

Making Archaeological Collections More Findable and Accessible through Increased Coordination

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ABSTRACT

Archaeologists seek to improve our understanding of the past by studying, preserving, protecting, and sharing nonreplaceable archaeological resources. Archaeological collections hold information that can assist these aims as long as they are properly cared for, identified, and accessible. One of the most serious barriers is the lack of large-scale coordinated efforts to make archaeological collections findable and accessible. This article suggests that developing and implementing the use of a standardized set of attributes regarding collections provides solutions and strategies to find collections. These attributes can connect and standardize existing archaeological collections from a variety of sources (federal and state agencies, CRM firms, Indigenous and descendant communities, and academic departments), serving the profession in multiple ways. Most critically, the baseline data can be synthesized to inform and direct priorities for future fieldwork, thereby decreasing redundancy in archaeological collections and improving curation efforts nationwide. Such efforts would also provide a resource to students and researchers looking to understand and interpret the past at multiple scales by encouraging more collections-based research and less archaeological site destruction. Access for descendant communities will also be improved with information about their cultural heritage. This, in turn, encourages transparency and collaboration between those communities and archaeologists.

Keywords: FAIR, CARE, collections, researchability, findable, access, informatics, database

Los arqueólogos buscan mejorar nuestra comprensión del pasado estudiando, preservando, protegiendo y compartiendo recursos arqueológicos no reemplazables. Las colecciones arqueológicas contienen información que puede contribuir a estos objetivos, siempre que estén debidamente cuidadas, identificadas y accesibles. Una de las barreras más serias es la falta de esfuerzos coordinados a gran escala para hacer que las colecciones arqueológicas sean localizables y accesibles. Este documento sugiere que desarrollar e implementar el uso de un conjunto estandarizado de atributos con respecto a las colecciones brinda soluciones y estrategias para encontrar colecciones. Estos atributos pueden conectar y estandarizar las colecciones arqueológicas existentes de una variedad de fuentes (agencias federales y estatales, empresas de CRM, comunidades indígenas y descendientes y departamentos académicos) sirven a la profesión de múltiples maneras. Lo más importante es que los datos de referencia se pueden sintetizar para informar y dirigir las prioridades para el trabajo de campo futuro, lo que reduce la redundancia en las colecciones arqueológicas y mejora los esfuerzos de conservación en todo el país. Dichos esfuerzos también proporcionarían un recurso para los estudiantes e investigadores que buscan comprender e interpretar el pasado en múltiples escalas al fomentar más investigaciones basadas en colecciones y menos destrucción de sitios arqueológicos. También se mejorará el acceso de las comunidades descendientes con información sobre su patrimonio cultural. Esto, a su vez, fomenta la transparencia y la colaboración entre esas comunidades y los arqueólogos.

Palabras clave: FAIR, CARE, colecciones, investigabilidad, encontrable, acceso, informática, base de datos

Our discipline operates on the premise that archaeological resources (field records and artifact assemblage) are invaluable. Yet, given that the archaeological system in the United States currently operates the majority of archaeological collections, they are invisible to researchers, practitioners, descendant communities, and the general public. This lack of visibility is epitomized in the slow shift of academia to accept collections-based research as a legitimate avenue of graduate study and the lack of acceptance of collections-based work as a creative mitigation approach in

cultural resource management (CRM). The resulting focus on fieldwork, with little support for curatorial processing and long-term care that prioritizes accessibility of information on existing collections, continues to contribute to the ever-growing curation crisis (Bradle 2003; Childs 1995). For almost 20 years, experienced practitioners have decried our discipline's failure to digitize, organize, and connect archaeological site and collections information across North America (Kansa et al. 2010; Kintigh 2006; Kintigh et al. 2014; Limp 2011; Marwick et al. 2017; McManamon

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et al. 2017; Nicholson et al. 2023; Ortman and Altschul 2023; Snow et al. 2006). How can we ethically continue to practice archaeology, and generate new data, when we often cannot access archaeological collections that already exist along with the data they provide?

More recent examples from archaeology, as well as longer-standing examples from other sciences and humanities, have repeatedly demonstrated the power of networked, distributed, community approaches to these issues (e.g., Bates et al. 2020; Costello et al. 2014; Kali 2006; Schuchardt et al. 2007; Wells et al. 2014). In addition to enabling innovative research that will inform public policy, increased community data integration would also improve fieldwork and collections management at all levels of archaeological practice. In this article, we propose and describe a solution to this problem: the development and use of ontologies (standard vocabularies with formal definitions of relationships between definitions of concepts and information) for archaeological collections on a regional and, eventually, national level. We contend that developing and implementing the use of a standardized set of attributes will help repositories gain intellectual control of the collections they manage and make those collections findable and accessible for use by archaeologists and other interested parties. The reuse of these collections will enable a more thorough understanding of the archaeological past and a more mindful approach to archaeological field and lab work.

WHY CREATE A NATIONWIDE INVENTORY NETWORK?

There is a need for a nationwide inventory of archaeological collections and for the development of basic data structures and standards that will allow those inventories to be readily accessible by users. Such an inventory will also enable datasets to be connected across digital networks, akin to the Digital Index of North American Archaeology project discussed below. At the state level, inventories of archaeological sites are maintained by historic preservation offices. Most State Historic Preservation Offices (SHPOs) maintain these inventories in databases that support the work of CRM practitioners, the research needs of students and scholars, and the data needs of governmental planning and compliance reviewers. Although some states require that permitted projects identify suitable repositories for generated collections, they do not retain information about the resulting collections and their curation locations within the state site file data. This is a missed opportunity because this is a logical place to share this information, and it could add value to existing collections by making them more findable.

Information about collections does not need to be exhaustive but should contain a basic set of attributes to help locate and define collections. These collections are likely the only remaining physical manifestation of the archaeological record for sites that have become inaccessible due to development, destruction, or other impacts. This is especially true for sites impacted by the early practice of North American archaeology, many affected prior to the passing of the National Historic Preservation Act (NHPA) and excavated as part of federal undertakings such as the River Basin Surveys, Civilian Conservation Corps (CCC) projects, Tennessee Valley Authority (TVA), and other national infrastructure programs.

These collections are valuable tools for archaeological synthesis, research, CRM projects, infrastructure planning, descendant community connection, and public education (Henebry-DeLeon and Neller 2020).

Marquardt (2004) and Warner and Childs (2019) remind us to focus on what has been accomplished in archaeological collections management. Repositories have stepped up regarding care and rehabilitation of collections, but we need to do more to make these collections accessible. Our profession must maintain an active agenda for collections management and curation to ensure that the collections and the knowledge they contain can further contextualize humanity and be available for future generations (Domeischel and Trimble 2019). A comprehensive catalog that is systematically organized and linked to standardized attributes is needed to support archaeology's continued evolution in the twenty-first century.

THE VALUE OF OUR APPROACH

All sectors of archaeology (including academia, CRM, tribal archaeology programs, and government agencies) create artifact assemblages and are responsible for ensuring their proper preservation, curation, and reuse, including assemblages that are brought into the preservation process from descendant communities or discoveries by the public at large. Principle #7 in the SAA's Principles of Archaeological Ethics (Society for American Archaeology 1996) stipulates that all sectors "should encourage colleagues, students, and others to make responsible use of collections, records, and reports." To fulfill our profession's responsibility to steward the archaeological record, we argue that all sectors should work together to increase accessibility of collections. Of utmost importance is the creation of a comprehensive synthesis of the thousands of sites already excavated or simply identified and their relation to the collections generated from those identifications.

The development of a basic set of attributes that describe the archaeological collections that repositories hold serves the profession in multiple ways. Most critically, these baseline data can lead researchers to collections that inform national resource modeling as well as regional syntheses. Such data integration contributes to discussions and increased understandings of issues facing human societies that only archaeology can provide (Altschul et al. 2018; Anderson et al. 2017; Galle et al. 2019; Ortman and Altschul 2023). Such models and syntheses can be used to inform and direct priorities and needs for future fieldwork conducted in all sectors (Doelle et al. 2016). Insights from modeling could also decrease the unnecessary disturbance of previously investigated archaeological sites. Creative strategies could be developed that support use of existing collections through rehabilitation, facilitate modeling and syntheses, and aggregation of regional collection data. Overall, this could reduce redundancy in archaeological collections and improve preservation and curation efforts nationwide.

The work to rehabilitate and expand research of existing collections could come from academia. Prior to the last two decades, academic programs in the United States have primarily focused on field-based research for student training based in part on the priorities created by funding models but even more by student

advisors' misconceptions that legacy collections do not provide sufficient research ability. In addition, there has been an emphasis on taking intellectual "ownership" of a site through fieldwork, which has caused students who do not direct excavations to be viewed as improperly trained or having skirted the necessary work to earn their degree. Nevertheless, recent research shows that existing collections, whether excavated a few years or decades ago (as in the case of legacy collections), are a valuable resource for undergraduate and graduate research (Arendt 2013; Casselberry 2012; Ford 2019; Grant 2021; Myers 2019; Schiappacasse 2019; Voss 2012). They provide opportunities to explore and better understand the development of archaeological field and lab methods and for curation training. Collections-based research also enables archaeologists to understand and interpret the past at multiple scales (ranging from a single site to larger multisite comparative analysis). In some cases, such as the US Army Corps of Engineers' Veterans Curation Program, processing these often long-forgotten legacy collections can even provide a twofold benefit by teaching useful transferable skills to veterans entering the civilian workforce while extracting valuable data from the collections and making them more accessible (<https://veteranscurationprogram.org/>).

There are many collection-based thesis and dissertation research projects that have provided meaningful and field-changing insights. For example, Pauketat (1991) utilized legacy collections from the Mississippian mound site of Cahokia to better understand the emergence of complex chiefdoms, leading to a revised theoretical construct and expansion of research of Cahokia and the Mississippian Midwest. Bellorado's (2020) study utilized museum collections to understand how people in the Southwest used clothing to signal social identity in the Chaco and post-Chaco eras. Finally, recent edited volumes (Allen and Ford 2019) highlight numerous projects that are asking new questions and finding innovative uses for existing archaeological collections. Unfortunately, with the exception of Ford and Allen's volume, the fact that these research projects are collections based is not a focus, and this aspect in essence often goes unnoticed. Although the perceived unimportance of collections-based research may persist for many, we can change that perception in the profession by making collections findable and accessible—highlighting the vast amount of information that can be found in these collections when linked to other data. Science builds on data, and existing collections hold the types and quantities we need to provide a clearer understanding of past human cultures.

Federal and state governments have legally mandated responsibilities to manage the archaeological resources under their jurisdictions through long-term stewardship, including archaeological collections. All sectors of our discipline have the same ethical responsibility when it comes to stewardship. Knowing where collections are curated and what they contain only helps to make this task easier to complete and prioritize when fiscal resources are allocated.

Moreover, it is critical to note that our profession is not the only beneficiary of such efforts. Descendant communities have rights to their archaeological heritage. These rights are expressed in their desires to know where materials are housed and to have a voice in the stewardship of this heritage, including archaeological collections (Hazell and Hawkins 2023; Neller 2004, 2019; Thompson et al. 2023). Such rights extend to the data generated

from inventorying, cataloging, and researching artifact assemblages. Archaeologists must ensure that we create data storage and sharing systems that follow both the FAIR (Findable, Accessible, Interoperable, and Reusable; Wilkinson et al. 2016) and CARE (Collective benefit, Authority to control, Responsibility, Ethics) principles (Carroll et al. 2021; Gupta et al. 2023). We encourage transparency and collaboration with descendant communities. Such partnerships enable more holistic interpretations and understandings of the past (Colwell 2015; Flewellen et al. 2021; Franklin et al. 2020; Gonzalez 2016; Holland-Lulewicz et al. 2020; Silliman 2018). Making archaeological collections findable and accessible in ways that respect Indigenous and descendant communities' data sovereignty facilitates a tangible connection between assemblages and the descendant communities whose ancestors created them. Our proposed nationwide inventory would empower interested communities to efficiently locate and track collections of interest and could inform THPOs' decisions about the need for additional fieldwork.

MODELS FOR REGIONAL DATABASES

The development of collaborative databases is dependent on social and institutional processes to a greater extent than new technologies. In his assessment of the field, Limp (2011) outlined the following key elements of technological practices that support positive social and institutional processes focused on data:

- (1) Separation of content from representation and (re)use: By exposing data to the internet in open ways, data may be explored, recombined, and analyzed by researchers beyond the constraints of their systems of origin. Herein, we the authors achieve this with public tabular formats, as described below.
- (2) Fast interactive pages: Researchers need to be able to access and utilize data without lags due to back-end processing or barriers created by unnecessary security procedures. Herein, we achieve this with publication of scientific and cultural data chosen for safe reuse, without sensitive information pertaining to site locations and descendant community concerns.
- (3) Architecture of participation: This is the ability of researchers to access and recombine data, critique data, and share all this data with a community. We achieve this by combining the two aforementioned points. We advocate that government agencies provide unrestricted access to nonsensitive scientific and cultural information in the spirit of the Open Government Data Act (<https://www.cio.gov/handbook/it-laws/ogda>), which will begin processes of reuse, critique, and communication back to repositories and to the broader research community.

The development of regional or national databases that collate and organize archaeological data is not a new idea. Internationally, this strategy has been utilized to great effect (e.g., ARIADNE, <https://ariadne-infrastructure.eu/>; Arches, the United Kingdom's Archaeology Data Service, <https://www.archesproject.org/>). Within the United States, the practice of aggregating collections and data on a regional scale has been achieved by several different projects. Several US examples have collated regional or period-specific data to provide better researchability. These

examples contain large-scale datasets aggregated from scores of assemblages and provide a model for the value of compiled data to archaeological research.

- CyberSW (<https://cybersw.org/>)
- Chaco Research Archive (<http://www.chacoarchive.org/cra/>)
- Colonial Encounters (<http://colonialevents.org/>)
- Digital Archaeological Archive of Comparative Slavery (<https://www.daacs.org/>; Galle et al. 2019)
- Digital Index of North American Archaeology (<https://doi.org/10.6078/M7N877Q0>)
- National Cultural Resources Information Management System (NCRIMS; Halford and Ables 2023)

EXAMPLES OF CURATORIAL INFORMATICS IN PRACTICE BY DINAA

The design of an archaeological data repository's structure has important implications for users' abilities to interact with the data. Hansen (2019) provides important contextual information on the complicated history of the American Museum of Natural History's attempt to create digital resources as a means to collections access and illustrates how quickly inconsistency in data and difficulty in use can occur. King and Samford (2019) provide steps that repositories can take to enhance access to collections.

Among the examples in the previous section, the Digital Index of North American Archaeology (DINAA) exemplifies many potential solutions to the variety of informatics choices facing curators. DINAA brings into focus the different choices SHPOs and other repositories make regarding data collection and management. State and museum archaeological datasets are not designed to be scientific databases—or anthropological databases. They are primarily management tools that employ scientific and cultural terminology, definitions, attributions, and measurements to help order the massive amount of data that they contain. Consequently, such databases necessarily point to scientific and anthropological information of value to a wide variety of stakeholders. The goal of DINAA is to make this system of data representation an open and accessible one.

A problem often encountered in archaeological research is that data exist in seeming isolation. If data are not interoperable (i.e., it is not possible to analyze and interpret the datasets recorded in multiple states or sites, or in multiple research periods, together), then how can one use these apples and oranges to inform inter-site investigations? Additionally, if the data associated with curated collections are not known to exist, particularly when collections' existences cannot be ascertained within state site files, there is no other way to identify potentially useful data unless they have been published. We can fill this knowledge gap by creating an overview, or framework, that allows the data from existing collections to not only be discoverable but to talk to each other—that is, to be interoperable. By standardizing the attributes listed for existing collections and tying them to known sites, we can ensure that data will be represented in the way needed to return information *in the way that users will seek it*. The successful connection and interoperation of online archaeological data, offline data, and primary literature in the United States has been demonstrated

repeatedly by the DINAA project, which integrates basic archaeological site descriptors (e.g., Smithsonian Trinomial site numbers, site types, culture historical periods, calendar dates, and diagnostic artifact categories) into a publicly open index through which similar terms and concepts are connected using bridging ontologies and linked open-data strategies (Wells et al. 2014).

The objective of the DINAA project has been to define and integrate terms, attributes, and general geographic locations used to describe existing archaeological data represented in governmental site files, museum collections, research databases, and published literature, allowing the eventual interoperability of all archaeology data gathered from North American sites and collections through a linked ontology. A combination of digital object identifiers (DOIs), resource description framework (RDF) and web ontology language (OWL) entries, and archival resource keys (ARKs) all together structure archaeological site numbers, site definitions, and original sources of site data into an open index. The functions of the DINAA index are similar to those of a library card catalog, created to discover and locate original datasets, rather than the compilation of an encyclopedia. There are similarities between each state's archaeological site files, and between each museum's collections, but at the same time, preservation of the unique metadata and the original naming and categories of attributes can contribute to additional insight within specific research projects. Information encoded in original data structures can be valuable in its own way, and its preservation by linkage to similar information in other datasets through a standardized and clearly defined set of attributes rather than translation can further increase the added value of existing collections. This is particularly true when considering Indigenous Knowledge (IK) related to historic preservation, which often does not—nor should it need to—fit within common data structures used for archaeological collections (Kansa et al. 2021; Prabhakar and Mallory 2022).

Concerns regarding sensitive site data have also been at the forefront of ethical considerations for the DINAA project. Protection of archaeological site location is maintained through geospatial representation generalized within a 20 km², raster-like grid. For reference, this allows regional representation of sites and their associated data to areas no more specific than the coverage of an entire USGS topographic map. Furthermore, data considered legally or ethically sensitive (such as ownership information or data related to burials) are not included in the index. These may only be sought through citations, attributions, and links to original sources (e.g., SHPO databases) by users who have the need, authority, and established credentialed access to sensitive data (Wells et al. 2014). As of the date of this article, the DINAA website has published records on almost 900,000 archaeological sites across the 48 contiguous United States, with varying levels of information quality dependent on factors such as levels of investigation and availability of original digital records for interoperation; because of project efficiencies based in open-data practices, this entire effort has cost less than \$0.25 per site in direct expenditures.

Important applications of the linked ontology approach to archaeological data demonstrated by the DINAA project include modeling potential regional archaeological resource loss along the US Gulf of Mexico and Mid-Atlantic coasts (Anderson et al. 2017); development of educational modules in multistate archaeological record keeping for cultural resource management

professionals (Cook et al. 2018); illuminating ways in which government agencies at all levels may coordinate archaeological records with reduced expenditures and high information returns for scientific, cultural, and public benefits (Kansa et al. 2018); lowering barriers for access and reuse of heritage data by Indigenous and descendant communities in line with the CARE principles of the Global Indigenous Data Alliance (Kansa et al. 2021); and connection of primary site data to online literature with Smithsonian Trinomial site numbers and stable identifiers. The latter allows literature searches with geospatial visualization of site queries across sources, such as the complete runs (up to the 2018 JSTOR embargo) of the journals *American Antiquity*, *Midcontinental Journal of Archaeology*, and *Plains Anthropologist*, as well as Native American Graves Protection and Repatriation Act (NAGPRA) inventories and other reporting in the *Federal Register* (Wells et al. 2023).

The linked, open-data structure of DINAA connects site definitions to SHPO datasets, a variety of research data sources, and primary literature. Using open practices, DINAA is a current answer to the aspirations of the National Archaeological Database Project (NADB), which ceased updates in 2004. At that time, it had amassed a bibliography of about 350,000 citations of archaeological reports (National Archaeological Database [NADB] 2022; NADB-MAPS 2015). The cost-effective and public-facing strategy of DINAA demonstrates how American archaeology can meet expectations for fiscal responsibility and public science in data management.

HOW-TO GUIDE

In consideration of the collaborative, networked, indexed example of DINAA, we suggest a simple guide for curatorial facilities to leverage their practices of data communication for themselves. Curators could make their archaeological collections findable and accessible through a connected, interrelatable, public-facing format. One of the most serious barriers to making archaeological collections findable and accessible is the limited information that can be queried at the repository level. Ideally, a coordinated strategic plan at the national scale that allows for the development of a national archaeological collection database would provide the best long-term solutions and policies for understanding the full breadth of collections in the United States. Such a project would require a large-scale consolidated effort and considerable financial investment due to the need to gather input from states, individual institutions, and descendant communities and solid data. This is a daunting undertaking for already stressed collections management professionals in the field; there is no existing funding stream (and federal mandate) for this type of endeavor.

A solution and strategy that could facilitate progress is the creation of a brief finding aid with a minimum set of attributes for collections housed in repositories. We are not proposing the development of large-scale datasets of archaeological collections but rather a small dataset of specific fields that makes finding archaeological collections straightforward. Repositories could update this dataset with respect to their collections to facilitate accessibility for research, education, and connection to descendant communities. We recommend that the minimum set of attributes be gathered and fed into a state or regional database. The logical place would be the SHPO site inventory databases. We acknowledge that an alternative strategy used by other, similar

projects—such as those relating to biological collections (e.g., iDigBio)—would be to focus on university and academic collections. However, DINAA has already demonstrated the utility of SHPO site data to create a framework of connection and interoperability of archaeological data. What we propose would add another layer of information onto this existing network. The goal is to provide sufficient information to possible researchers and descendant communities that will allow individuals to find collections, not discover all facets of collections. One can think of it as a compendium: a simple, straightforward assemblage of attributes conveying a short finding aid about a collection.

We were inspired by a survey put forth by the Society for Historical Archaeology's Collections Committee entitled "**OMG this collection is a GOLD mine!**" The survey gathered data on historical archaeological collections that could provide opportunities for research. We suggest that a good starting point would be for state and federal repositories to compile data related to 10 basic attributes or fields of information (listed below as "Minimal Attributes") and make these datasets available to interested parties. We also include a list of "Additional Attributes" that will provide supplementary information to better assist researchers and descendant communities with finding collections of interest. The terms used to describe these attributes may vary by region, but so long as they are defined, organizations and individuals can query such data and interpret them based on their own interests.

We understand that time is precious, and this task will not seem like a viable option for most collections managers with their immense workloads (although this could be an excellent task for technicians or even interns with an interest in data accessibility if they are provided with the necessary training). Due to time restraints, we recommend prioritizing the description of existing Phase III (excavations that entail substantial recovery) collections that curators or SHPOs know have good analytical integrity in order to work out the first phase of the process and see how the attributes hold up. Those collections would compromise the testing dataset that, if found to be robust, could be expanded to Phase II (testing), Phase I (survey), and ultimately all other collections with and without material remains recovered using a variety of methods. Simultaneously, institutional accession standards could be modified to ensure that all new collections submitted to repositories are required to be accompanied by the minimal and additional attributes as a dataset when a collection is submitted. For both existing and new collections, we advocate for the minimal inclusion of the following attributes in collections records to increase accessibility of those collections.

Minimal Attributes

- (1) **Site Number(s):** Considered the most important attribute, this entry (or entries for collections with multiple site numbers) will allow for robust data mining and matching for site and collection association.
- (2) **Site Type:** A quick descriptor to denote the type of site will provide more information on the collection.
- (3) **Time Period(s):** This is the general time period of the site (e.g., Late Woodland period).
- (4) **Collection Name:** The collection name is a common identifier within a repository, and it can be helpful for multisite projects or in cases when a project was connected to a well-known archaeologist.

- (5) **Report Title and Year:** This will help tie the collection into searches that focus on reports (e.g., The Digital Archaeological Record, or tDAR, and NADB).
- (6) **Phase of Project:** This generally provides insight on research potential, type of investigation, and breadth of collection.
- (7) **Estimated Artifact Volume (in cubic feet):** Volume of collection can provide insight into the research potential of the collection.
- (8) **Estimated Associated Records (in linear inches):** The extent and presence of associated records can provide insight into the research potential of the collection.
- (9) **Human Remains / Funerary Materials:** This indicates the presence, absence, or uncertain occurrence of human remains or funerary materials in the collection.
- (10) **Repository Name:** This is the information necessary to allow interested individuals to inquire about accessing the collection.

The following attributes are also strongly suggested for inclusion, if possible, to provide researchers and descendant communities with more robust data on the collections.

Additional Attributes

- (11) **Site Name:** This is helpful to include for popular named sites and could allow for more access to collections when site numbers are unknown by the searcher.
- (12) **Early Date:** The earliest suspected human occupation of site (with date format noted, such as BC, AD, BP, etc.) helps to provide a more exact time frame.
- (13) **Late Date:** The latest suspected human occupation of site (with date format noted, such as BC, AD, BP, etc.) helps to provide a more exact time frame.
- (14) **Project Name:** Similar to Collection Name, the project name may serve as a common identifier within a repository. It can be useful for multisite projects or when a project was connected to a well-known archaeologist.
- (15) **Accession or Collection Identifier Number:** This number allows repository officials to track collection access requests and ensures that the proper materials are pulled when access is requested.
- (16) **Principal Investigator:** This is another attribute that can help lead interested individuals to a list of collections excavated by a specific individual.
- (17) **Year(s) of Excavation:** This may aid in locating a collection based on known excavation dates, but it may also provide insight into the standards used in the original analysis.
- (18) **Key Features from Excavation:** This indicates features discovered during excavation to provide insight into the researchability of the collection.
- (19) **Material Classifications Included:** This indicates types of artifacts collected to provide insight into the researchability of the collection. It allows for more individualized review of the collection prior to requesting access based on research and access interests.
- (20) **Diagnostics Present? (Yes or No):** This is an indicator of the researchability of the collection based on the specific interest of the individual requesting access.
- (21) **Brief Collection History:** This is a short write-up of additional details of the collection that would be beneficial to a researcher or member of a descendant community.

- (22) **Is Collection Washed/Sorted?** This provides researchers with information on the current physical state of the collection.
- (23) **Is Collection Cataloged?** This provides researchers with information on the organizational state of the collection.
- (24) **Additional Location(s) of Materials from Site (if known):** This indicates that additional materials from the same collection are housed elsewhere.
- (25) **Other Publications/Reports from Site (if known):** This indicates that additional reports from the same site exist.

Repositories will gain better intellectual control of their collections through a systematic, structured process of recording key attributes about the archaeological collections under their care. They can then feed this dataset into a state or regional database of known archaeological collections in order to better serve researchers, descendant communities, and the public, resulting in improved collections stewardship.

CONCLUSION

The lack of accessible standardized information on existing archaeological collections is a major contributor to the curation crisis. Archaeological professionals must confront the difficult reality that the failure to fully engage with our professional and ethical responsibilities to collections organization and research is negatively impacting the archaeological record. As Childs (2004) notes, until archaeologists truly accept these responsibilities, the curation crisis will continue to intensify. Although we are making progress, continued work is needed to fully demonstrate the value of collections and how their role in heritage management is essential to having a forward-thinking, mindful, and respectful approach to the work of archaeology.

A comprehensive catalog of archaeological collections and their locations will help move archaeology into the future. Collections provide untapped opportunities if basic descriptive data is gathered and provided in an accessible format. Making archaeological collections findable and accessible in ways that align with descendant communities' needs and interests requires a coordinated effort. We suggest starting on the state level, preferably in coordination with SHPOs or permitting agencies. Ultimately, the data generated can be fed into regional databases and, potentially, a national database of archaeological collections.

This article provides solutions and strategies for making archaeological collections findable by and accessible to academia, CRM, federal and state government agencies, and tribal governments and communities. The development of regional databases of existing archaeological collections serves the profession in multiple ways. It can provide the baseline data to determine and direct future fieldwork through archaeological synthesis, thereby decreasing redundancy in archaeological collections and improving curation efforts nationwide. Such databases would also be a vital resource for students and researchers looking to understand and interpret the past, encouraging more collections-based research and less archaeological site destruction. Such data would also provide descendant communities with information about their cultural heritage and invite more opportunities for collaboration between those communities and archaeologists.

Ultimately, these databases form the baseline and potential network for a larger, national database that will help to preserve and interpret our collective past. The end result far outweighs the time and resources necessary to build them and will contribute valuable information for future practitioners. We continue to improve our methods for rehabilitating, curating, and managing archaeological collections. An important next step is to make them findable and searchable. The future of archaeology should contain national-level archaeoinformatics applying the tools of computation and analysis to capture and interpret archaeological data. These are the types of changes Amand and colleagues (2020), Nicholson and colleagues (2023), and Ortman and Altschul (2023) have recently called for to systematically understand and leverage the wealth of archaeological data and knowledge held in collections.

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