistance do you need to get more involved in or do a better job at public education/outreach?**

Response Categories	OOS Scientists (n=105)		Not OOS Scientists (n=242)	
	Frequency	%	Frequency	%
more funding and/or help getting funding	39	37%	81	33%
more time	31	30%	62	26%
institution recognition/support (funds, tenure, training)	19	18%	51	21%
help presenting/adapting/visualizing scientific info	14	13%	13	5%
staff or funding for staff	11	10%	17	7%
match-making (with educators, opportunities, paid/unpaid jobs, funding sources)	9	9%	44	18%
database of materials/ examples/ tools	5	5%	15	6%
info on what works and what doesn't	2	2%	9	4%
funder commitment & accountability	2	2%	8	3%
training: forums, meeting workshops, online	1	1%	8	3%

*Note: This is an open-ended question. Only the top responses are reported here and due to multiple responses, the total may equal more than 100%.*

**APPENDIX 5  
OCEAN OBSERVING SYSTEMS SCIENTISTS' RESPONSES  
RESULTS 2004 TO 2008**

In this appendix we offer comparative results to items from our past scientist surveys. However, because as COSEE NOW, we changed our survey goals and so changed many survey questions, and solicited responses from a different email list, we caution against drawing conclusions by comparing 2008 results to those of previous years.

Question numbers for each year are indicated as such: 2004 are plain; 2005 are in (parentheses); 2006 are in [brackets]; 2007 are in {braces}; and 2008 in /slashes/.

**(4)[4]{4}/11/. Is your ocean observatory/observing system up and running (that is, collecting data)?**

Response Choices	2005 (n=48)		2006 (n=89)		2007 (n=98)		2008 (n=141)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
yes	14	29%	35	39%	44	45%	84	59%
no	24	50%	41	46%	33	34%	32	22.5%
most of the time	9	19%	9	10%	13	13%	21	15%
not sure/ don't know	1	2%	4	5%	8	8%	5	3.5%

Note: This question was not asked in 2004.

**13(13)[12]{14}/7/. Are you currently involved in public education/outreach?**

Response Choices	2004 (n=79)		2005 (n=46)		2006 (n=89)		2007 (n=94)		2008 (n=143)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
yes	56	74%	31	69%	65	73%	72	77%	103	72%
no	17	22%	14	31%	23	26%	19	20%	34	24%
not sure/ don't know	3	4%	0	0%	1	1%	3	3%	6	4%

**8(8)[7]{7}. As part of your funding, are you required to conduct public education?**

**/22/. Are you required to conduct education/outreach as part of your funding?**

Response Choices	2004 (n=79)		2005 (n=46)		2006 (n=89)		2007 (n=98)		2008 (n=96)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
yes	44	55%	29	63%	49	55%	62	63%	55	57%
no	26	33%	13	28%	35	39%	28	29%	38	40%
not sure/ don't know	9	11%	4	9%	8	8%	8	8%	3	3%

14. From this list of public education/outreach activities, check all of those in which you are currently involved.

14(16)[15][17]. From this list of activities, check all of those in which you are currently involved. (check all that apply)

/24/. From this list of education/outreach activities, with which you are currently involved?

Response Choices	2004 (n=75)		2005 (n=44)		2006 (n=89)		2007 (n=94)		2008 (n=95)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
teach science at the college level: undergraduate (U.S. grades 13-16) or graduate	—	—	—	—	—	—	—	—	63	66%
contribute data, content or other services to a public website	57	76%	36	82%	69	77%	73	78%	58	61%
present to the public or coastal managers at community meetings	26	35%	18	41%	33	37%	37	39%	53	56%
contribute to /advise media on science content, issues or stories	—	—	—	—	—	—	—	—	52	55%
judge science fairs or other science competitions	—	—	—	—	—	—	—	—	47	49.5%
present/talk to K to 12 students in the classroom	26	35%	16	36%	32	35%	27	29%	47	49.5%
consult [with science educators/education specialists] on the development of programs and/or materials the public [or managers/policy makers]	23	31%	22	50%	35	39%	36	38%	44	46%
consult [with science educators/education specialists] on the development of programs and/or materials for K to 12 teachers and students	28	37%	25	57%	41	46%	38	40%	34	36%
involve public or coastal managers in research	16	21%	7	16%	12	13%	18	19%	31	33%
conduct lab or field experiences for K to 12 students	11	15%	8	18%	11	12%	7	7%	29	30.5%
present at K to 12 teachers at workshops or meetings	16	21%	22	50%	26	29%	29	31%	28	29.5%

Response Choices	2004 (n=75)		2005 (n=44)		2006 (n=89)		2007 (n=94)		2008 (n=95)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
manage or coordinate an education/ outreach program	—	—	—	—	—	—	—	—	23	24%
conduct lab or field experiences for K to 12 teachers	15	20%	8	18%	23	26%	15	16%	21	22%
conduct lab or field experiences for the public or coastal managers	13	17%	4	9%	13	15%	7	7%	21	22%
involve K to 12 students in research	10	13%	5	11%	7	8%	6	6%	17	18%
involve K to 12 teachers in research	11	15%	8	18%	12	13%	13	14%	17	18%
provide funding for science educators/ education specialists to work with teachers and/or the public	14	19%	12	27%	19	21%	26	28%	16	17%
none of the above	3	4%	4	9%	4	4%	8	8.5%	1	1%
other	19	26%	2	5%	14	16%	9	10%	10	10.5%

**9. What's the greatest public benefit to having scientists/researchers like you involved in public education?**

**(9)[8]{10}. What do you view as the greatest public benefit to having scientists/researchers like you involved in public education? (check your top one or two)**

**/25/. What do you view as the greatest public benefit to having scientists/researchers involved in public education? (check all that apply)**

<b>Response Choices</b>	<b>2004*</b> (n=79)		<b>2005</b> (n=45)		<b>2006</b> (n=89)		<b>2007</b> (n=94)		<b>2008**</b> (n=137)	
	<i>Frequency</i>	<i>%*</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%**</i>
increasing public's understanding of science	18	23%	21	47%	47	53%	47	50%	115	84%
providing accurate information	13	16%	8	18%	20	22%	19	20%	93	68%
focusing attention on environmental issues	21	26%	8	18%	9	10%	14	15%	92	67%
assisting with management, policy & decision making	14	18%	17	38%	26	29%	29	31%	90	66%
increasing public's appreciation of science	17	21%	13	29%	26	29%	25	27%	78	57%
presenting the benefits and relevance of research	21	26%	22	49%	22	25%	19	20%	77	56%
serving as a model and motivator for teachers & students	20	25%	12	27%	18	20%	13	14%	58	42%
other	—	—	2	4%	2	2%	1	1%	5	4%

\*Note: In 2004 this was an open-ended question and so percentages will be lower than for 2005 - 2008 when we changed this to a multiple-choice question (based on 2004 responses). Only the top responses are reported for 2004.

\*\*Note: For the 2008 survey the instructions were changed to "check all that apply" rather than "check your top one or two" so the percentages are greater than those of previous years.

Because some respondents offered more than one response, the total may equal more than 100%.

**10(10)[9]{11}. What's the greatest barrier you face getting involved in public education?**

*(check your top one or two)*

**/26/. What's the greatest barrier to getting scientists/researchers involved in education/  
outreach? *(check all that apply)***

Response Choices	2004* (n=79)		2005 (n=45)		2006 (n=89)		2007 (n=94)		2008** (n=136)	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
lack of time	34	43%	28	62%	55	62%	58	62%	108	79%
lack of financial support	25	34%	23	51%	44	49%	38	40%	80	59%
no acknowledgment by my institution/agency	6	9%	3	7%	5	6%	11	12%	58	43%
lack of staff	5	6%	14	31%	20	22%	24	25.5%	50	37%
I'm [scientists] not interested	—	—	1	2%	0	0%	0	0%	37	27%
not sure what K to 12 teachers & students need	1	1%	4	9%	8	9%	7	7%	36	26.5%
not sure what the public needs	2	3%	4	9%	7	8%	6	6%	***	***
not sure how to get involved	2	4%	2	4%	3	3%	5	5%	34	25%
the public's not interested	—	—	1	2%	2	2%	1	1%	8	6%
other	4	5%	3	7%	9	10%	9	10%	8	6%

\*Note: In 2004 this was an open-ended question and so percentages will be lower than for 2005 - 2008 when we changed this to a multiple-choice question (based on 2004 responses). Only the top responses are reported for 2004.

\*\*Note: For the 2008 survey the instructions were changed to "check all that apply" rather than "check your top one or two" so the percentages are greater than those of previous years.

\*\*\*In 2008 we combined into one response K-12 teachers, students and the public because the results were so similar each year, and so the percentage above is for the combined response option.

Because some respondents offered more than one response, the total may equal more than 100%.

**APPENDIX 6**  
**NSF-FUNDED SCIENTISTS & OTHER SCIENTISTS**  
**A COMPARISON OF RESPONSES**

N = 361

This appendix offers a comparison of the responses of NSF Scientists (those who stated they receive funding from the National Science Foundation) and Not NSF Scientists (those who did not state NSF was a funder) based on responses to Question #23. Because NSF funding is U.S. focused, we included in the Not NSF Scientists category only those from the U.S.

**1. Type of Institution/Agency.**

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=283)	
	Frequency	%	Frequency	%
academic	70	90%	220	78%
non-profit	7	9%	25	9%
government	1	1%	28	10%
business / for profit	0	0%	6	2%
other	0	0%	4	1%

**2. Where is your institution's home.**

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=283)	
	Frequency	%	Frequency	%
United States	78	100%	283	100%
Another Country	—	—	—	—

**3. Your Institution/Agency Name (optional)**

*See Full Report*

**4. Your main job/role as related to aquatic sciences is....**

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=283)	
	Frequency	%	Frequency	%
Scientist and Educator	42	54%	112	40%
Researcher / Scientist	36	46%	171	60%
Director / Administrator / Manager	—	—	—	—
Engineer / Technician	—	—	—	—
Teacher / Educator	—	—	—	—
Student	—	—	—	—
Other	—	—	—	—

**5. Your current career stage is....**

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=283)	
	Frequency	%	Frequency	%
Undergrad student	0	0%	0	0%
Graduate student	2	3%	18	6%
Early career working professional	17	22%	102	36%
Mid-career working professional	44	56%	97	34%
Late career working professional	13	17%	51	18%
Retired	1	1%	9	3%
Other	1	1%	6	2%

**6. Do you consider your aquatic science field as....**

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=283)	
	Frequency	%	Frequency	%
oceanography	52	67%	182	64%
limnology	21	27%	76	27%
other	13	17%	51	18%

**7. Are you currently involved in public education/outreach?**

*Instructions to Respondents...Note: We're using the term "education/outreach" throughout this survey to cover public education and/or outreach efforts for teachers and students (U.S. grades K-16: kindergarten through college), general public, community groups, and coastal or ocean managers and policy makers.*

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=283)	
	Frequency	%	Frequency	%
yes	78	100%	199	70%
no	0	0%	71	25%
not sure / don't know	0	0%	13	5%

**8. When you think about the next ten years, how important are coastal or ocean observatories/observing systems to the future of ocean science research? (check one)**

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=283)	
	Frequency	%	Frequency	%
very important	36	46%	151	53%
important	26	33%	90	32%
somewhat important	13	17%	29	10%
not very important	1	1%	2	1%
not important	0	0%	0	0%
don't know	2	3%	11	4%



**9. Are you affiliated with a current or future coastal or ocean observatory/observing system (in fresh or salt water)? (check one)**

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=283)	
	Frequency	%	Frequency	%
no	51	65%	176	62%
yes	25	32%	87	31%
not sure/ don't know	2	3%	20	7%

Note: #9 was a filter question requiring a response and, depending on the response, directed respondents to questions designed only for them. Respondents answering "yes" to #9 were guided to answer Questions #10 thru 18, which were related to ocean observing systems and COSEE NOW's current project goals. Respondent answering "no" or "not sure" to #9 were skipped over the OOS questions and continued with question #19.

**QUESTIONS ASKED of OOS AFFILIATED RESPONDENTS ONLY**

**10. Your observatory/observing system name (current or future) is... (if no name, type none)**  
See Full Report

**11. Is your ocean observatory/observing system up and running (that is, collecting data)?**

Response Choices	NSF Scientists (n=24)		Not NSF Scientists (n=85)	
	Frequency	%	Frequency	%
yes	15	62.5%	52	61%
no	5	21%	19	22%
most of the time	4	17%	11	13%
not sure/ don't know	0	0%	3	3.5%

**12. COSEE-NOW is working on developing a virtual "community center" where scientists, educators, policy makers and the public can exchange information, collaborate and share education/outreach techniques, such as lesson plans, visualized data or media presentations, that relate to coastal and ocean research, in particular using observing systems data.**

Given this description, please answer the following questions.  
(check a response for each question)

**Do you think there is a need for a virtual center as described above?**

Response Choices	NSF Scientists (n=25)		Not NSF Scientists (n=87)	
	Frequency	%	Frequency	%
yes	17	68%	57	65.5%
maybe	5	20%	22	25%
don't know, need more information	2	8%	8	9%
no	1	4%	0	0%

**Do you think such a center could help you with your education/outreach activities?**

Response Choices	NSF Scientists (n=25)		Not NSF Scientists (n=87)	
	Frequency	%	Frequency	%
yes	20	80%	45	52%
maybe	4	16%	30	35%
no	1	4%	5	6%
don't know, need more information	0	0%	6	7%

**Do you think you would use such a virtual center?**

Response Choices	NSF Scientists (n=25)		Not NSF Scientists (n=87)	
	Frequency	%	Frequency	%
yes	17	68%	42	49%
maybe	5	20%	32	37%
don't know, need more information	2	8%	9	10.5%
no	1	4%	3	3.5%

**13. Given the description of the virtual center above, which audience(s) do you think you would be most interested in engaging with/collaborating with?**

*(check a response for each)*

*Note: Respondents could respond by selecting yes, no, maybe or don't know/need more information. We are reporting only "yes" responses here.*

**#13. Summary Table: Yes responses**

Audiences	NSF Scientists (n=25)		Not NSF Scientists (n=87)	
	Frequency	%	Frequency	%
K-16 teachers	21	91%	54	66%
scientists	18	72%	71	83%
informal educators (at aquariums or in communities, etc.)	15	65%	51	63%
K-16 students	15	65%	44	54%
coastal or ocean managers/ policy makers	13	52%	49	58%
the public	12	52%	41	55%
education managers/ policy makers	8	36%	35	45.5%
anyone else?	3	—	10	—

**14. Given this virtual community center as described, what would be your greatest barrier(s) to using it? (check all that apply to you)**

Response Choices	NSF Scientists (n=25)		Not NSF Scientists (n=87)	
	Frequency	%	Frequency	%
lack of time	18	72%	63	72%
technology familiarity issues	8	32%	16	18%
challenges collaborating in a virtual space	7	28%	28	32%
not sure how or what to contribute	7	28%	26	30%
prefer face-to-face over virtual interactions	7	28%	19	22%
challenges collaborating with teachers	6	24%	17	19.5%
don't know, need more information	5	20%	14	16%
lack of interest	5	20%	10	11.5%
technology (connection) issues	3	12%	15	17%
nothing to gain from it	3	12%	11	13%
concerns about privacy	3	12%	9	10%
challenges collaborating with scientists	1	4%	6	7%
other	7	28%	14	16%

Note: Some respondents offered more than one response. As a result the total equals more than 100%.

**QUESTIONS #15 to 18 were technology related questions and aren't relevant to this comparisons so results are not included here**

See Full Report for Results

**19. Are you currently a member of ASLO (American Society of Limnology & Oceanography)? (check one)**

Instructions to Respondents...This question is a filter to make sure you're directed only to questions that are relevant to you. The survey software may skip over some questions and so the question numbering may not be sequential.

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=281)	
	Frequency	%	Frequency	%
yes	77	99%	257	91.5%
no, not currently but have been	1	1%	12	4%
no, never have been	0	0%	12	4%
not sure / don't know	0	0%	0	0%

Note: #19 was a filter question that required a response. Respondents answering "yes" or "no, not currently" to #19 continued with question #20. Respondent answering "no, never have been" or "not sure" to #19 were skipped over the membership-related questions and continued with question #31.

**QUESTIONS ASKED of ASLO MEMBERS ONLY**

**20. To which of these other professional societies/organizations do you belong?**  
(check as many as apply)

Choices	NSF Scientists (n=63)		Not NSF Scientists (n=205)	
	Frequency	%	Frequency	%
AGU (American Geophysical Union)	44	70%	125	61%
TOS (The Oceanographic Society)	21	33%	59	29%
ESA (Ecological Society of America)	18	29%	40	19.5%
ERF (Estuarine Research Federation)	14	22%	53	26%
SIL (International Society of Limnology)	8	13%	27	13%
NABS (North American Benthological Society)	3	5%	16	8%
MTS (Marine Technology Society)	3	5%	8	4%
ECSA (Estuarine and Coastal Sciences Association)	1	2%	2	1%

**21. Are you currently involved in public education/outreach?**

*Instructions to Respondents...Note: We're using the term "education/outreach" throughout this survey to cover public education and/or outreach efforts for teachers and students (U.S. grades K-16: kindergarten through college), general public, community groups, and coastal or ocean managers and policy makers.*

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=269)	
	Frequency	%	Frequency	%
yes	78	100%	194	72%
no	0	0%	64	24%
not sure / don't know	0	0%	11	4%

*Note: #21 was a filter question that required a response. The next set of questions pertained specifically to education/outreach activities for ASLO members. Respondents answering "yes" to #21 continued to Question #22. Respondents answering "no" or "not sure" to #21 were skipped over the education/outreach questions and continued with question #25.*

**QUESTIONS ASKED of ASLO MEMBERS INVOLVED IN ED/OUTREACH ONLY**

**22. Are you required to conduct education/outreach as part of your funding?**

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=193)	
	Frequency	%	Frequency	%
yes	70	90%	96	50%
no	5	6%	88	46%
not sure/ don't know	3	4%	9	5%

**23. Who/what provides your funding for education/outreach?**

Response Categories	NSF Scientists (n=78)		Not NSF Scientists (n=106)	
	Frequency	%	Frequency	%
U.S. Government (all agencies)	78	100%	29	27%
NSF	78	100%	0	0%
NOAA	10	13%	13	12%
Sea Grant	7	9%	5	5%
Academic Institution (college, university, etc.)	15	19%	40	38%
Private Foundation/ Donors	4	5%	4	4%
Unfunded volunteer/ personal commitment	2	3%	31	29%
State/ Local Government	2	3%	12	11%
Misc. Grants	0	0%	11	10%
Employer	0	0%	5	5%
For-profit	0	0%	3	3%
Non-profit	0	0%	1	1%

*Note: This was an open-ended question and some respondents offered more than one response. As a result the total equals more than 100%. Only the top responses are reported here.*

**24. From this list of education/outreach activities, with which are currently involved?**  
(check all that apply)

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=192)	
	Frequency	%	Frequency	%
teach science at the college level: undergraduate (U.S. grades 13-16) or graduate	62	80%	138	72%
contribute data, content or other services to a public website	51	65%	101	53%
consult on projects developing programs or materials for K- 12 teachers and students	35	45%	61	32%
judge science fairs or other science competitions	34	44%	81	42%
present/ talk to K-12 students in the classroom	34	44%	70	36.5%
present to the public or managers/ policy makers at community meetings	30	38.5%	81	42%
conduct lab/ field experiences for K-12 students	26	33%	54	28%
contribute to/ advise media on science content, issues or stories	25	32%	71	37%
present at K-12 teacher workshops or meetings	21	27%	43	22%
involve K-12 students in research	20	26%	34	18%
conduct lab/ field experiences for K-12 teachers	19	24%	32	17%
work on projects developing programs or materials for the public or managers/ policy makers	18	23%	50	26%
involve K-12 teachers in research	18	23%	32	17%
manage or coordinate an education/ outreach program	18	23%	33	17%
provide funding for science educators/ education specialists to work with teachers and/ or the public	15	19%	21	11%
involve the public or managers / policy makers in research	14	18%	37	19%
conduct lab/ field experiences for the public or managers/ policy makers	14	18%	29	15%
none of the above	0	0%	1	0.5%
other	13	17%	26	13.5%

*Note: Some respondents offered more than one response. As a result the total equals more than 100%.*

***Continued: QUESTIONS ASKED of ALL ASLO MEMBERS (not just those involved in E&O)***

**25. What do you view as the greatest public benefit to having scientists/researchers involved in education/outreach? (check all that apply)**

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=266)	
	Frequency	%	Frequency	%
increasing public's understanding of science	66	85%	212	80%
providing accurate information	53	68%	168	63%
increasing public's appreciation of science	53	68%	140	53%
focusing attention on environmental issues	47	60%	152	57%
serving as a model and motivator for teachers & students	43	55%	114	43%
presenting the benefits and relevance of research	41	53%	120	45%
assisting with management, policy & decision making	39	50%	134	50%
other	4	5%	6	2%

*Note: Some respondents offered more than one response. As a result the total equals more than 100%.*

**26. What's the greatest barrier to getting scientists/researchers involved in education/outreach? (check all that apply)**

Response Choices	NSF Scientists (n=78)		Not NSF Scientists (n=265)	
	Frequency	%	Frequency	%
lack of time	66	85%	212	80%
lack of financial support	43	55%	135	51%
lack of staff	31	40%	73	27.5%
no acknowledgment by the institution/agency for such work	28	36%	97	37%
not sure what the public, teachers and students needs	19	24%	62	23%
not sure how to get involved	13	17%	59	22%
scientists aren't interested	13	17%	42	16%
the public's not interested	2	3%	18	7%
other	4	5%	19	7%

*Note: Some respondents offered more than one response. As a result the total equals more than 100%.*

**QUESTIONS #27 to 30 focused on ASLO Member Issues and are not included here**  
*See Full Report for Results*

**31. What do you think is/are the greatest obstacle(s) to the public's understanding of aquatic sciences?**

Response Categories	NSF Scientists (n=66)		Not NSF Scientists (n=180)	
	Frequency	%	Frequency	%
weak/lacking public background information	24	36%	53	29%
poor science education in schools and/or by teachers	18	27%	18	10%
science communication: not engaging, few charismatic speakers, no strategic plan	12	18%	31	17%
media: lack of attention, poor accuracy, focus on sound bites or drama	9	14%	33	18%
lack of public exposure to scientists, content and/or environments	8	12%	15	8%
need public info presented simply and accurately	7	11%	35	19%
weak public understanding of relevance/importance	7	11%	25	14%
lack of public interest, focus	6	9%	25	14%
scientists lack time/support	1	2%	10	6%

*Note: This is an open-ended question. Only the top responses are reported here and due to multiple responses, the total may equal more than 100%.*

**32. What assistance do you need to get more involved in or do a better job at public education/outreach?**

Response Categories	NSF Scientists (n=65)		Not NSF Scientists (n=163)	
	Frequency	%	Frequency	%
more funding and/or help getting funding	38	58%	53	33%
more time	16	25%	44	27%
institution recognition/support (funds, tenure, training)	13	20%	26	22%
staff or funds for staff	7	11%	9	6%
database of materials/ examples/tools	3	5%	10	6%
funder commitment & accountability	3	5%	9	6%
match-making (with educators, opportunities, paid/unpaid jobs, funding sources)	2	3%	27	17%
help presenting/adapting/visualizing scientific info	2	3%	11	7%
info on what works and what doesn't	0	0%	7	4%
training: forums, meeting workshops, online	0	0%	4	2%

*Note: This is an open-ended question. Only the top responses are reported here and due to multiple responses, the total may equal more than 100%.*

**The final questions related to logistics and are not included here**  
See Full Report for Results