Advancing Integration of Museums into Undergraduate Programs

We are an NSF-funded research coordinating network (RCN) that aims to increase the integration of natural history collections into undergraduate education.

Our goals are to:
1. Train undergraduates in specimen-based research
2. Develop instructional tools that use museum specimens and databases
3. Introduce educators to the instructional power of natural history collections
4. Increase public awareness of the importance of natural history collections

The Challenge

Evaluators are mostly unaware of the educational potential of collections and associated databases. This even includes students and instructors at institutions with large museums:
- a survey of ~100 undergraduates at U of California Berkeley revealed that:
  - > 70% unaware of the Museum of Vertebrate Zoology
  - < 10% had visited the museum
- the same survey of ~100 undergraduates at U of New Mexico revealed that:
  - about 50% unaware of Museum of Southwestern Biology
  - only about 15% had visited the museum

What do collections-based approaches offer undergraduate education?
- Scale
  - time and space
- Integration of Data
  - biotic and abiotic
- Genomic and organismal
- Complexity
- Web-based Discovery-informatics
- Educational Process
  - Experiential versus passive
  - Actual data

Annual Themes
Year 1 – Integrative Inventories
Year 2 – Geographic Variation
Year 3 – Evolutionary Dynamics of Genomes
Year 4 – Biotic Response to Climate Change
Year 5 – Co-evolving Communities of Pathogens & Hosts, relating to Emerging Disease

Example of a cross-disciplinary seminar: CO-EVOLUTION: Art + Biology in the Museum

Spring 2012 Seminar @ Museum of Southwestern Biology, University of New Mexico

Communication between fields is important within science, but also between biologists, artists, and historians as we build collective knowledge. Natural history collections emphasize spatial and temporal variation and are uniquely situated to bridge the gap between traditionally segregated disciplines, as they foster development of creativity, generative thinking, and rigorous inquiry, all required of future leaders. By incorporating art and history into biology, we begin to strengthen ties between the sciences and the humanities within the university’s curriculum and research activities. A common interest in place-based research and inquiry-driven learning underpins integrated and experiential approaches to pedagogy.