Natural History Collections and Biodiversity Literacy in Undergraduate Education (BLUE)

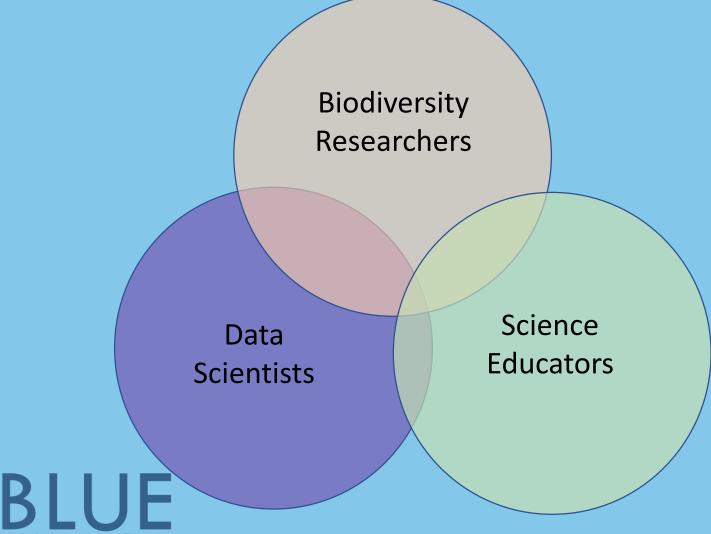
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The 21st century biodiversity scientist is required to be fluent in integrative fields spanning evolutionary biology, systematics, ecology, geology, and environmental science and possess the quantitative, computational and data skills to conduct research using large and complex data sets.

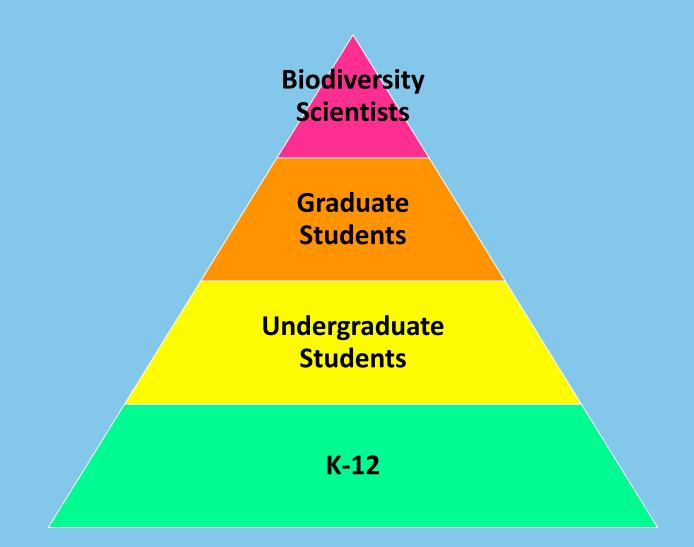


Preparing the 21st Century Biodiversity Scientists Requires Collaboration



Biodiversity Literacy in Undergraduate Education

Undergraduate education is the logical step in training the future workforce, engaging new end-users, and sustaining and promoting **BIODIVERSITY** science.



Why Natural History Collections?

- Natural history collections and associated data are:
- engaging, concrete, and place-based
- ripe for incorporating collaborative learning activities, community participation, and use of societally-relevant case studies and science in action
- well suited to learning core content and competencies in the undergraduate curriculum
- able to engage students in the full data lifecycle
- a gateway resource to introduce students to biodiversity data literacy



BLUE Data Network Vision

 Incorporate biodiversity science and data skills across the undergraduate curriculum to improve undergraduate biology training and meet increasing workforce demands.



- 1. Cultivate a diverse and inclusive network of biodiversity researchers, data scientists, and biology educators focused on undergraduate data-centric biodiversity education.
- 2. Build community consensus on core biodiversity data literacy competencies.
- 3. Develop strategies and exemplar materials to guide the integration of biodiversity data literacy competencies into introductory undergraduate biology curricula.
- 4. Extend the network to engage a broader community of undergraduate educators in biodiversity data literacy efforts.



Who do we engage?

- BEACON
- EOL
- iDigPaleo
- Data Driven Discovery Initiative
- iDigBio
- SYNTHESYS3
- Atlas of Living Australia
- DataONE
- NEON
- CyVerse
- GBIF
- TDWG
- DRYAD
- Map of Life
- Notes from Nature
- WeDigBio
- VertNet
- Biodiversity Informatics
 Training Curriculum

- Data Carpentry
- CEREO
- QUBES
- SERC/InTeGRate
- Earth Educators Rendezvous
- BioQuest
- RCN PSRN
- RCN-UBE 3dNaturalist
- RCN-UBE AIM-UP!
- RCN-UBE NIBLSE
- Geoscientists
- Geographers
- Sociologists
- Statisticians
- Bioinformaticians
- Ecoinformaticians
- Implementation
- Scientists
- CC/MSI/PUI/R1

Instructors

- BSA
- ESA
- SPNHC
- SSE
- NSCA
- GSA
- BCoN
- SEEDS
- PLANTS II
- SCNet
- SACNAS
- MANRRS
- AIHEC
- AISES
- CCURI
- NABT
- ABLE
- And many more...

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Building Consensus

- Targeted community assessment
- Focus groups, surveys, needs assessment, etc.
- Dedicated workshops and symposia, thematic working groups, sessions at society conferences, and online virtual networking
- A community of partners working to:
- Build partnerships with data-driven initiatives
- Develop biodiversity data literacy competencies
- Establish curriculum alignment, integration, and propagation



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If you build it, they will come



Sustained adoption of education innovations

- Dissemination: getting the word out to potential adopters about trying an innovation
- Propagation: a new teaching strategy is used successfully by non-developing instructors.
 - Development
 - Instrument can be consistently interpreted by users other than its Developers.
 - Instrument has consistent impact on student learning regardless of instructor
 - Dissemination
 - Passive (websites, publications, presentations)
 - Active (workshops, working groups, networks, personal connections)
 - <u>Support</u>
 - Developing materials that aid adopters in implementation or are Modular
 - Engaging adopters in development, leveraging existing communities, and creating mechanisms for follow-up



Henderson, C., R. Cole, J. Froyd, D. Friedrichsen, R. Khatri, and C. Stanford (2015) Designing educational innovations for sustained adoption: A how-to guide for education developers want to increase the impact of their work. Kalamazoo, MI: Increase the Impact.

Vision and Change* Strategies for Change Action Item

"Faculty must engage in regular conversations and peer-to-peer mentoring about teaching and learning, and improve, test, and share their own understanding of how students learn."

> Small Collection Symposium, Boise, ID 2014

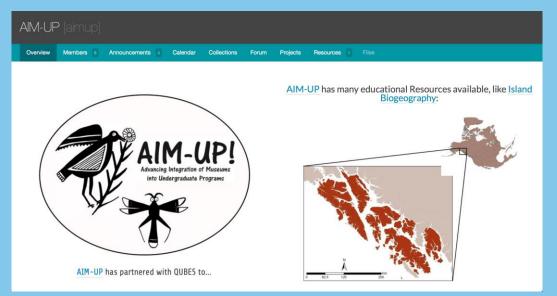




*Brewer, Carol A., and Diane Smith. "Vision and change in undergraduate biology education: a call to action." American Association for the Advancement of Science, Washington, DC (2011).

Building Educational Networks: QUBES/AIM-UP!/iDigBio

Goal: provide access to high quality quantitative and information literacy educational modules and resources, and provide instructor training and mentoring





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Getting Involved

- Identify Data and Biodiversity Science Initiatives
- Share your materials/initiatives/successes! We want to share what the community is doing and we will post on the BiodiversityLiteracy.com website
- Email members of the BLUE Core Team and tell us your suggestion or how you would like to be involved:
- Libby Ellwood: ellwoodlibby@gmail.com
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Biodiversity Literacy in Undergraduate Education

BiodiversityLiteracy.org

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Join us for WeDigBio 2017! October 19-22













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- QUBES
- Kurator
- CollectionsWeb
- Biodiversity Collections Network (BCoN)

