# What do collections-based approaches add to undergrad education?

- Scale—time and space

- Integration
  - biotic and abiotic
  - genomic and organismal

- Complexity

- Web-based Discovery

- Scientific Process
  - Experiential vs passive

# A Few Challenges

- Not many educators seem to know:
  - about natural history collections
  - how to access museum information
  - how to incorporate specimen data in teaching
    - Few examples, little discussion
- Museum collections and data have limitations

# NSF Research Coordinating Network

- Goal of this program is to create new directions in education and research. Innovative ideas for implementing novel networking strategies are especially encouraged. Groups of investigators supported to communicate and coordinate their research or educational activities across disciplinary, organizational, geographic and international boundaries.

# RCN-UBE

- The Undergraduate Biology Education track could focus on any topic likely to lead to improved participation, learning, or assessment in undergraduate biology curricula.

# AIM-UP!

- Make natural history collections more accessible to educators and to the public.
- Consider novel ways of educating based on collections and associated data
- Develop instructional tools, guidelines, and generally more usable "front-end" entry into museums databases that will facilitate on-line use by educators.

# AIM-UP!

- RCN-UBE
- 5 Years
- 24 Institutions by end
  - (UAM, MVZ, MCZ, MSB, DMN&S, USDA National Parasite Lab, UMMZ, UNSM, NYSM, UGuelph, UN-Montevideo, U Arizona)

# AIM-UP!– a network to

- identify specific questions of interest (centered around 5 particular themes)
- begin developing educational activities
- beta-test curricular materials and tools

# Annual timeline

Fall Semester
       UNM-weekly AIM-UP! Seminar 1-credit
       Fall Teleconference  2 Hour
       Short Visits for Subtheme Development and Seminars

Winter Break (J,F)
       All-Hands Meeting (Rotating)-2 day plus
- (Theme Development, Demonstration, Implementation, & Evaluation)
- followed by 1 Day Educator Workshop

Spring Semester
       Spring Teleconference 2 Hour
       Short Visits for Subtheme Development

Summer
       Summer Teleconference 2 Hour
       Short Visits for Subtheme Development
       Annual Evaluation Reports and Adjustment

– Year 4 Student Workshop (2 weeks—8 students)

# Annual "All-Hands" Meetings

1. Theme Development
2. Demonstration
3. Implementation & Evaluation (beta test)
- Rotates among UAM, MCZ, MVZ, MSB
- Selection of New Participants and 6 Local Teachers based on commitment to undergraduate mentoring

# Annual "All-Hands" Meetings Workshop on Third Day

- 6 educators from the surrounding region invited to learn about new curricular materials and tools

- To **increase dissemination** of curriculum materials, **pilot new materials**, provide **immediate feedback** from educators, and **increase** pool of participants in **evaluation activities**.

# Potential Products

- **Individual modules** centered around annual themes will be beta-tested and revised during Fall Seminar and during courses
- **CCLI proposal** based on emergent curriculum
- **Presentations and workshops** at meetings
- **Publications—**
  - **Opinion or Perspective**
  - **Bioscience**
- **Other**

# Primary Conceptual Themes:

1) Integrative Inventories: Exploring Complex Biotic Associations Across Space and Time  (MSB)

2) Decoding Diversity: Making Sense of Geographic Variation (UAM)

3) Generating Genotypes: Evolutionary Dynamics of Genomes (MCZ)

4) Fast Forward: Biotic Response to Climate Change (MVZ)

5) Coevolving Communities (MSB)

# Santa Fe RCN—Goals

- Organization & Background

- Discuss Deliverables

- Review Theme 1 "Integrated Inventories"

# Santa Fe RCN—Day 1

- Overview, Organization & Background
  - Getting to Know You
  - Discuss 5 Themes & Overall Plan
  - Undergrad Education
  - Background on Database Development
- Develop List of Deliverables
  - Educational activities
    - Museum Institutions
    - Non-museum Institutions
    - Public Outreach

# Santa Fe RCN— Day 2

- More Background
  - New Museum Initiatives
    - iPlant
    - Parasites
    - Barcode of Life
- Evaluation
- Discuss Integrative Inventories Theme
- The New Plan