1. Committee meetings. In 2013, the BSA Committee on Human Diversity met at the BOTANY meetings in New Orleans, Louisiana. During this meeting Ann Sakai provided an update about activities to increase diversity in the BSA. In addition, she notified the committee that BSA will sponsor the PLANTS program once NSF support is over. After our meeting at BOTANY 2013, several emails were sent to committee members to request input for the Diversity Lunch Speaker and new committee members. The list of nominees for the committee was sent to BSA Board of Directors.

The Committee will meet Sunday July 27, 11:00 am-noon at BOTANY 2014. Reminders have been sent to the Committee.

2. Broadening Participation Symposium at BOTANY 2013. During the 2012 Diversity committee meeting, Anna Monfils suggested a symposium on the topic of broadening participation for the 2013 meetings. Following this suggestion, Anna Monfils and Ann Sakai worked on the symposium ‘Broadening Participation: Recruiting and Retaining Outstanding Scientists in the Botanical Sciences’. The symposium was well attended at BOTANY 2013. The abstracts of the presentations can be found at the end of the report. This symposium was co-sponsored by the BSA Ecology section, BSA Teaching section, BSA Systematics/ASPT, and with the support of iDigBio. Lastly, The Plant Science Bulletin (2013, vol 59: 162-163) provided a short summary of this symposium.

3. PLANTS Program. The Botanical Society of America was awarded a five-year NSF-funded PLANTS grant (Preparing Leaders and Nurturing Tomorrow’s Scientists: Increasing the diversity of plant scientists) directed by Ann Sakai (UC-Irvine), Ann Hirsch (UCLA), and Heather Cacanindin (BSA) in 2011. The goal of this program is to increase the number of undergraduates from underrepresented groups who attend the annual BOTANY meetings, and to increase their level of academic excellence and motivation to pursue advanced degrees in the plant sciences. The program for the PLANTS students is based on extensive mentoring by BSA
volunteers (faculty, postdocs, PLANTS alumni) at the meeting. In addition, the program includes a workshop on how to apply to graduate school and in 2013 included a new Student Writing Workshop. The continued involvement of the Diversity Committee in publicizing this program and selection of students, and the enthusiastic support of the BSA membership as writing mentors, PLANTS mentors, and as panelists for workshops is greatly appreciated. The support and expertise of Heather Cacanindin has been invaluable.

In 2013, a total of 15 students were selected to attend Botany 2013. In 2014, we had 40 applicants and 13 will be attending Botany 2014.


4. Enhancing Scientist Diversity in Plant Biology Luncheon. In 2013, Dr. Muriel Poston gave a talk entitled “Cultivation of the next generation of plant biologists”. In 2013, several emails were sent and a meeting was held with committee member Juan Zalapa to come up with issues and speakers that would be of interest to the Lunch audience. In 2014, Dr. Michael J. Dockry - Forest & Wildlife Ecology (http://www.mikedockry.net/) will be the speaker for the lunch. Michael holds a non-academic position at the USDA.

5. Society for Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS). The BSA currently sponsors two undergraduate poster awards ($500 each) at the annual SACNAS meetings. SACNAS is an organization devoted to advancing Hispanics, Chicanos & Native Americans in Science. The 2013 SACNAS meeting was held in San Antonio, Texas, Aug 3-6, 2013. The BSA co-sponsored with the American Society of Plant Biologists (John Harada, Diversity committee chair) up to half of the cost of a booth and a symposium (Living With the Neighbors - How Plants Cope With Other Organisms), with speakers Dr. Linda Walling (linda.walling@ucr.edu), Dr. Brenda Molano-Flores (molano1@illinois.edu), Dr. Monica Medina (mmedina@ucmerced.edu), and Dr. Gustavo MacIntosh (gustavo@iastate.edu). This symposium was well attended and Brenda Molano-Flores and Ann Sakai will report back to BSA about the level of interest of SACNAS participants in the booth and symposium. The Plant Science Bulletin (2013, vol 59: 163) provided a short summary of our involvement at the SACNAS meeting.

Prepared by Brenda Molano-Flores and Ann Sakai, Diversity Committee Chair and past Chair.
Broadening Participation - Recruiting and Retaining Outstanding Scientists in the Botanical Science

Organized by Ann Sakai and Anna Monfils

Monfils, Anna [1], Sakai, Ann [2].

Broadening Participation - Recruiting and Retaining Outstanding Scientists in the Botanical Sciences.

Many of the upcoming crises facing the U.S. and the planet, such as climate change, loss of biological diversity, invasive species, and sustainable agriculture, will affect future generations. Addressing these issues will require innovative training of young scientists and expertise that crosses traditional discipline boundaries and utilizes new technology, forms of communication and research techniques. These issues also will require the creativity, originality, and participation of a diverse community of scientists. The vitality of the sciences depends upon inclusion of people from the broadest possible base. The purpose of this symposium is to share some of the best practices to encourage recruitment and retention of all students, and particularly URM (underrepresented minority) students. What are the best practices to recruit and retain a diverse community of young scientists who will help maintain the creativity and vitality within the botanical sciences? Are there particular pedagogical methods, curricula, or types of institutional support that are good for all students and especially effective for students from underrepresented groups? How can some of these methods be implemented by instructors at institutions ranging from small teaching institutions to large research universities, and across botanical disciplines? Speakers will discuss successful teaching approaches in the introductory core biology courses, mentoring strategies for students and academics, recruitment of a diverse community of scientists, overcoming the dual hurdles of science and technology as it relates to current digitization initiatives, and curricular and institutional programs to promote diversity in the sciences. We will encourage audience participation on how to apply these ideas to specific botanical disciplines and research initiatives. With a Botany 2013 conference-wide theme of Celebrating Diversity, this symposium seems timely, relevant and of broad appeal to graduate students, postdocs, and faculty.

Skog, Judith [1], Skog, Jeremy [2].

Biodiversity, Bioinformatics, Bias, and Beyond.

The "Field of Bachelor's Degree in the United States: American Community Survey Reports" from the U.S. Census Bureau notes that out of 56 million people with bachelor's degrees, 20 million are in STEM fields. However, there are great differences within these 20 million people for field of study according to ethnicity or gender, and only about 1 million of them hold degrees in interdisciplinary areas. Additional data provide information on other science degrees and workforce. A new report from NSF on "Women, Minorities and Persons with Disabilities in Science and Engineering" shows mixed results for several areas of increasing participation in the sciences of
underrepresented groups. More students from these groups are showing interest in a
career in science areas, but not all fields of study are showing similar gains and interest is
mixed across the various ethnic groups, along with differences in preferences by gender.
Discrepancies increase, according to both these reports, as the recipients enter and move
through the workforce. Some of the examples and data from these reports will be
presented and examined in this discussion in the light of increasing opportunities for
integration of biology and informatics and the availability of big data for furthering
research analysis. New opportunities will require examining old views, creating new
ways of attracting those groups now underrepresented to take up challenges, improving
mentoring and the mentors, and ameliorating implicit bias in training, hiring, promoting
and rewarding in academia and beyond. Documented approaches and support for proven
methods need to be more fully embraced and disseminated through societies and
institutions to fully prepare a diverse student population capable of meeting the
challenges of integrated research.

Bart, Hank [1].

Increasing the participation of African Americans in ecology and evolutionary biology:
experts, attitudes and interventions.

The underrepresentation of African Americans in ecology and evolutionary Biology,
especially field-oriented and museum-based professions such as taxonomy, is striking.
What is particularly troubling about this is that decades of investment in programs
designed to broaden the participation of African Americans and other underrepresented
groups in STEM is having measureable impact on numbers and the representation of
African Americans in biomedical fields is robust. Why are so few African Americans
pursuing advanced study and careers in ecology and evolutionary biology? The fact of
the matter is, no one really knows. A team of highly accomplished, African American
ecologists and evolutionary biologists has recently assembled to study this issue and find
solutions. The plan is to survey the attitudes of African Americans toward careers in
ecology and evolutionary biology and develop interventions to designed remove the
roadblocks. In this presentation, I will review the scant literature on this subject, describe
our thinking in developing the attitudes survey, and provide very preliminary details on
potential interventions.

Haak, David [1], Freeman, Scott [2].

Closing the Achievement Gap: Evidence-Informed Teaching and Learning in Biology.

If we bring the same level of rigor to our teaching as our research, then we should design
our courses based on data. Together with my colleagues, we have been working to
evaluate the impact of different course designs-- from “highly-structured”, where
students are required to prepare for class sessions that focus on intensive active learning
exercises, followed by weekly practice exams, to “low-structure”, much closer to a
traditional lecture format--on student performance in an introductory biology course for
majors. I will present results from our research and address questions about wether
structured interventions can close the achievement gap between students from advantaged and disadvantaged backgrounds enrolled in STEM courses. In the process of this research we have addressed interventions that promote culturally aware teaching and therein have a disproportionate benefit for high-achieving students and for students from disadvantaged backgrounds. Finally, I will discuss work on metacognition and learning and how we have developed approaches for evaluating the equivalence of students and assessments when comparing measures of achievement.

**Herrera, Jose** [1].

**Talking about leaving -- botany and related disciplines, an NSF perspective.**

Hidden in many of the statistics about the lack of participation by Underrepresented Minority (URM) students is the worrisome detail that most URM students, who are successful in STEM, disproportionately choose careers in health-related fields. The reasons URM students opt not to pursue a career in field-related or botanically-focused professions are numerous, interrelated and complicated by sociological, economic and cultural considerations. Yet, solving many of the most pressing contemporary ecological problems will require ideas and the intellectual capital of the fastest growing demographic of our nation. Many STEM disciplines, including botany, lack a diversity of viewpoints that has limited our ability to manage important scientific challenges. This talk will remind the audience of several common misconceptions about URM students and describe a few of the widespread challenges that prevent or stifle URMs from considering STEM careers that ultimately undermine their needed contributions to such fields. Several federally-funded programs have shown promise to mitigate these challenges and the talk will focus on highlighting place-based strategies that engage URM students in STEM and encourage their entry into field-based and botanical careers. Moreover, since many of these strategies are place-based we will endeavor to enter into collective and interactive conversations with the audience to share some commonly-used strategies used in a diversity of institutions by a variety of professionals within biology. Finally, the talk will briefly describe programs within the National Science Foundation (NSF) that directly or indirectly fund innovative and evidence-based strategies to recruit and retain URM students within STEM and highlight several examples of NSF-funded projects that have successfully addressed the need to encourage URM students to pursue non-health related careers.

**McKenna, Mary** [1].

**Growing Minority Botanists: “Roots” of Engagement for Undergraduates.**

The national under-representation of African Americans and other minorities in graduate programs and professional careers in botany, ecology, and environmental science is an area of critical concern for the future of these fields. In 2004, faculty at Howard University established the Environmental Biology Scholars program with support from NSF, to develop a community of African-American undergraduate researchers prepared for graduate programs in botany, ecology, and environmental biology. Key aspects of this
program are (1) early recruitment of talented and highly motivated students (2) early and sustained research experiences (3) close mentoring by Howard faculty (4) strong peer mentoring (5) community-building through regular meetings and activities for all participants (6) opportunities to present research at scientific meetings, and (7) effective partnerships with the scientific community. Our students benefit from participation in REU programs throughout the US and internationally (OTS, Ghana), and in particular, we formed a strong partnership with UVA’s Blandy REU program. Close partnerships with graduate programs at U Michigan, UC Davis, and UC San Diego provide further training for our students. Diversity outreach programs in scientific societies such as PLANTS (BSA) and SEEDS (ESA) are another important tool that provides a glimpse of the professional life of a scientist and empowers students to expand their scientific networks. So far, nineteen Environmental Biology Scholars graduated from the program and fourteen students are current participants. Ten of our graduates entered masters programs in botany, ecology or environmental science (half at Yale FES and U Michigan), and four are currently pursuing a doctorate (Duke, Berkeley, Texas Tech, and Columbia U). Although the biology students at Howard (and HBCU’s generally) have traditionally been more attracted to medical careers or research in biomedical areas of biology, creating a community of inquiry and peer support along with sincere and sustained faculty mentoring can be transformative.

O’Neal, Christopher M. [1].

Increasing Retention of Underrepresented Groups in Biology: The Role of the Graduate Student Teaching Assistant.

Despite impressive improvements in the retention of some underrepresented minority (URM) groups in the biological sciences, other groups continue to lag behind in their proportional representation. Pushes from the National Science Foundation, academic institutions and other organizations have focused on faculty mentorship, bridge programs, and undergraduate research opportunities as mechanisms for addressing the retention gap. Little has been done, however, to empower graduate student teaching assistants to positively impact URM retention in the classroom, the teaching lab, and in office hours. This is a particularly unfortunate oversight in the biological sciences, where TAs at large institutions account for a majority of the contact time students have with instructors. This presentation will review some of the research on how instructor behaviors in and out of the classroom impact students’ decisions to stay in or leave the sciences. Participants will have the opportunity to explore qualitative data collected at the University of Michigan from students in gateway sciences courses, including biology. We’ll close with a discussion on preparing TAs to teach “for retention,” and look at some best practices that arise from our research.