

# Assessing the State of Graduate Programs in the Ocean Sciences



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## OVERVIEW OF SURVEY DATASET

In 1978 survey data was collected on the status of graduate students in oceanography by the ten members of the Joint Oceanographic Institutions (JOI) (Nowell and Hollister, 1988). These data, which accounted for 65% of the graduate students in residence in oceanography, explored demographics of admission, degrees granted and patterns of student support. These surveys continued, and in 1994, with the formation of the Consortium for Oceanographic Research and Education (CORE), the set of institutions was expanded to include a broader range of graduate programs in ocean sciences. Presently, the survey is sent to the 46 academic members of the Consortium for Ocean Leadership. The scope of data collected has been expanded to also include faculty demographics. The most recent survey was completed in mid-summer 2011 for academic year 2010-2011, with 28 graduate programs responding.

Only 35% of terminal degree recipients become academics!

10 students graduate with a MS for every 11 students graduating with a PhD!

### Highlights of 2010-2011 Survey Data

ADMISSIONS	IN RESIDENCE	GRADUATED
3110 Applications	2223 Students	263 Masters (57 continue to Ph.D.)
990 Offers Made	79% U.S. Citizens	146 Ph.D.
618 New Enrollments	85% White	
23% Biological Oceanography and Marine Biology	7% Asian American	
14% Physical Oceanography	6% Hispanic	
	2% African American	
	1% Native American	
	92% Financially Supported	

286 Students Enrolling

47% 53%

18 Leave w/o Advanced Degree

77% 23%

1159 Master's and PhD Students  
 M: 47% F: 53%

$N = \text{Students}$   
 $T = 4 \text{ Years}$   
 $\frac{\partial N}{\partial T} = +32$

112 Graduate w/Master's Degree

44% 56%

123 Graduate w/PhD

51% 49%

Academia Job 14% Non-Academia Job 48%

\*Missing percentages unknown.

Academia Job 63% Non-Academia Job 22%

## FLOW MODEL METHODOLOGY

For continuity, the results presented in this flow model are from the 14 institutions that reported on the status of their graduate students in their oceanography department for four years; 07-08, 08-09, 09-10, and 10-11. Primary data are the fluxes of entering students, terminal Masters and doctoral degrees and the concentration of ocean science graduate students. The rate of increase of the concentration of students ( $\partial N/\partial T$ ) is increasing by 32 students per year. The flux of students not receiving degrees is not directly recorded in the survey, so is calculated by the balance of entering students and terminal degree recipients and students leaving without a degree and the increasing number of students in residence.

## CHALLENGES

**Curriculum:** Only one third of ocean science graduate students have initial employment progressing toward a traditional academic career (and there is unmeasured attrition after an initial postdoctoral appointment). Are oceanographic institution's curricula reflecting the needs of the students and providing necessary background and skills?

**Mentoring:** Society needs scientifically trained minds capable of working in all facets of science. "It is critical that oceanographic institutions mentor their graduates...who seek or end up in careers outside of academia" (Kappel, 2011). Do oceanographic institutions provide mentoring that supports the success of all of the students and values this diversity?

**Gender:** Over the past three decades, the proportion of women entering ocean science graduate programs has increased greatly (1980s: ~30%, 07-11: 53%) and continues to do so. Presently, more men earn PhDs while women earn more terminal Master's degrees. How can we better understand the causes?

## FUTURE WORK

What constitutes a successful graduate program in the ocean sciences? Students, faculty, administrative leadership, and federal agency funders may measure success in varied ways and with differing emphasis:

- Strong graduation rates
- Opportunities for employment
- Student population reflecting sources of funding
- Serving a diverse population (gender, ethnicity, culture)
- Insuring acquired skills reflect workforce needs

Many of these potential metrics for success can be answered by analyzing the dataset at hand and others require additional data to be collected. A compiled dataset could allow these metrics to be used to ask which programs are successful, how these programs achieve success, and synthesizing results to share as best practices for the community.

## WHAT QUESTIONS WOULD YOU LIKE EXPLORED?

Kappel, Ellen. "Three Examples of Failure...Or at least They Thought So." *Oceanography* 24.4 (2011): 5. Print.  
 Nowell, Arthur and Charles Hollister. "Graduate Students in Oceanography: Recruitment, Success, and Career Prospects." *EOS The Oceanography Report* 69.36 (1988): 834-835,840-843. Print.