

Making Geological Collections Preservation a True Priority

2014 proposal to GSA Board based on 2012 Geoscience Data Preservation Position Statement & other more recent supporting documentation

Even with the millions of dollars in federal research used to acquire, prepare, and analyze geological specimens, the accumulation of materials in geological collections has continued without sufficient thought to long-term preservation, access and usability. Now, these collections are at a pivotal point; with localities continually being reclaimed and exhausted, storage limits being exceeded, and resources limited, geological materials are becoming endangered. Though there is much discussion regarding this problem, if true action is not taken soon, then there is great risk of losing our collections forever.

This message is not new. Over a decade ago, the Board on Earth Sciences and Resources wrote a book titled “Geoscience Data and Collections: National Resources in Peril”. Their message was clear “Many [geoscience collections] could act as invaluable resources in the future but immediate action is needed if they are to remain available. Housing of and access to geoscience data and collections have become critical issues for industry, federal and state agencies, museums, and universities. Many resources are in imminent danger of being lost through mismanagement, neglect, and disposal”. In addition to this book, other publications voice similar opinions such as the GSA position statement on Geoscience Data Preservation which states “The Geological Society of America (GSA) supports the preservation of geoscience samples and data sets for the public good and urges public and private sector organizations and individuals to routinely catalog and preserve their collections and make them widely accessible.” As a result of publications such as these, the question that comes to mind is: Why is nothing being done to better preserve geological collections?

Perhaps the answer has to do with the fact that the priority isn't there or, more importantly, a “true priority” isn't there. “True priority” refers to something for which people are paid and evaluated on, and that administrators support and fund. It doesn't seem to matter much if one professor wants to preserve their student's thesis collections, or a teaching assistant wants to organize their class teaching collection. If it isn't a policy from the top down, then it doesn't get to be a true priority, it isn't funded, supported, and it falls apart or never gets done. As a direct result of this, our collections are continuously being lost, neglected, and in some cases even discarded.

Unlike museums and state repositories some collections, especially in the universities, are limited in how preservation of their collections gets started. One common way a catalog is started is if the person who built or recently managed the collection creates a catalog themselves. In this case programs like Microsoft Excel are typically used because the priority has not been there to use a more robust system and that's all that most can afford and have the knowledge to manage. Another way is for someone in the discipline to develop or customize a commercial system and implement it collection-by-collection, i.e. Timm's EGEMS, Nagel & White's “Collector”, and others. Neither method has proved efficient or effective long-term.

Fortunately, at this year's Southeastern GSA meeting, the discussion was started for how the geological community could develop a sustainable solution. Many of the university professors, students, state survey and museum professionals, as well as private collectors, agreed that the only way to enact a nation-wide paradigm shift in the way university materials are managed is through a top-down approach likely requiring a new university-level policy. This may require a funded workforce to research and prepare a report similar to that of the 2009 “Scientific Collections: Mission-Critical Infrastructure for

Federal Science Agencies” report. The report surveyed federal collections looking for areas of collections care that needed more structure and support. In the final paragraph the report states “Scientific collections are by their nature backward-looking. They record our history and allow us to confirm past findings, but we create collections and maintain them as an investment that will benefit future generations. The recommendations in this report will put in place a system for monitoring and improving the condition of Federal scientific collections and will promote needed improvements in management, documentation, and curation....the IWGSC [Interagency Working Group on Scientific Collections] is convinced that these additional investments will provide even greater returns by improving Federal research that serves the U.S. taxpayer and the global community.” This is what needs to be done for geological collections now.

Geological collections management and digitization is a current topic that is being discussed in all sections of the geosciences. GSA has active collaborations with collections organizations like the Society for the Preservation of Natural History Collections (SPNHC) who are in support of such initiatives, not only for geosciences but for all natural history disciplines. There are a number of existing NSF sponsored digitization initiatives led by EarthCube, C4P and iDigBio but ultimately, if our one-of-a-kind collections and the data associated with them have any hope of long term survival, more action is needed from leaders in the community such as yourselves.

In addition to protocols, infrastructure to support the digitization of our collections is also needed. Recent decades were times of incredible growth in understanding of earth systems that could inform future study through preservation of documented collections, if there was an easy way for geoscientists to document and repository these legacy collections. Continued access by the scientific community at large would allow past results to be verified and allow new, synthetic research programs to be built around new technologies and at larger regional and global scales that would otherwise be impossible. The Virginia Tech Department of Geosciences has already been a model for this change through the development and implementation of the EGEMS database for geological materials and recently they have begun discussing how to instill a department-wide policy that as part of graduating requirements, all students must catalog their specimens, and record any associated data. The Jackson School of Geoscience at the University of Texas in Austin is another example of this push, actively working with *Specify 6* developers at Kansas University to extend the system’s geological capabilities for their Non-vertebrate Paleontology collections (NPL). They are creating an easy digital resource for all students and faculty to encourage the collection and retention of pertinent provenance data in a format that can easily be migrated into the database. An active iDigBio digitizing working group is also focused to provide the *Specify* team with the geological needs of the paleontology community.

Members of the geological community who have signed below have expressed support for GSA to take leadership in developing new strategies to assure our collections are preserved for future use. We are willing to assist and suggest following in the footsteps of efforts such as the 2009 report on federal scientific collections, the 2011 NSF data management mandate, and the Office of Science and Technology’s 2014 policy on scientific collections (see supporting documents). Emplacing policy especially at the university-level is an important step because without “true policy” it is impossible to have “true priority”. As well, to ensure this conservation effort takes place across the entire community in as quick and organized a fashion as possible, we suggest using a similar model to that of iDigBio and funding organized meetings such as a topical session for GSA 2015 and/or a separate workshop. iDigBio has been moving forward with a parallel initiative for some time now, see their report “Collections for the 21st Century” and, recently they have been reaching out to try and support other

branches of natural history including hosting a workshop this fall in Santa Barbara, CA on “Leveraging Digitization Practices Across Multiple Domains.”

It is also essential that the priority for preservation is clear and supported. If federal offices are struggling to see the value our collections have, GSA can lead our community to change this. For example it seems NSF does not recognize mineral collections as a valid part of a natural history museum. In a quote from a concerned member of the community “NSF does recognize fossil collections as a valid natural history museum endeavor, and has provided management and data entry for fossil vertebrate, invertebrate, and plant items. In short, everything but minerals.” If this is true then this could be a large part of the reason the biological community is so far ahead.

Using the community discussion and growing need as a motivation, and the experience of those such as iDigBio as a guide, we hope you accept our proposal for GSA to lead our community in implementing policy and action for collections preservation.

Sincerely,

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on behalf of all our members
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David J. Gombosi, ExxonMobil Upstream Research Company
Ralph Bottrill, Mineral Resources Tasmania/Tasmanian Museum
John Attard, Attard Mineral XRD Services
Miguel Gregorkiewitz, University of Siena, Italy
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Peggy Fisherkeller
Chris Widga, Curator, Illinois State Museum
Stefan Nicolescu, Yale Peabody Museum of Natural History
Steven R Dunn, Mount Holyoke College
Gabriela Robertson
O. David Johnson, Curator, Evans Collection, College of Idaho
Tiffany Adrain, Collections Manager, University of Iowa Paleontology Repository
Nick Booth, University College London Museums.
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James Lumbard, Centre for Anatomical and Human Sciences, Hull York Medical School
Johan Kjellman, Museum of Evolution, Uppsala University
Benjamin Hallett, University of Wisconsin Oshkosh

Supporting Documentation

[2014 Office of Science and Technology Memorandum on Scientific Collections](#)
[2012 GSA Position Statement \(revised\) on Geoscience Data Preservation](#)
[2009 Scientific Collections: Mission-Critical Infrastructure for Federal Science Agencies](#)
[2011 NSF Data Management Mandate](#)
[2002 Board of Earth Sciences and Resources Report: Geoscience Data & Collections, Natural Resources in Peril](#)

Other Resources

[iDigBio Vision](#)
[Sarah Timm Thesis “The Generation and Management of Museum-Centered Geologic Materials and Information”](#)
[USGS National Geological and Geophysical Data Preservation Program](#)
[NSF EarthCube Program 2013](#)
[EarthCube Research Coordination Network iSamples](#)
[EarthCube Special Interest Group “Physical Samples as Part of Cyberinfrastructure”](#)
[System for Earth Samples Registration](#)
[IGSN e.V. \(Implementation Organization of the International GeoSample Number\)](#)
[Data Management Interest Group Notes from Launch Meeting](#)
[“Curating a Natural History Collection While Succeeding in Academia” Lucinda A. McDade](#)