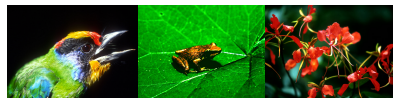


Increasing Diversity in the Conservation Sciences through Active Teaching, Faculty Communities, and Conservation Leadership

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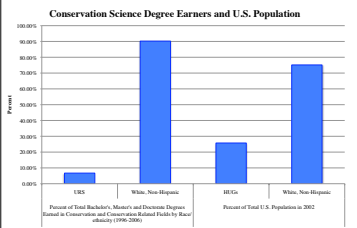
BACKGROUND

Between 1996 and 2006 Non-White Hispanics, African-Americans, and Native Americans/Alaska Natives students (collectively called underrepresented students (URS)) made up only 7% of students graduating with a conservation or conservation related degree¹. This despite that in 2002 Non-White Hispanics, African-Americans, and Native Americans/Alaska Natives made up 27% of the U.S.A. population^{1,4}. In comparison, the fields of sociology, education, math, and computer and information sciences graduated more than twice as many URS¹ for the period 1996-2006. White Non-Hispanic students earned 90% of all conservation related degrees from 1996-2006¹. Although no longer a matter of legal concern, for underrepresented students (URS) the effects of educational discrimination are still felt at all educational levels. When URS begin school, many enter into the science, technology, engineering, and mathematics (STEM) pipeline: a system of training that begins in primary school and ends with the graduated qualified working scientist⁵. For a variety of reasons, a high percentage of URS egress, or 'leak', from the STEM pipeline⁶ before completing their training. These reasons can include academic tracking (the specific process of separating students along specific curricular paths like college-bound or vocational training⁷, lack of academic preparedness, academic isolation, and social isolation. The capacity challenge in the conservation workforce thus can be attributed to a combination of historical^{8,9}, educational¹⁰, social¹¹, and financial barriers¹² URS face to becoming professional conservation scientists.

THE CAPACITY CHALLENGE

What are the barriers URS face to becoming conservation science professionals?

- Historical
 - Separate but equal policies⁸; area of focus i.e. environmental justice vs. wilderness wildlife, and recreation⁹
- Educational
 - Separate but equal policies⁸; tracking^{13,14}; academic isolation⁶; lack of rigorous college preparation⁸
- Social
 - Social isolation¹⁵; lack of mentorship^{16,17}
- Financial barriers
 - Loan aversion^{12,18}; burdensome work hours per week⁶



OUR HYPOTHESIS

Our hypothesis is that we can increase the representation of students from underrepresented groups if we work to create conservation science communities that foster academic and social integration and are characterized by culturally competent mentoring, active teaching methods, access to research opportunities, and access to financial support.



DI staff mentor a high school student.



DI high school interns learn to build annotated bibliographic libraries.



At the Museum, in 2007, DI staff facilitate a discussion with New York City Metropolitan area conservation educators.

OUR RESPONSE

Recognizing the need to increase diversity in the field, the Center for Biodiversity and Conservation (CBC) at the American Museum of Natural History (AMNH) has initiated the Enhancing Diversity in Conservation Science Initiative (DI). The DI's current efforts are dedicated to:

1. Identifying and supporting the needs of faculty members at Minority Serving Institutions (MSIs) in order to promote student diversity in conservation-related fields;
2. Promoting the recruitment, achievement and success of students and early career professionals from underrepresented groups, with the intention of encouraging fidelity and retention in the field of conservation;
3. Building bridges between the CBC/AMNH and MSIs on topics related to the conservation of cultural and biological diversity and;
4. Inspiring, developing, and supporting tomorrow's emerging conservation leaders.

At this time, we work toward these goals by generating interest among MSI faculty for education research, training in active pedagogical methods, and a conservation science teaching community. Our Faculty Focus Groups conduct educational research on their campuses and in their own classrooms. We also provide the materials and resources for teachers seeking to improve their conservation teaching practices. Moreover, to maintain the sense of praxis in community that scientific teaching and active teaching require we encourage members to use webpages we provide on our servers or those of ConserveOnline.

ACTIVITIES & PRELIMINARY RESULTS

Culturally Competent Mentoring

'Cultural competency requires effectively providing services to people of all cultures, races, ethnic backgrounds and religions in a manner that respects the worth of the individual and preserves their dignity'¹⁹. Quick Reads on Diversity: Mentoring Students from Historically Underrepresented Groups, a first in a series of DI generated educational resources, integrates the concepts of culturally competent mentoring and developmentally appropriate mentoring. This document is intended to give faculty and administrators a quick practical overview of mentoring and easy to remember tips on mentoring students of color.

Active Teaching Methods

Another project of the CBC, the Network of Conservation Educators and Practitioners (NCEP, <http://ncep.amnh.org>) works extensively throughout the world to train conservation educators, informal and formal, on scientific teaching including active teaching and active teaching pedagogy²⁰. The DI has

worked closely with NCEP to recruit and train faculty from MSIs. To date NCEP has worked with 18 faculty members from 15 different MSIs.

Access to Research Opportunities

The DI hosts high school junior or senior interns. Much of the work interns do is primary literature research on aspects of environmental science and STEM educational achievement among underrepresented students. Some interns come to the CBC from the national Research Experience for Undergraduate (REU) program. Other interns find us via the web of the networks of CBC staff.

Access to Financial Support

Accessing financial support is an important factor for those considering studies in conservation. We are actively looking for an organization to partner with to build and maintain a database of financial opportunities and useful tools, such as preparing applications and preparing for interviews.

Preliminary Results of A MSI Faculty Needs Survey

In October 2008, the Diversity Initiative asked faculty members from minority serving institutions throughout the US to gauge their impressions of diversity in conservation biology at their respective institutions and to identify their interest in the DI's proposed activities. The majority of the respondents were professors who classified their colleges as Hispanic-Serving Institutions followed by those that identified with Historically Black Colleges. Forty-one percent of the faculty believed that it was unlikely to expect more than 10% of their students to enter careers in the field of conservation. Many of the respondents replied that there was great need to enhance their current syllabi with active teaching and active learning strategies. Of the number of activities, workshops and resources proposed for implementation, great interest was expressed in attending a workshop designed to foster the development of leaders in conservation and conservation-related fields at minority serving institutions. More than half of the respondents agreed that tomorrow's successful conservation leaders should possess the ability to use an interdisciplinary approach to problem solving, cross-cultural learning and team building skills, and program management strategies.

BUILDING CONSERVATION LEADERSHIP

From our interactions with faculty members at MSIs, we have come to understand that our goal should be not only to increase the number of URS in conservation, but also to foster the development of conservation leadership among URS so that they can in turn participate in shaping the future of the field. Manolis et al., *in press*²¹, describe two types of conservation leadership research (in which we include teaching as a form of educational research) and integrating conservation (here we also include ecology) science into policy, management and society-at-large. In our discussions with school administrators and faculty at MSIs on conservation leadership they expressed various perspectives including:

Some faculty perspectives:

1. Curriculum is the place to begin bringing awareness to university administration about ecology and conservation leadership.
2. Curriculum change can also be an effective way to begin to build conservation leadership among students.
3. Some schools still lack an institutional tradition or an institutional culture of environmentally sustainable practices, despite extensive conservation and ecology curricula.

Leadership at any institution will require:

- acquiring and assessing core leadership skills and competencies;
- communicating and bringing attention to a specific ecological or conservation problem;
- managing time, projects, people and resources effectively;
- bringing diverse people, talents, and views to bear on the issues; and;
- assessing progress regularly and changing course when appropriate.

There is a concern that lack of an institutional culture of environmentally sustainable practices on some MSI campuses, might prove to be a barrier to creating curricular change. Nonetheless MSIs offer perspectives that upon investigation may yield valuable insight. MSIs can play an especially critical role in conservation leadership within teaching and research. Because leadership involves cultivating and targeting diversity as a priority^{22,23}, a practice in which MSIs have been engaged as a mission, MSIs are in the unique position of having been on the cutting edge of these areas of leadership for decades. For example MSIs have offered URS various leadership opportunities²³, an opportunity for URS to respond to community needs²⁴ and a place for URS to be part of empowering communities²⁴.

JOIN US!

You are invited to participate by:

- Testing, reviewing, and adapting modules in the classroom
- Attending one of our workshops on Active Teaching
- Joining our Faculty Focus Group for MSI Educators
- At ConserveOnline (www.conserveonline.org) in the workspace: Minority Serving Institutions Faculty Focus Group

Contact us at biodiversity@amnh.org



REFERENCES

References are provided on the accompanying sheet.