

NOSB Past Participant Survey 2016 (Post Baccalaureate)

Introduction

The Consortium for Ocean Leadership annually implements the National Ocean Sciences Bowl as a regional and national, competition based program for high ability secondary students in the United States. Annually, a tracking survey has been implemented to follow students after high school graduation, through college and, for some, graduate school, and into the workplace. Beginning in 2000 and continuing annually since that year, Drs. Tina Bishop and Howard Walters have developed the surveys associated to this now longitudinal tracking study, as well as numerous other instruments and data collection procedures. This year, in Spring 2016, a revised tracking survey was prepared and, with review and input from COL staff, disseminated to past participants who have completed or are near completion of at least a Baccalaureate degree. The survey was distributed by COL using internal databases, and a sample of 15 responses were obtained from post-secondary and graduate students or college graduates. Summary results are as follows.

Demographics

The survey garnered responses from fifteen individuals who were participants in the NOSB program and who have now either completed at least a Baccalaureate degree from a university, or remain in higher education as students at some level. Of the respondents, nine are male and six are female. Eight of the respondents fall within the age band of 18-24, six are from 25-30 years old, and one is between 31-35 years old. Two of the respondents are currently pursuing a BA degree, one is currently in an MS program, and three are in PhD programs.

The remaining students have completed a degree program and have entered the workforce. Respondents reporting that they have completed degrees indicate:

- six have completed BA degrees,
- nine have completed BS degrees,
- three have completed MS degrees, and
- one has completed a PhD.

Degree Completion

Respondents were asked to report the universities where they completed their degrees. This list of institutions includes:

- Texas A&M
- The College of William and Mary
- Rice University
- McGill University
- Columbia University
- University of Colorado, Boulder
- MIT
- UCSD
- University of Rhode Island

- UC, Berkeley
- Emory University
- George Washington University
- University of North Carolina, Wilmington
- University of Pennsylvania
- Stony Brook University
- University of Michigan

Respondents were further asked to identify the primary content area(s) in which they obtained their degrees. These areas included:

- Animal biology
- English
- Biochemistry
- Cell Biology
- Biology
- Computer Science
- Pre-Med
- Sociology
- Aerospace engineering
- Atmospheric and Oceanic Science
- Chemistry
- Ecology, Behavior and Evolution
- Oceanography
- Geophysics
- Statistics
- Philosophy and Political Science
- Marine Biology
- Spanish
- Marine Science
- Economics, Environmental Policy
- Natural Resources and Environment
- Geology

The survey asked respondents to identify, if they knew, any sources of funding that supported their undergraduate or graduate work. The item did prompt the response by providing a list of the federal science programs that have supported NOSB over the past years. Ten respondents provided responses to this item. These responses included:

- NSF (six respondents, two of whom specifically noted REU)
- DAAD
- NASA Earth and Space Science Fellowship
- NOAA
- DOD/SERDP/DCERP

The final two items specific to degree completion included whether or not the respondent completed his/her degree(s) in the area intended at the point of graduation from high school. Ten of the fifteen reported affirmatively to this item. As in previous surveys, this indicates a much higher than anticipated affirmation for these NOSB past participants, as a far higher proportion of undergraduates change majors early in the college experience. Finally, seven of the fifteen respondents indicate that their degree included an emphasis in marine, oceanic, or aquatic science.

Social Connections

Items ten through thirteen explored a number of avenues with respect to the durability of the social connections established among the participants and various stakeholder groups. Among the responses for this set of items, twelve of the respondents indicate they remain in communication with other NOSB participants. Thirteen of the fifteen indicate they remain in communication with their former NOSB coach (high school teacher). Six of the fifteen indicate that they remain in communication or connected to the institution that hosted their respective regional NOSB competition. For those students indicating this last point, three serve or continue to serve as NOSB volunteers, one as a mentor to high school students, and two as current undergraduate or graduate students. Overall, eight of the fifteen students indicated that they have served as volunteers, or continue to serve as volunteers, at their regional or a national NOSB competition. As observed in previous surveys of past-participants, it seems clear that NOSB fosters a durable social community around the competition that persists in complex ways over time.

Employment

Items fourteen through seventeen asked a variety of questions related to employment for those respondents who are currently in the professional workforce, post-baccalaureate degree or post-graduate. Individuals were asked to describe their current employment, either by naming the company or describing the nature of the work itself. Responses to this item included:

- Thermofisher Scientific, clinical account manager
- Circulation Specialist at Tidewater Community College's library
- The MathWorks
- Gallery Assistant at an art museum
- Graduate Research Assistant in Atmospheric Science
- NOAA at CIRES
- PostDoc researcher at the Marine Biological Association of the UK
- Research Associate with ECS Federal, supporting NOAA Fisheries Office
- Healthcare consulting
- Nielsen.

When asked to describe the nature of their work, the responses included:

- Sales
- Business systems

- Software development
- Research
- Policy management and development, and
- Data analysis.

When asked to describe their longer term career goals, the respondents described a variety of science related professional fields and activities. These included research, law, policy administration, government service, medical research and clinical practice, and conservation and environmental issues work. Finally, two of the respondents indicated they are employed with previous NOSB team mates or at agencies they first encountered in the NOSB program. These included, specifically, NASA and NOAA.

College Experiences, Fellowships, and Internships

Items eighteen through 22 focused on the relationship of NOSB to the respondents college and career ambitions, and explored a variety of issues related to college matriculation such as fellowships and internships. Respondents, when considering NOSB and their eventual education and career pathways, noted that NOSB helped them make connections between their education and career with interests and understandings of environmental conservation and related stewardship issues. Other respondents described how NOSB helped them refine their area of content interest from general science areas, to areas more specifically addressed within the NOSB content.

Numerous respondents described internships, fellowships, or work opportunities that were embedded in their college experiences. These included:

- Research internships of various types (genetics, marine sciences, demographics, geography, law, and environmental areas);
- Volunteer opportunities or part time employment opportunities in science laboratories, agencies, or related research programs, or in private industry.
- One respondent noted that he/she was a Hollings Fellow, and conducted undergraduate research in air chemistry;
- One respondent was a Knauss Fellow with NOAA/Estuarine Reserves Division, Coastal Program; and
- One respondent received the NSF Carol B. Lynch Fellowship at CU Boulder at the CIRES laboratory.

Research Related Items

Items 23 through 25 captured a final set of information related to current issues in the research literature for science learning (which has been previously reviewed and updated for this current NOSB study year in a separate report). When asked about their interest in learning science (item 23) several students used language including “passion, curiosity, enjoyment, inspiration, and wonder” to describe their motivation for studying and working in science. Several further described their high school teachers as instilling that vision of science in their classrooms. Such

description supports the continued findings in the research around issues of inquiry and constructivism in science learning. Further (item 24) finds that eight of the fifteen respondents were prompted to participate in environmental stewardship activities because of their participation in NOSB. These activities included green dorm initiatives in college, beach cleanups, and work with local and community environmental organizations. These observations are supportive of research findings that have connected formal STEM education with lifelong interest and pursuit of environmental stewardship and conservation activities.

Finally, item 26 asked respondents if they perceive that awareness of the ocean has evolved or *changed in society* at this point in their lives from their perspective (having a background connection to oceans through NOSB). Twelve respondents provided feedback to this item, with nine of the twelve responding affirmatively: they perceive that there is greater visibility and awareness of ocean issues in society, and that this continues to grow. One respondent noted: “within my generation, I think awareness is slowly growing as to how important [the ocean] is to humanity and how much damage is being done to it.” Another noted: “Yes, awareness has certainly grown given the crisis of climate change. I can think about this locally as Hurricane Sandy caused major damage to some parts of NYC. Globally, the rise of sea level endangers small island nations and will cause great instability to all nations.” Other respondents described the impact of damaging natural and anthropogenic events (pollution), the role of mass media and entertainment, and the growing understanding of global climate issues as contributing to increased ocean awareness.

Summary

While the number of respondents to this current survey is small, they represent an informed sample of past NOSB participants who have completed or are nearing completion of their initial college degrees or graduate programs. They are distributed widely across the United States, and in one case internationally. And they possess a unique view of the issues to which they speak. They have participated in the NOSB; they are connected educationally and in many cases vocationally to STEM areas. They remain connected in many cases to the NOSB community.

The participation of these respondents in this survey suggests they were significantly impacted by the NOSB to engender a continued interest in communications with the program. This suggests, as noted in previous reports, that NOSB is creating a durable, social community that continues to be connected to STEM endeavors in higher education, government and private industry, and the research community. To the question of the broader impacts of funded informal science education programming, these respondents and their responses continue to point to the NOSB as a national success story.