

GEOLOGICAL SURVEY OF ALABAMA

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GEOLOGIC INVESTIGATIONS PROGRAM

CONTINUATION OF METADATA DEVELOPMENT FOR GEOLOGICAL COLLECTIONS AT THE GEOLOGICAL SURVEY OF ALABAMA: FINAL REPORT FOR PROGRAM YEAR 2011 OPEN FILE REPORT 1215

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ABSTRACT

The Geological Survey of Alabama (GSA) maintains a core and sample storage warehouse that contains about 12,000 square feet of shelved space in which more than 67,000 boxes of samples are stored. The warehouse contains cores and well cuttings from oil and gas wells, well cuttings from water wells, industrial and GSA project cores, coal samples, and vibracores. In a separate facility, GSA also maintains an extensive collection of more than 182,000 Paleozoic, Mesozoic, and Cenozoic fossils that occupies 69 cabinets in its paleontology collection. GSA collections were inventoried during the 2007 Program Year for the National Geological and Geophysical Data Preservation Program (NGGDPP). For Program Year 2008, GSA initiated development of site-specific metadata records for samples in parts of the collections in the core and sample warehouse and for fossils of Paleozoic age in the paleontology collection. In 2009, GSA continued the development of metadata records for coal samples and oil and gas related cores and mud logger well cuttings in the warehouse and for fossils of Mesozoic age in the paleontology collection. In 2010, GSA developed metadata records for Gulf of Mexico vibracores and for fossils of Cenozoic age in the Toulmin part of the paleontology collection. Additionally, unique paper geologic maps were scanned and metadata records were created. For Year 2011, GSA has developed metadata records for petrographic thin sections, non-Toulmin collection Cenozoic fossils in the paleontology collection, and vibracore collected in relation to the Deepwater Horizon oil spill.

A total of 5,498 records for thin section were created, 19 records were created for vibracores and 2,744 records were created for 24,461 specimens in the paleontology collection. The 2011 metadata have been uploaded to the NGGDPP National Catalog in a Microsoft Excel spreadsheet file in pipe-delimited CSV format using the template provided by the program.

CONTINUATION OF METADATA DEVELOPMENT FOR GEOLOGICAL COLLECTIONS AT THE GEOLOGICAL SURVEY OF ALABAMA: FINAL REPORT FOR PROGRAM YEAR 2011

**BY SANDY M. EBERSOLE AND W. EDWARD OSBORNE,
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INTRODUCTION

The Geological Survey of Alabama (GSA) maintains a core and sample storage warehouse in the Mary Harmon Bryant Special Collections Facility on the University of Alabama (UA) campus in Tuscaloosa, Alabama. The warehouse contains about 12,000 square feet of shelved space. GSA is closely affiliated with the State Oil and Gas Board of Alabama (OGB), which requires that cores and well cuttings be submitted and archived, and the samples are maintained by the GSA in its facility. Alabama is a major oil and gas producing state, ranking 15th nationally in natural gas production and 15th in liquid petroleum production. Consequently, GSA maintains an extensive collection of samples from oil and gas wells. The warehouse contains processed well cuttings from about 3,600 oil and gas wells and cores from more than 3,300 oil and gas wells. In addition, the facility houses about 450 industrial cores, more than 200 vibracores, nearly 2,800 sets of water well cuttings, and more than 1,500 coal samples. In total, more than 67,000 boxes of samples are stored in the GSA warehouse.

The GSA was founded in 1848 and, since then, GSA geologists have made extensive collections of Paleozoic, Mesozoic, and Cenozoic fossils from numerous world-class sites that exist in Alabama. More than 182,000 fossils occupy 69 cabinets and are housed in the basement of Walter B. Jones Hall (the main GSA building on the UA campus) as well as in the warehouse in the Special Collections Facility.

During Program Year 2007, GSA conducted an inventory of its geological and geophysical collections for the National Geological and Geophysical Data Preservation Program (NGGDPP). The results of the inventory were entered into the online survey at the completion of the project. For Program Year 2008, GSA completed development of site-specific metadata records for most of the collections in the core and sample warehouse and for fossils of Paleozoic age in the paleontology collection. For 2009, GSA completed the development of metadata records for additional oil and gas related cores, mud logger well cuttings, coal samples in the warehouse, and fossils of Mesozoic age in the paleontology collection. For 2010, GSA completed the development of metadata records for Gulf of Mexico vibracores, fossils of Cenozoic age in the Toulmin part of the GSA paleontology collection, and also captured digital images of unique paper geologic maps and prepared supporting metadata. For Program Year 2011, GSA has developed metadata records for petrographic thin sections, non-Toulmin collection Cenozoic fossils in the paleontology collection, and vibracore collected in relation to the Deepwater Horizon oil spill. The 2011 metadata have been uploaded to the National Digital Catalog.

PURPOSE AND METHODS

The purpose of this project is to generate site-specific metadata records that describe, at the individual sample level, the contents of a significant part of the geological collections at the GSA. Where possible, the data were extracted from existing databases. For example, data for the vibracore were extracted from existing databases constructed in relation to response to the Deepwater Horizon oil spill. In contrast, development of metadata records for specimens in the paleontology collection required examination of the paper labels accompanying individual fossils in the cabinets of the collection.

GOALS

The goals of the Program Year 2011 project were based, in part, on the results of the collections inventory completed during Program Year 2007 (table 1). For Program Year 2011, GSA anticipated creating metadata for 19 vibracores and 5,125 petrographic thin sections. Metadata records for 4,500 were anticipated for fossils of non-Toulmin Cenozoic age of the paleontology collection. Consequently, the goal of the Program Year 2011 project was to generate 9,644 metadata records.

Table 1. Comparison of the goals and results for the Program Year 2010 project.

| Type of sample | Goals | Completed |
|--|-------|--|
| Deepwater Horizon oil spill vibracores | 19 | 19 |
| Cenozoic fossils | 4,500 | 2,744 records (24,461 total specimens) |
| Petrographic thin sections | 5,125 | 5,498 |
| Total | 9,644 | 8,261 |

RESULTS

The actual number of metadata records completed during the Program Year 2011 project is compared with the number of records proposed (goals) in table 1. Discrepancies between the actual numbers and goals are discussed below. The actual number of Deepwater Horizon related vibracores is equal to what was originally estimated. The number of metadata records for petrographic thin sections recorded for this project is 5,498 – over 400 more than previously estimated due to an original underestimation of thin sections. The number of unique metadata records for fossils is 2,744 – lower than previously estimated; however, the number of specimens is 24,461, greater than the number recorded for the previous year’s project. This discrepancy is because multiple specimens were found to be stored as groups of small glass vials within larger specimen boxes (e.g., 1 big box containing 6 glass vials, each vial containing multiple specimens). Because each box represented a small collection of a specific species, the box was assigned a single identifier for the set (i.e., 1 big box containing 6 glass vials = one metadata record).

The metadata records for the GSA collections were compiled in Microsoft Excel files. The files were formatted according to the instructions posted at http://datapreservation.usgs.gov/docs/NGGDPP_MetadataPreparation.pdf. The files were saved in pipe-delimited csv format and were uploaded to the National Digital Catalog at <http://my.usgs.gov/csc/nggdpp/upload>.

DISCUSSION

The process of constructing metadata records for samples stored in the GSA paleontology collection resulted in additional benefits. The physical inspection of paper records in the paleontology collection allowed the collection manager and Co-Principal Investigator (Ebersole) to examine the Cenozoic paleontology collection in greater detail, revealing storage and preservation deficiencies. Specimens with Bynesian decay (Byne’s disease) were noted and were stored in acrylic bags to provide a more stable micro-climate to help reduce further damage from the growing gypsum crystals deteriorating the fossil shells. Specimen labels that were deteriorating (such as many from the 1800s) were noted in the database and as much information as was legible on these labels was captured. We hope additional storage and preservation problems in the GSA paleontology collection can be addressed in future NGGDPP Program Years.

SUMMARY

GSA's long-term goal is to contribute to the completion of metadata records for all geologic collections and enhance the digital infrastructure at the Geological Survey of Alabama. The U.S. Geological Survey's NGGDPP has played a vital role in helping GSA advance toward this goal. For this project, a total of 5,498 records for thin section were created, 19 records were created for vibracores and 2,744 records were created for 24,461 specimens in the paleontology collection. Although significant progress has been made through participation in the NGGDPP, much work is still to be done to catalog the growing number of geological and geophysical maps, fossils, core, thin sections, hand samples, and other collections associated with the geological research and resources development in Alabama.

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