

# HUMAN DIVERSITY AND THE OPPORTUNITIES TO ENGAGE STUDENTS IN SMALL COLLECTIONS

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# Disclaimer

Though NSF, BIO, DBI and the programs that I manage (CSBR & ADBC) support diversity and inclusion in all projects that they fund, including Natural History Collections.

My comments do not verbatim reflect the position of any of these entities.

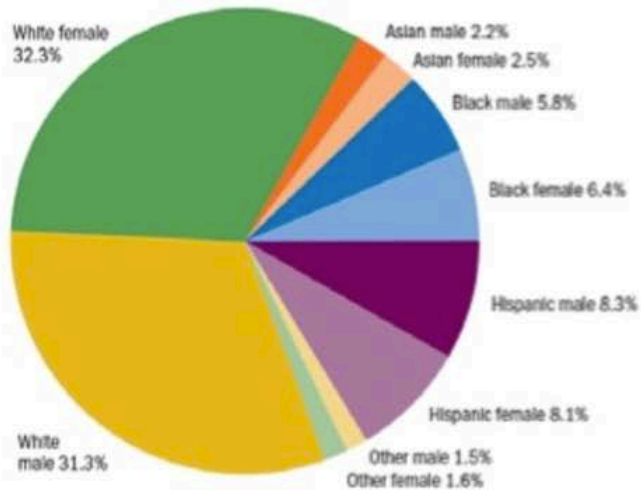
# Overview

- The Context
- Finding Students who are URMs
- Recruitment and Retention
- Job opportunities
- Benefits of a Career in Natural History Collections
- What does the community Gain
- Resources for Supporting URMs
- Challenges



# The Context

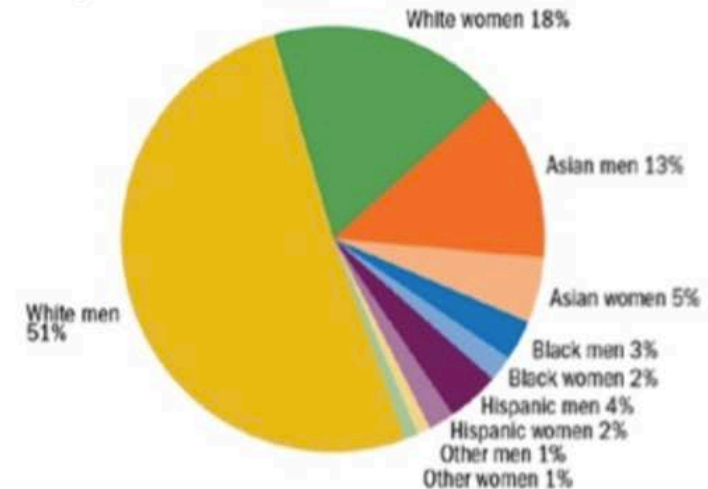
Resident population of the United States, by sex and race/ethnicity: 2010



NOTE: Hispanic may be any race. Other includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and multiple race.

SOURCE: *Women, Minorities, and Persons with Disabilities in Science and Engineering*; [www.nsf.gov/statistics/wmpd/](http://www.nsf.gov/statistics/wmpd/).

Scientists and engineers working in science and engineering occupations: 2010



NOTE: Hispanic may be any race. Other includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and multiple race.

SOURCE: *Women, Minorities, and Persons with Disabilities in Science and Engineering*; [www.nsf.gov/statistics/wmpd/](http://www.nsf.gov/statistics/wmpd/).

Source: “Early-career researchers the missing link for STEM diversity” (Maggie Hardy)

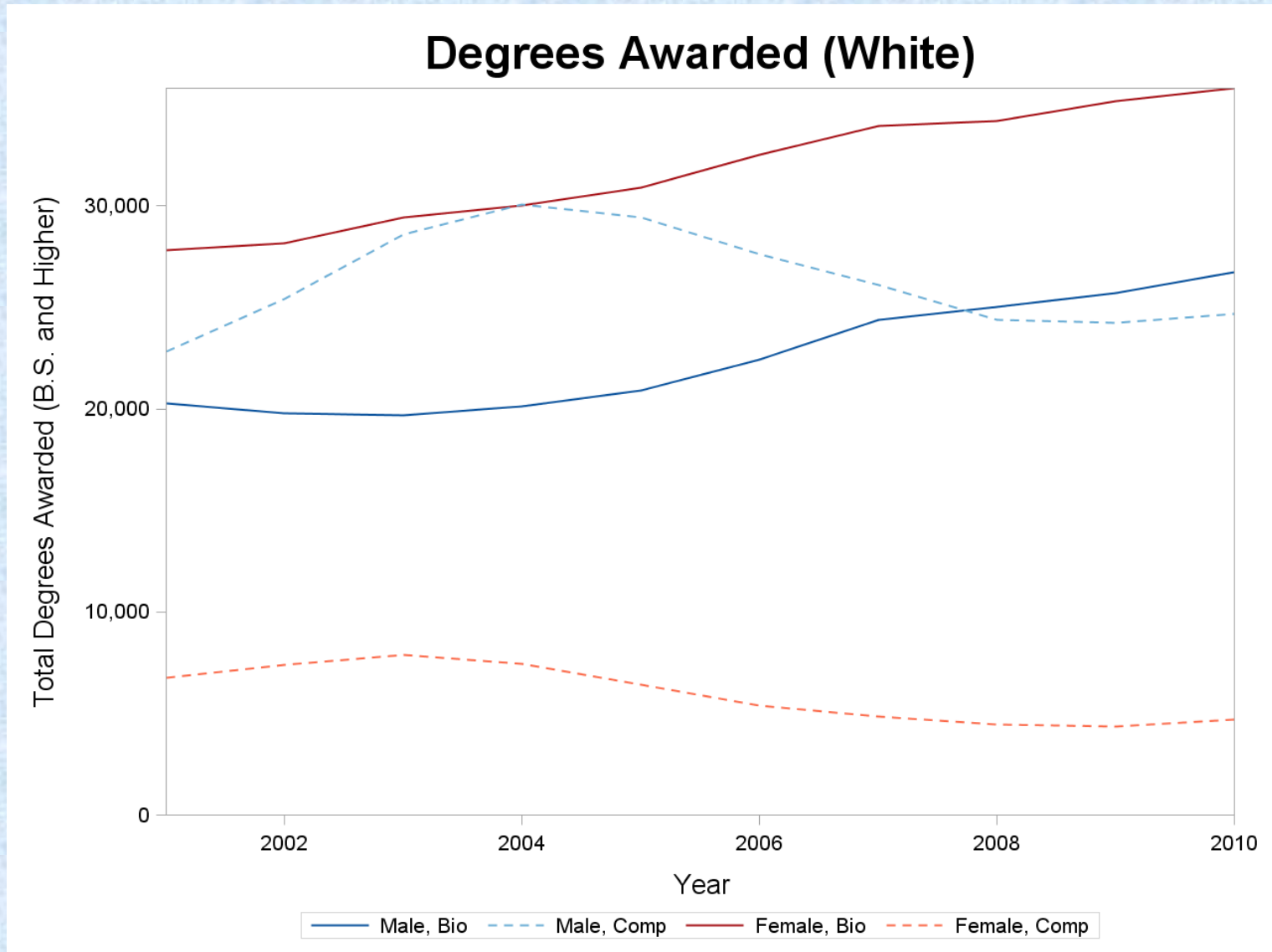
The ethnic make up of the STEM workforce is not representative of the general population.

“Native American and Alaska Native students earn bachelor’s degrees in STEM fields at about the same rate as white students (21% for women and 27% for men), but are not employed in STEM fields proportionally. **The number of black and Hispanic students earning degrees in STEM fields is lower than the national average, and their employment in STEM – once again – isn’t proportional.**” (Maggie Hardy, 2015)

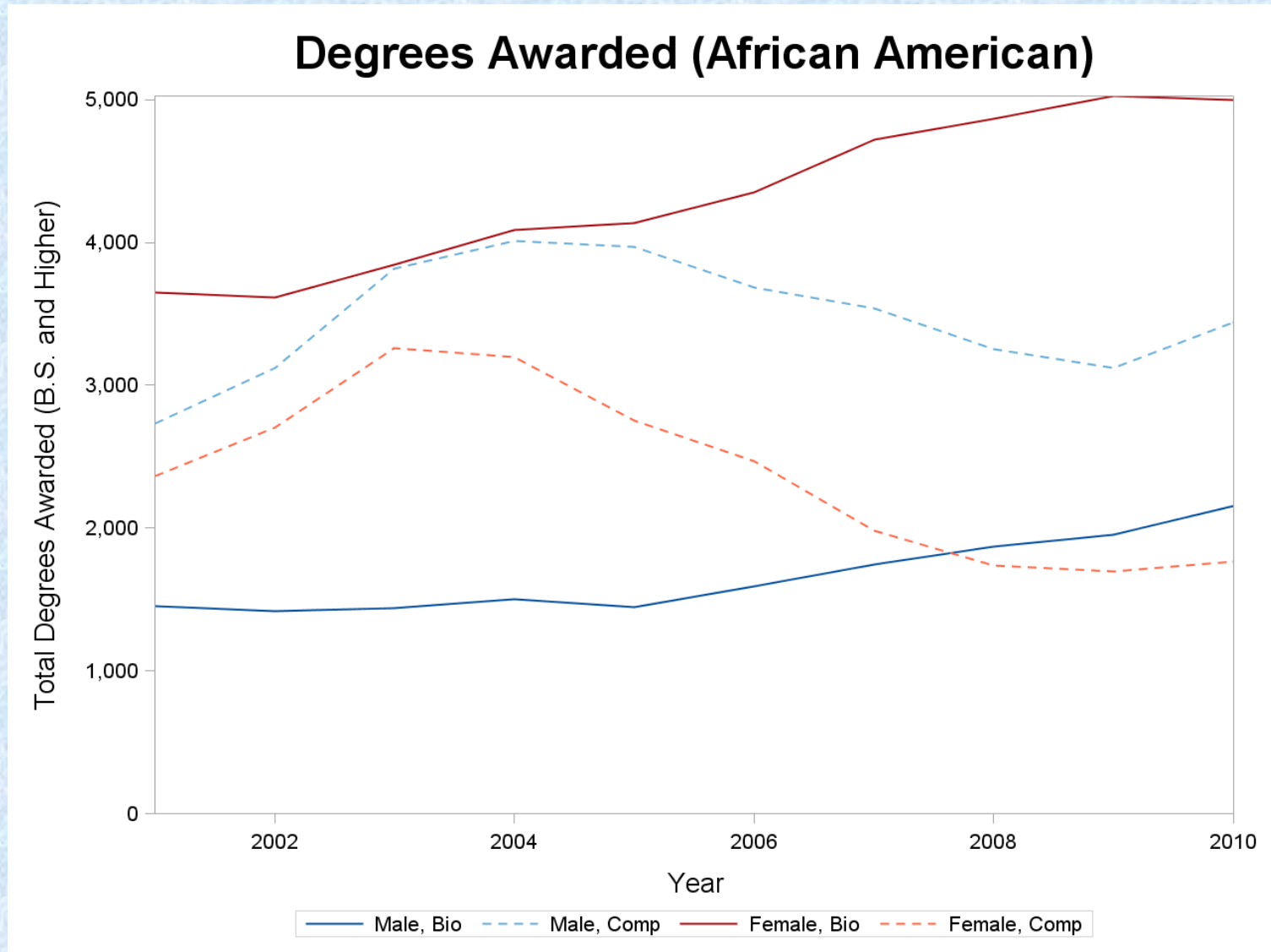
# Resources for stats

- NSF Broadening Participation Report 2011-12
- American Community Survey Reports from the Census Bureau with 2011 data on degrees
- US Dept. of Education: National Center for Educational Statistics
- The Chronicle of Higher Education

# NSF report B.S. and higher degrees



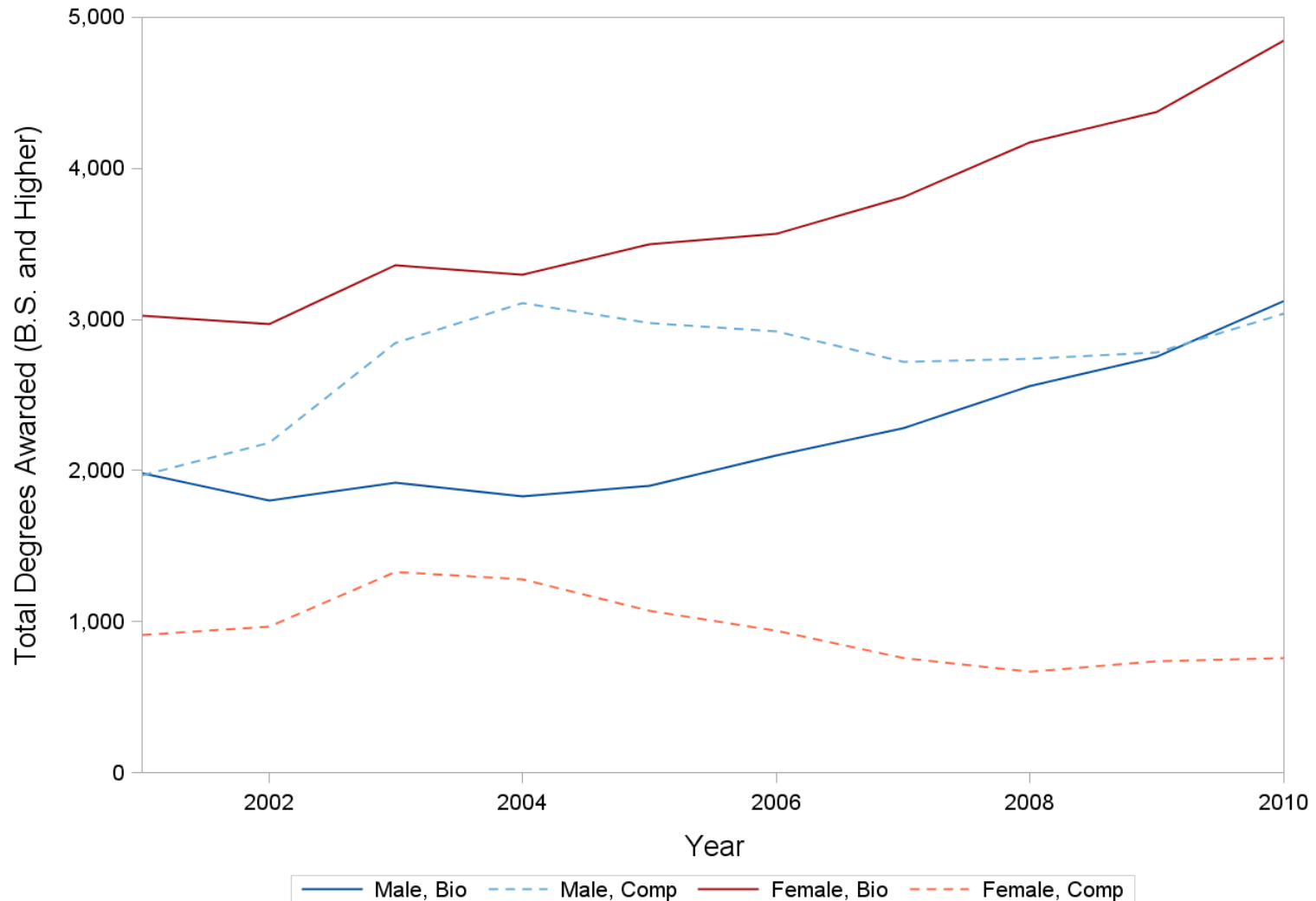
# B.S. and higher – African American





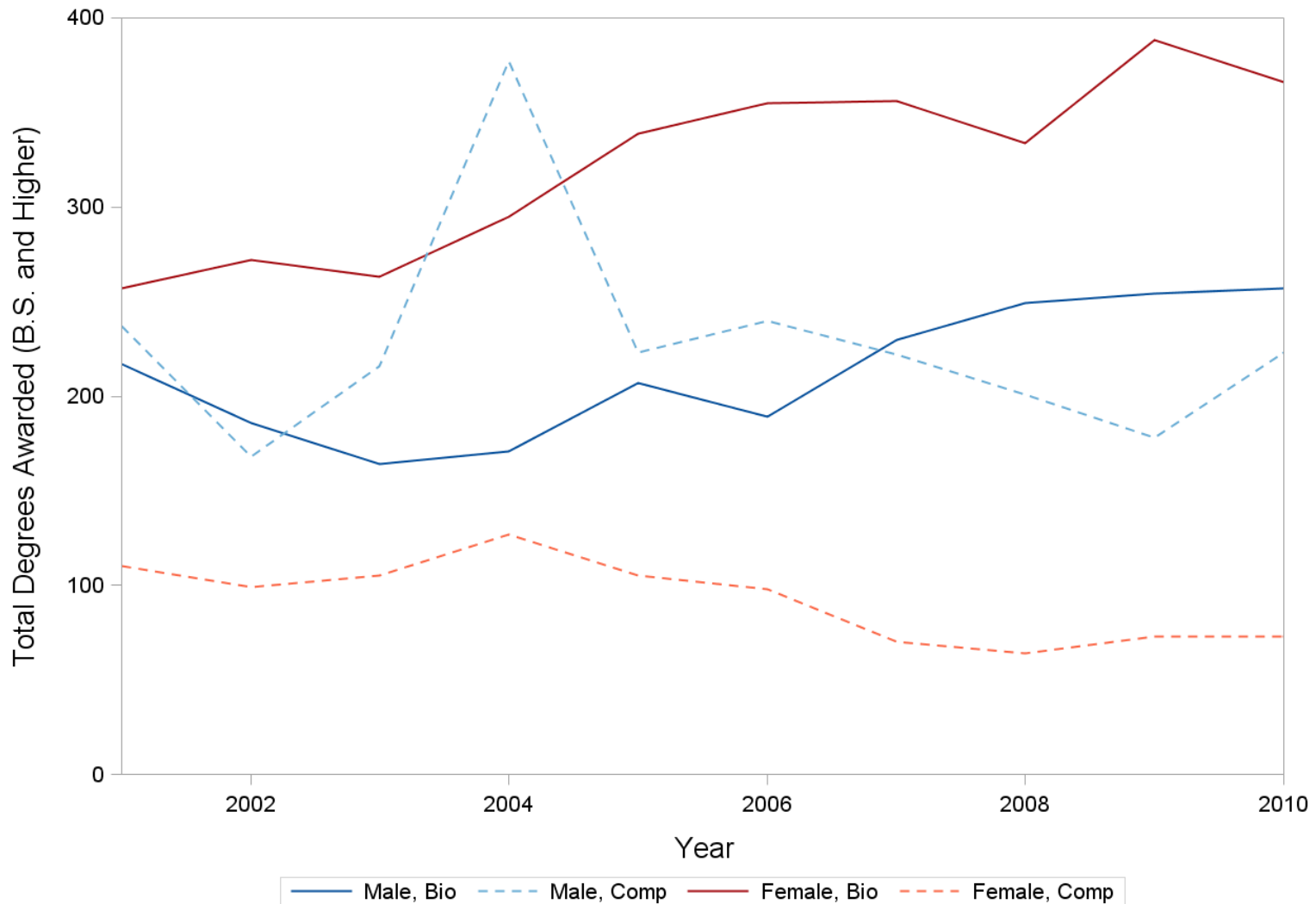
# B.S. and higher - Hispanic

## Degrees Awarded (Hispanic)



# B.S. and higher - Native American

## Degrees Awarded (Native American)



**SAME MESSAGE THROUGHOUT!!!**

**STEM Graduation Rate**

**STEM Employment**

**Biology Graduation Rate and Employment**

**“The problem isn’t new and it isn’t going away by itself.” (Maggie Hardy, 2015)**

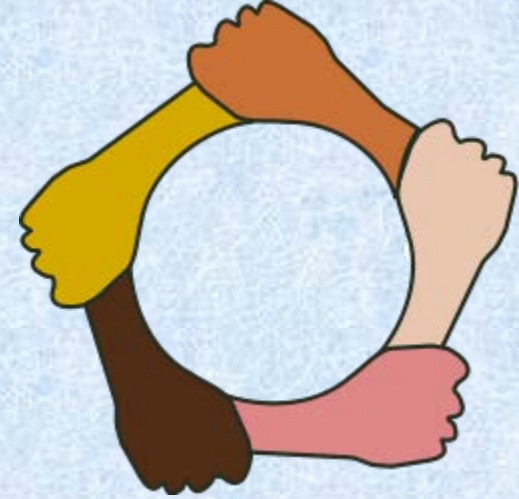
**Data for Natural History Collections?  
Essentially Nonexistent!!!!**

**Small Natural History Collections  
Can Begin to Fill This VOID**

# Where Are They?

- Interface with High and Middle Schools
- Interface with 2-year Colleges
- Recruit and Train Undergraduates
  - Provide intellectually engaging, fun experiences
  - Internships at all levels
- Graduate student training
- Active/unrelenting recruiting
- Outreach to MSIs: HBCUs, HSIs, Tribal Colleges

# Recruitment and Retention



- Strategies must target both
- Must be an active sustained effort
- Must be done in a culturally rich and diverse environment (virtual mentor networks)
- Build support networks (professional societies, etc.)
- Professional development; CV building, grant writing, manuscripts
- Provide incentives; promotion, increased responsibility, paid internships

# Identify Niches/Opportunities and Fill Those Gaps

- Alpha taxonomists
- Local and regional field biologists
- State and Federal
  - DNR
  - Nature Conservancy
  - National Parks
  - US Fish and wildlife
- Independent consultants
- NGOs
- Data entry specialists
- Bioinformaticians
- Community engagement experts
  - Citizen science
  - Crowd sourcing

# Emphasize Career Benefits

- Contributions to Human Health
- Formal and Informal Education
- Environmental Science
- Improvements in Agriculture
- Land Management
- Conservation and biodiversity assessment
- National Security
- Rewarding employment





# Benefits to the Community and Science

- New and different perspectives (potential to fuel innovation)
- Impacts economic growth
- Correct/address inequity
  - “... promoting diversity not only promotes representation and fairness but may lead to higher quality science.”

# Resources

- CSBR
  - RAHSS
  - REUs; sites & supplements
- ADBC
  - Student involvement in digitization
- ABI
- GRFP
- RCN-UBE, HER Programs
- PRFB
  - Collections track



# Challenges: Small Collections

## Leading the Charge

- Mentoring – probably most important are mentors who are encouraging, supportive, and instill sense of value and strong work ethic
- Carve out/explore opportunities
  - Where are we?
  - Where are we going?
  - Do we buy into the ideal: “participation in STEM fields should mirror the population of the nation”
- Explore opportunities for integrative activities (MSIs)
- Challenge the ‘norm’ and encourage new approaches
- Work with societies to overcome silos, perceptions and implicit bias
- Commit to a sustained effort