

Sam Noble Museum of Natural History Paleobotany, Micropaleontology & Mineralogy Collection

Collection Information & Data Access/Sharing

The Paleobotany, Micropaleontology and Mineralogy collections are permanent primary sources documenting the geological and paleontological history of Oklahoma and the Earth. Collection staff take seriously their commitment to past, current and future generations to be good stewards of the specimens, documentation and data in our care to ensure they continue to be windows into our geological and paleontological past.

Paleontological data, include (but are not limited to):

- Physical specimens/fossils and the sediments that contain them
- Associated fossils (including plants, invertebrates and vertebrates), even if not identified
- Stratigraphical relationships and sedimentological properties
- Reserves and/or matrix (*e.g.*, rocks/sediment samples, fragmentary fossils)
- Physical documentation (*e.g.*, maps, fieldnotes, photographs, catalogs, correspondence, publications)
- Digital documentation (*e.g.*, photographs, maps/GIS datasets, GPS data, emails/texts/etc., PDFs, scans)
- Collection documentation (*e.g.*, accession paperwork, catalogs, labels, inventories, preparation notes)
- Analytical/Associated documentation (*e.g.*, chemical analyses)

Fossils are nonrenewable resources where each fossil specimen is unique. However, the maintenance of the physical fossils along with the documentation/ data can and should allow for them to be repeatably examined by scientists and other scholars, including applying new analytical techniques and testing new hypotheses. Therefore, the premise is that all fossils and data (both physical and digital) should be curated and remain permanently stored and accessible.

Collection documentation in any format (paper, digital etc.) contains information about various aspects concerning the specimen including the collection, acquisition, management, preservation, conservation, display and intellectual use of each specimen.

Collection documentation serves several purposes:

- records the legal status of specimens and/or donations
- details the source/collection locality (including geological and paleontological context) of specimens
- tracks the condition, location and care of the collection and individual specimens
- logs use in various project including research, education and exhibitions
- provides information establishing the scientific details and significance
- helps to protect and secure the data/information about the specimens and the collection itself

Our Collection:

- respects the privacy, safety, and security of staff, collectors, landowners, donors and their families
- makes every effort to follow intellectual property rights, collecting permit terms, distribution agreements and similar contracts

- acknowledges that some information/data/images are sensitive, private in nature, and/or confidential
- recognizes circumstances exist that cause access to some information/data (along with the collections or specimens themselves) to be variously restricted, controlled, redacted, embargoed, or prohibited
- realizes that collecting, recording and managing collections information is part of an ongoing process

Therefore, Paleobotany, Micropaleontology and Mineralogy Collection staff utilize the resources available to us in order to safeguard the specimens and data while providing as much access to the collections (specimens, data, images, documentation, etc.) as possible without jeopardizing their safety.

Museum best practices include having a statement or policy on how people can view, use and mention their collection, gain access to museum collections, and how information is shared about the collection with people. Traditionally this has required museums to be gatekeepers to the physical specimens, photographs and museum documentation. However, with the trend to digitize and make things available online, best practices now expand to include how a museum or collection shares the digital representation of the specimens, photographs and museum documentation. We base our digital access to collections or collection information on the traditional principles guiding access to original collections items and documents.

Science relies on data. Therefore, our Collection shares much of our specimens, data, images, documentation, etc. to both the public and scholars. However, because providing or sharing some of that data might place the specimens, the localities where the specimens were collected, our Collection and/or our Museum at risk, access to some specimens, data, images, documentation, etc. may be variously restricted, controlled, redacted, embargoed, or prohibited (hereafter referred to as restricted).

Some reasons why we restrict access to some specimens, data, images, documentation, etc.:

- Legal Obligations (*e.g.*, laws, policies or agreements)
- Privacy or Publicity Concerns (*e.g.*, privacy rights or agreements)
- Intellectual Property Rights (*e.g.*, copyright, rights of attribution and integrity)
- Ethical Concerns (*e.g.*, obligations not to ignore or override the express intentions of donors)
- Security Concerns or Needs
- Preservation Concerns
- Collections Availability
- Resource Limitations

A review of other natural history museum's policies indicates many also variously restrict/control access to some specimens, data, images, documentation, etc. for the same reasons to preserve specimens, localities, relationships and data for future study and use.

We recognize that some of the specimens, data, images, documentation, etc. that we restrict sharing might be available from other sources (*e.g.*, publications, conference presentations, local knowledge) but

ethically we must do our part to not be the ones to potentially endanger the specimens, the localities where the specimens were collected, our Collection and/or our Museum.

Digitization/Computerization of museum collection data started as internal database(s) for collection staff to help improve or expedite physical access to the collections and/or with collections management tasks like inventory and retrieving information by collection staff. These internal database(s) were not intended to capture or serve all the specific details a researcher might need, especially those of “modern” researchers. Therefore, as both paleontology and technology has advanced, fossil collections have become sources of data for analyses that were never envisioned when the specimens were first collected or sometimes even when they were initially digitized. This includes the way data were initially recorded, as well as the terms/vocabulary used. Consequently, we have verbatim fields for the original data to maintain it internally but have parsed data into more numerous fields and standardized the terms/vocabulary used to record the data to improve database searches and have recently worked to ensure it is in a Darwin Core format to allow data to be shared. However, even when data were accurate at time of entry, in order to make data available online it might still need to be updated to reflect new information, such as recent identifications and changes in taxonomies, political boundaries or the “standardized” terms data aggregators require and to protect the sensitive, private in nature or confidential data, especially adding data flags for omissions and legacy data.

Collection staff realize that some of the specimens, data, images, documentation, etc. restricted from online access might be necessary for certain kinds of research. We also realize that withholding some data affects the accuracy of research based on aggregated data (*i.e.*, Paleobiology Database, iDigBio, Pteridoportal, and other such public data portals), However, collection staff work towards sharing which records have any omissions in the interest of protecting the sensitive, private in nature or confidential data such that those with a legitimate need of the more detailed information can contact the Collection with their request and reasons why they need the information. All requests are considered on a case-by-case basis along with the reasons why we restricted access to some specimens, data, images, documentation, etc. If granted, access might still be subject to additional restrictions especially on the dissemination of the data.

Examples data flags where more information available:

- “Name suppressed for privacy.”
- “Specific locality has been generalized to county centroid resolution. Detailed data might be available on request.”

Note that legacy data often is less detailed; as time permits, we are trying to add data flags to indicate this as well (*e.g.*, “Legacy specimen, data only known to county.”, “Legacy specimen, collector not listed.”).

Some types of data that we restrict include:

- Personal information relating to donors, lenders and/or their families which may infringe on individuals’ privacy
- Information related to internal security (*e.g.*, physical location of specimens or data within the Museum)

- Information restricted by the terms of our collecting permits/acquisitions where third-party permission needed to release data (e.g., private landowner, Federal/State/Tribal agency)
- Contextual information and/or digital files that the Collection database is not set up to handle
- Data that data aggregators are not set up to handle
- Historical collection might not have recorded in same way as today and “conversion” to a “modern” standard has not occurred yet
- Incomplete nature of an observation or does not “fit” the existing data “standards”
- Locality information below county to:
 - Respect the privacy, safety, and/or security property owner(s)
 - Protect localities/sites that might share locality data with protect sites (e.g., vertebrate paleontology localities, archaeological sites or other culturally sensitive properties)
 - Where third-party permission needed to release data (e.g., private landowner, Federal/State/Tribal agency)
 - Localities that contain/could contain specimens that are highly collectible and/or have potential commercial value or trade (especially those regulated under laws or other international conventions to which the U.S. is a signatory, including anthropological, rock or mineral and paleontological specimens)
- Those specimens/localities that are held under a repository agreement, which means we do not actually “own” the data in question and as such it is not our decision whether we release it or not
- Differing source information (such that we are unsure which to share)
- Data for which release might violate additional applicable laws, policies, regulations, rules or similar legal principles
- Data for which release might transgress ethics and/or sensitivity to cultural concerns

Our collection data represent “positive” information: a record of something found in a specific place and time. An absence of a record could mean that data were not collected, that data are not our collections, or that the data have not been captured electronically representing gaps or uneven distributions in records not necessarily absences of the organism or object of interest.

Our publicly available data in progress as collection staff continues to add, update, and modify records to improve for data quality and availability. Users should be aware that georeferenced localities represent polygon centroids instead of the actual point locality of the specimen and certain types of spatial analysis may have increased errors because of this.

References consulted when devising our collection information & data access/sharing procedures

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Some Laws, Regulations, or similar legal principles that influence data access/sharing procedures (arranged by date)

International, federal, tribal, state, and local governmental entities or agencies often have laws, regulations, policies, rules or similar legal principles that impact how fossils and geological materials may be collected, managed and/or shared. Attempts are made to be aware of these rules and how they changed or developed over time. Gathered here are some of the laws, regulations, policies, rules or similar legal principles that may have bearing on fossils and geological materials that managed by the collection. It is the responsibility if any research to verify that these or other laws, regulations, policies, rules or similar legal principles are followed in their research and collecting. This listing is not intended to be all-inclusive, but as laws, regulations, policies, rules or similar legal principles that may have bearing on fossils and geological materials that managed by the collection are discovered they will be added here.

Abbreviations used below:

- Bureau of Indian Affairs (BIA)
- Bureau of Land Management (BLM)
- Bureau of Reclamation (BOR)
- National Park Service (NPS)
- U.S. Department of Agriculture (USDA)
- U.S. Department of Interior (DOI)
- U.S. Fish and Wildlife Service (USFW)
- U.S. Forestry Service (USFS)
- U.S. Geological Survey (USGS)

Organic Administration Act of 1897. 16 U.S.C. §§ 473-475, 477-482 [Title 16, Part 473-475 and 477-482, United States Code]

USDA (USFS) regulations including:

36 C.F.R. § 2.1(a)(1)(iii) [Title 36, Part 2.1(a)(1)(iii), United States Code]

36 C.F.R. § 228.62(d-e) [Title 36, Part 228.62(d-e), United States Code]

36 C.F.R. § 261.9(i) [Title 36, Part 261.9(i), United States Code]

Antiquities Act of 1906. 16 U.S.C. §§ 431-433 [Title 16, Part 431-433, United States Code]

DOI (USFS, BLM) regulations including:

43 C.F.R. § 3 [Title 43, Part 3, United States Code of Federal Regulations]

USDA regulations including:

7 C.F.R. § 3100.41(a) [Title 7, Part 3100.41.(a), United States Code of Federal Regulations]

National Registry of Natural Landmarks of 1935. 16 U.S.C. §§ 461-467. [Title 16, Part 461-467, United States Code]

Petrified Forest National Monument in 1906. 16 U.S.C. § 119 [Title 16, Part 119, United States Code]

Dinosaur National Monument in 1915. Proc. No. 131, 39 Stat. 1752 (Oct. 4, 1915) [Proclamation No. 131, Title 39, Stat. 1752]

Agate Fossil Beds National Monument in 1965. Pub. L. No. 89-33, 79 Stat. 123 (June 5, 1965) [Public Law No. 89-33, Part 79, Statute 123]

Florissant Fossil Beds National Monument in 1969. Pub. L. No. 91-60, 83 Stat. 101 (Aug. 20, 1969) [Public Law No. 91-60, Part 83, Statute 101]

Hagerman Fossil Beds National Monument in 1988 and modified 1990. Pub. L. No. 100-696, 102 Stat. 4575 (Nov. 18, 1988) [Public Law No. 100-696, Part 102 Statute 4575] and Pub. L. No. 101-512, 104 Stat. 1923 (Nov. 5, 1990) [Public Law No. 101-512, Part 104, Statute 1923]

Mineral Materials Act of 1947. 30 U.S.C. §§ 601-604 [Title 30, Part 601-604, United States Code of Federal Regulations]

BLM regulations including:

43 C.F.R. § 3604.12(b) [Title 43, Part 3604.12, United States Code of Federal Regulations]

43 C.F.R. § 3622.4 [Title 43, Part 3622.4, United States Code of Federal Regulations]

National Wildlife Refuge System Administration Act of 1966. 16 U.S.C. §§ 668dd-668ee [Title 16, Part 668dd-668ee, United States Code of Federal Regulations]

USFW regulations including:

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50 C.F.R. § 27.63 [Title 50, Part 27.63, United States Code of Federal Regulations]

Archeological and Paleontological Salvage Act of 1974. 23 U.S.C. 305 [Title 23, Part 305, United States Code]

Federal Land Policy and Management Act of 1976. 43 U.S.C. §§ 1701-1785 [Title 43, Part 1701-1785, United States Code]

BLM regulations including:

43 C.F.R. § 8365.1-5(c) [Title 43, Part 8365.1-5(c), United States Code of Federal Regulations]

Archaeological Resources Protection Act of 1979. 16 U.S.C. §§ 470aa-470mm [Title 16, Part 470aa-470mm, United States Code]

Convention on Cultural Property Implementation Act of 1982. 19 U.S.C. §§ 2601-2613 [Title 19, Part 2601-2613, United States Code]

Federal Cave Resources Protection Act of 1988. 16 U.S.C. §§ 4301-4309 [Title 16, Part 4301-4309, United States Code]

The Paleontological Resources Preservation Act (PRPA) of 2009. Public Law 111-11, Title VI, Subtitle D; 16 U.S.C. §§ 470aaa - 470aaa-11 [Public Law 111-11, Title VI, Subtitle D; Title 16, Part 470aaa - 470aaa-11, United States Code]

USDA (USFS) regulations including:

36 CFR § 291 [Title 36, Part 291, Code of Federal Regulations] see: <https://www.ecfr.gov/cgi-bin/text-idx?SID=7b7796f0ea8fb9aa22cf76da4fb5d09&mc=true&node=pt36.2.291&rgn=div5>