

Project Report

2005-2006 Dendrochronology and Artifact Collection
Research Project,
Tonto National Monument



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Introduction

The following report describes a project that occurred between September 06, 2005 and January 31, 2006. The project compiled research information about prehistoric and historic wood elements at Tonto National Monument's Upper and Lower Cliff Dwellings. This information includes dendrochronology sample locations, species identifications, provenience information for replaced wood elements and chronology data such as tree ring and Carbon 14 dates. Additionally, an ACCESS database was created to store and display artifact provenience data.



Figure 1. Close up of replaced/altered pole lintels in Rm. 08/09, Lower Cliff Dwelling. Replaced by Gordon Vivian, 11/25/1952.

Background/Project Location

Tonto National Monument is located in the center of Arizona and has a total acreage of 1,120 Acres (Figure 2). Visitation recorded in 2004 was 63,213. The Monument is located within the lower Sonoran Desert Scrub Zone which includes cactus, jojoba, paloverde, catclaw and creosote. Summer thunderstorms are generally associated with moisture flowing north from the Gulf of Mexico and produce approximately 12" to 15" of the annual precipitation.

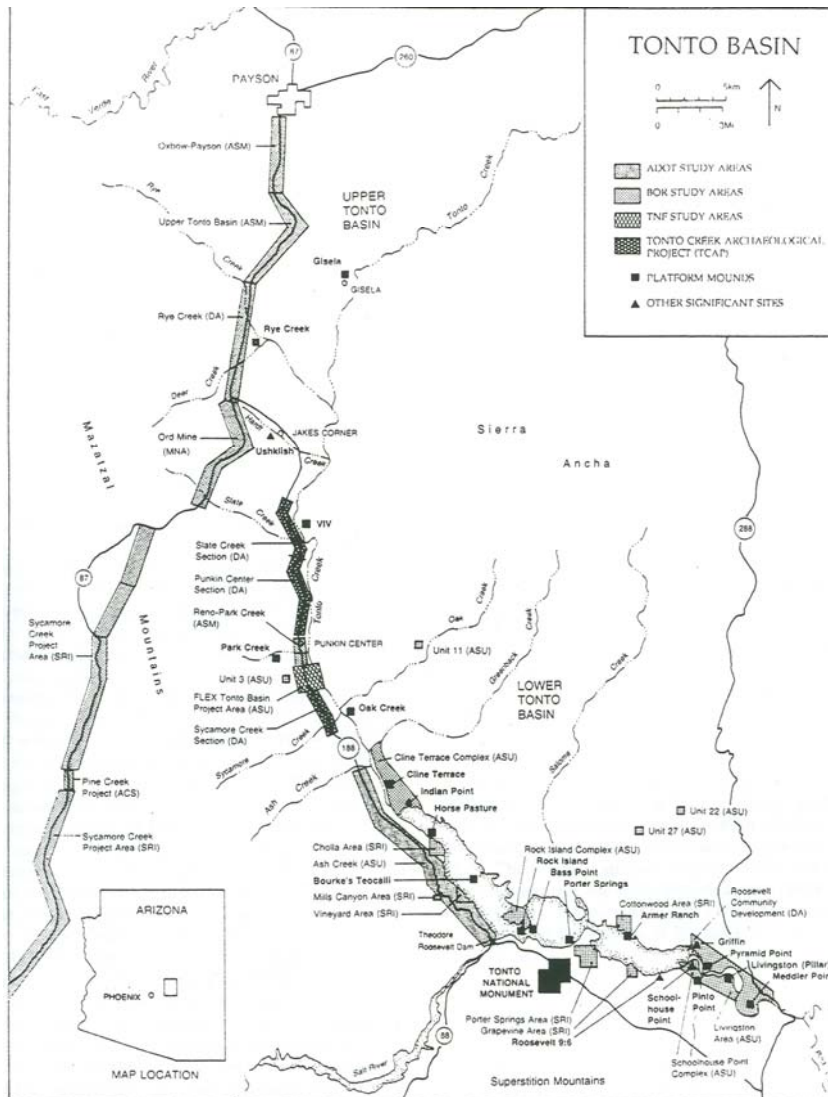


Figure 2. The location of Tonto National Monument relative to Tonto Basin geography and other prominent archeological sites (after Clark 1997).

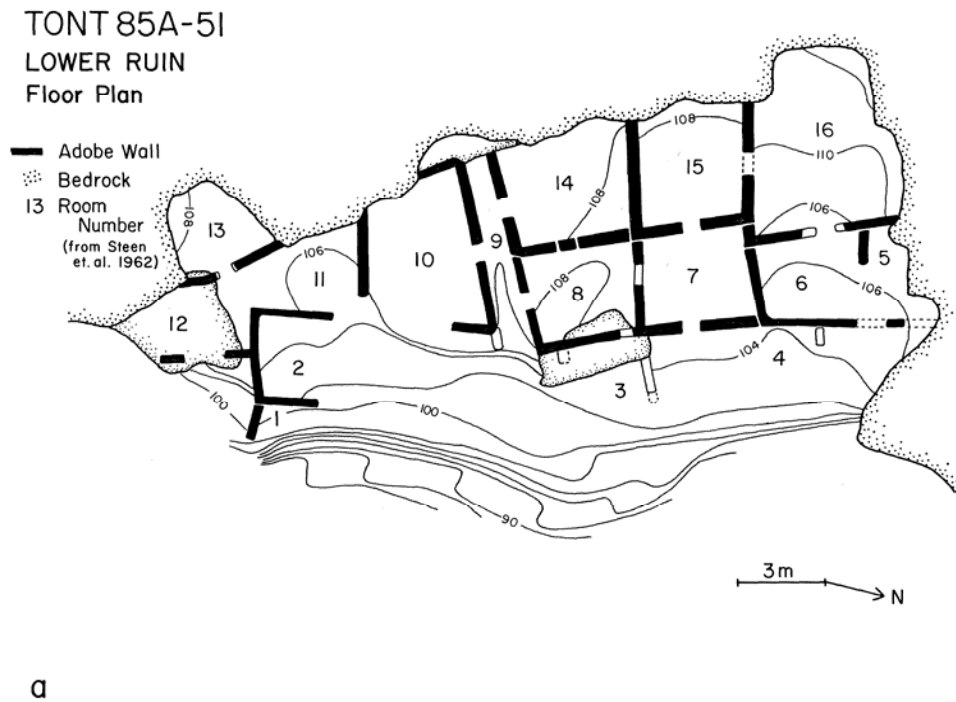


Figure 3. Plan view map of the Lower Cliff Dwelling (AZ U:8:47 or TONT 85A-51).

The Lower Cliff Dwelling is located at approximately 3160' in elevation while the Upper Cliff Dwelling sits at approximately 3360'. A riparian area is located within a 20 minutes walk below the ruins. The preservation of the Cliff Dwellings began in 1907 when President Roosevelt established the Monument based on its "great ethnologic, scientific, and educational interest" (Proclamation No.787-Dec. 19, 1907-35 Sta. 2168).

The Lower Cliff Dwelling (AZ U:8:47 or TONT 85A-51) consists of a 16 room masonry/adobe pueblo built into a large rockshelter (Figure 3). The site primarily represents a Late Classic Period, Gila Phase occupation with a preceding Roosevelt Phase dating ca.1300 – 1450 AD. Significant elements of the ruin include a fully intact roof in Room 14 and numerous wood elements still present in the walls.



Figure 4. Plan view map of the Upper Cliff Dwelling (AZ U:8:48 or TONT 85A-50)

The Upper Cliff Dwelling (AZ U:8:48 or TONT 85A-50) consists of a 32 room masonry/adobe pueblo built into a large rockshelter (Figure 4). The site primarily represents a Late Classic Period, Gila Phase occupation with a preceding Roosevelt Phase dating ca.1300 – 1450 AD (Fox 2000:1). The site has yielded spectacular cotton textiles as well as impressive lithic tools, ceramic vessels and intact wooden elements such as vigas and roofs.

Project Tasks

The Upper and Lower Cliff Dwellings have numerous preserved architectural elements including, posts, lintels, beams, and closing materials. Past projects have attempted to attain tree ring dates and species information from a majority of preserved wood at both sites. Additionally, stabilization projects have replaced these elements without adequate forms of documentary and physical evidence as defined in the Secretary of Interior's standards for rehabilitation. Similarly, artifacts recovered from the dwellings include lithic materials, perishables, ceramics and faunal remains. The majority of these items are currently stored at the Western Archaeological Conservation Center (WACC). Very little provenience data exists for artifacts recovered from the Upper and Lower Dwellings between 1907 and the 1960's.

Three tasks were identified in the project's original scope of work. The intent of this project is to provide valuable research information regarding the provenience and chronology of artifacts and wood samples recovered from the dwellings. A synthesis of each task is provided below.

Task 1. Research Past Dendrochronology Sample Locations and Findings for the Primary Cliff Dwellings.

Task 2. Research Historically Altered or Replaced Wooden Elements for the Primary Cliff Dwellings.

Task 3. Establish an ACCESS database Regarding Artifact Provenience Data for the Primary Cliff Dwellings.

Project Results

Task 1

The first priority of this task was to find sources with information about dendrochronology sampling events and sample locations. Twenty one sources have been found that contain information about dendrochronology samples (see dendrochronology bibliography database for more information). Literature searches were conducted at Cline Library (NAU), Arizona State University libraries and University of Arizona libraries. Six source materials including articles, books and technical publications were located during these searches.

Additionally, the Tonto National Monument digital archives were searched for memos, reports, and field notes that contained similar information. Five materials were found that discuss tree ring coring, dates or species identifications. The Laboratory of Tree Ring Research at the University of Arizona was also contacted. LTRR sent an entire copy of their Tonto file that included field notes, reports, letter reports and historic memos.

The dendrochronology bibliography database contains ten documents that comprise LTRR's current Tonto file. The Western Archaeological Conservation Center (WACC) was also contacted. With the assistance of Khaleel Saba, all the known Tonto files were searched for the desired information. Unfortunately, no new files were found to add into the existing database.

Of particular interest are two letters that may be associated with an unknown collection. One letter is from Tonto maintenance man John Peavy requesting permission to take core samples in 1940. The reply, from Charlie Steen, gives Peavy permission to core any prehistoric wood element not already sampled. Neither WACC nor LTRR were successful in locating any additional information on this collection event. Until other information is located, it can only be assumed that Peavy never took samples.

To date, eighty three tree ring cores have been extracted from wood elements at the Upper, Lower and Annex Dwellings at Tonto. The majority of these samples were taken from wood elements that were extracted from cultural fill deposits or now non existent architectural elements. The documents indicate that every prehistoric architectural element currently exposed at the Upper and Lower Dwellings was, at one time, cored. Of these samples only three reliable tree ring dates were found.

The database also records charcoal samples collected during the Greg Fox excavations. These samples constitute over four hundred individual catalog numbers. Although species and provenience information was recorded for many of these samples, they were excavated from disturbed cultural fill.

Similarly, species and condition information is recorded for fifty one samples taken during Robert Blanchette's wood assessment of the Upper and Lower Cliff Dwellings. Sample locations are clearly recorded. Unlike previous collections, samples were also microscopic in size and left no recognizable trace.

Collection events are surprisingly well recorded with regard to date and collector name. With exception to William Duffen, most records contain specific collection dates and provenience information. While at the Monument in early January, I was able to match the provenience information recorded in each document with its physical location in the dwelling.

The information extracted from the collected memos, publication and reports were compiled into an ACCESS database. Entitled "[dendrobase](#)", the ACCESS file contains information about the collection date, collector, provenience, species and chronological information of each sample. Additionally, a [bibliographic database](#) was created to display the information located in the "dendrobase". The bibliography contains links to PDF format files of each document. Please follow the links above to view each database.

[Appendix 1](#) shows data from the dendrochronology database. This data includes the collection date, collector, site name, sample number, room number, dendrochronological date and species identification.

Task 2

Like Task 1, this task involved the collection of information from past stabilization reports and field notes. The Monument's stabilization database was queried for any information on replaced wood elements. Additional documents were also searched to locate any information not found during the database query. Eleven entries were located that represent eight separate dates from 1937 to 1995. Table 1 illustrates the dates, names and locations associated with the nine existing replaced elements at the Upper and Lower Ruin.

Date of Work	Supervisor	Site Name	ASMIS	Room #	Location of replaced element
1937	Duffen, W.	LCD	51	10	"Ceiling beam" (primary beam)
1952	Vivian, G.	LCD	51	8	South wall, doorway (Lintel)
1952	Vivian, G.	LCD	51	9	North wall, below vigas (2x4)
1957	Richert, R.	UCD	50	14	East wall, above doorway (2x6)
1965	Mayer, M.	UCD	50	13	Low north doorway (lintel poles)
1970	Mayer, M.	LCD	51	9	Lintel and north wall below vigas (viga poles)
1992	Morrison, F.	LCD	51	9	Roof (adobe and saguaro)
1992	Morrison, F.	LCD	51	1	Secondary beams (replaced wood dowels)
1995	NPS	LCD	51	10	Secondary beams (replaced wood dowels)

Table 1. Information about existing replaced wood elements at the Upper and Lower Ruins, Tonto National Monument.

While at the Monument I located, photographed and plotted each element onto a site map. Although it is my belief that several other wood elements at the Lower and Upper dwelling have been replaced, their descriptions and locations are not recorded in Tonto archives.

The replaced wood information was placed into an ACCESS database entitled "[replaced wood](#)". The database records the date of the work, the supervisor, provenience, and a description of the element. Additionally, hyperlinks to map locations and digital photographs are also provided. A [bibliographic database](#) was also created to record the source materials where information was found. The bibliographic database also contains hyperlinks to PDF format files of each document. Please follow the links above to view each database.

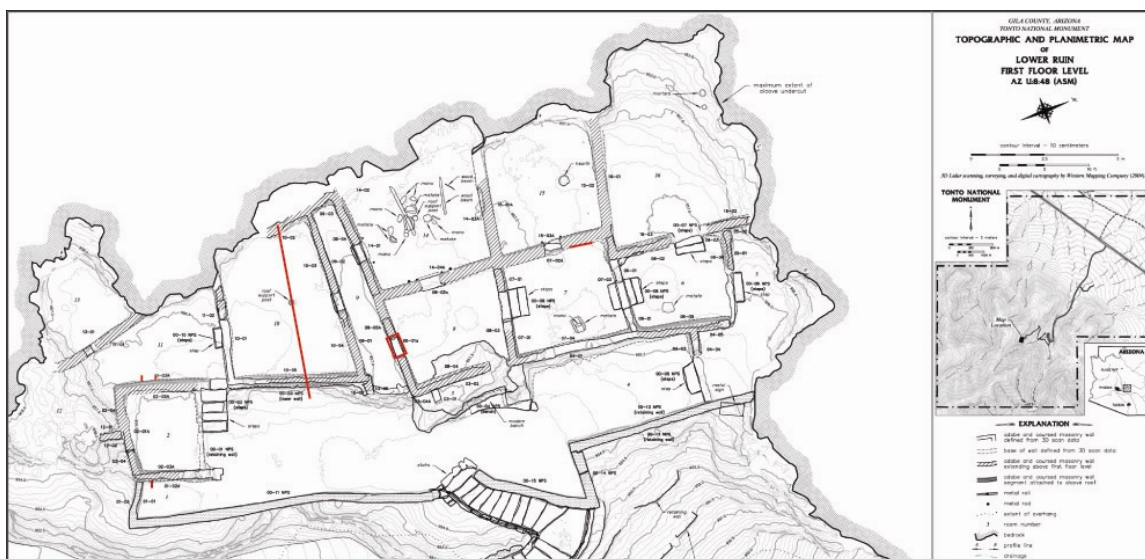


Figure 5. Site plan map of Lower Cliff Dwelling with locations of replaced wood elements shown in red.



Figure 6. Exposed corner of stabilized 2x4 above doorway,, Lower Cliff Dwelling, Room 9, north wall. Installed by Gordon Vivian, 1952.



Figure 7. Replaced dowel pin in exposed viga, Lower Cliff Dwelling, room 1, north wall. Replaced by Faye Morrison, 1992.



Figure 8. Replaced pole lintels at Lower Cliff Dwelling, north doorway, room 9. Replaced by Gordon Vivian, 1952.



Figure 9. 2x6 used to stabilize room 15 east wall, Lower Cliff Dwelling. Installed by Roland Richert, 1957.

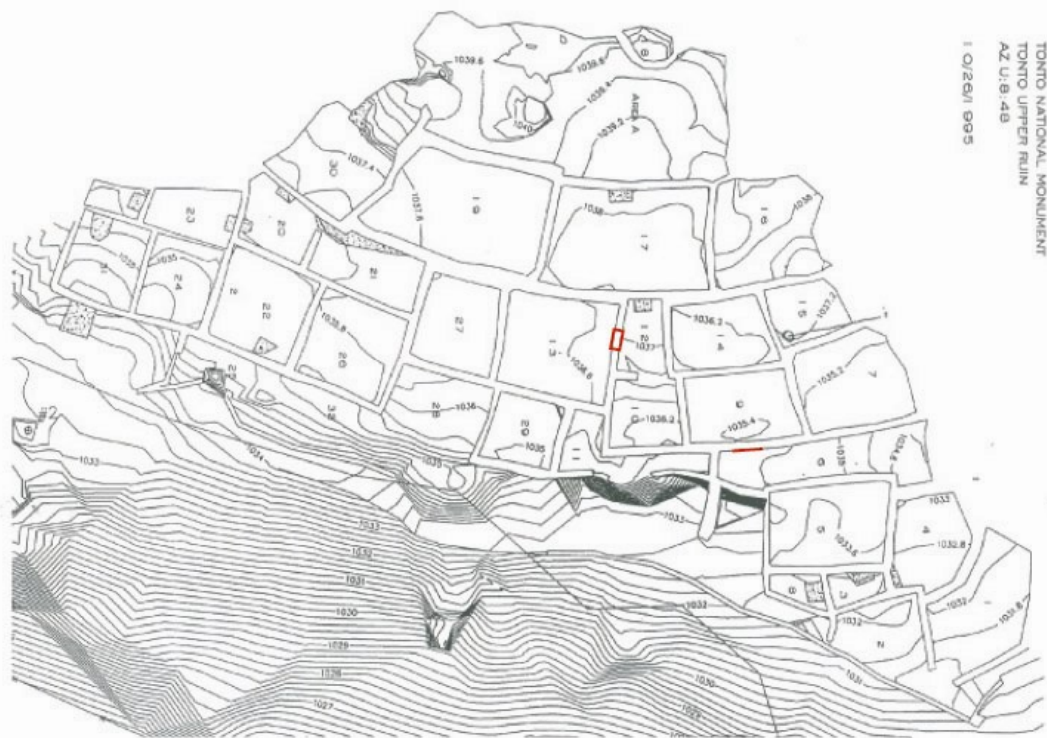


Figure 10. Site plan map of the Upper Cliff Dwelling with replaced wood elements shown in red.



Figure 11. Replaced pole lintel in room 13, north doorway, Upper Cliff Dwelling. Replaced by Martin Mayer 4/23/1965.

Task 3

Task 3 involved creating an ACCESS database with museum management information. Many of the excavations at TONT are directly related to ruins preservation activities. For this reason, the following information is needed to understand what is left intact below the surface in the primary cliff dwellings and which rooms essentially have received full data recovery. This information will be used as a factor in determining future invasive preservation projects. Also, artifact type and density may also be used when planning future projects.

This database contains approximately 4,500 artifacts recovered from archaeological sites within the Monument's boundaries. Many of these entries did not contain provenience information before the database was created. Additionally, entries also did not contain collection information such as excavation date, collector and cataloger.

Information about collection dates, collectors and provenience were researched in technical publications, excavation reports and stabilization reports. For events such as Steen's 1940 excavation of the Upper Ruin, basic proveniences, artifact descriptions and pictures were found. The information within these reports was matched to existing descriptions in the Monument's museum files.

Additional information was taken from the Monument's accession files. Collection dates and artifact descriptions were matched to existing accession numbers. NAGPRA eligible items such as burial goods and human remains were also reviewed and placed into a category to be used by the Monument's cultural resources manager.

It is important to note that a number of the artifacts within the database do not originate from sites within the Monument's boundaries. Artifacts donated from private collections across the southwestern United States are listed with Tonto accession numbers. For the purposes of this database, artifacts originating outside of the Monument were ignored (how many?).

The [Tonto artifact database](#) records information that includes accession number, collection date, collector, various provenience information, NAGPRA eligibility and morphological descriptions. Pictures of artifacts from museum files and reports are hyperlinked where possible. Tables 2 and 3 show artifact site numbers and artifact counts for sites located within and outside of the Monument's boundaries. Please follow the link above to view the artifact database.

ASM #	Site Name	Number of Artifacts Found
Unknown	Unknown	274
U:03:001	Tonto National Forest	2
U:03:002	Tonto National Forest	1
U:03:003	Tonto National Forest	1
U:04:001	Tonto National Forest	1
U:04:003	Tonto National Forest	1
U:04:004	Tonto National Forest	1
U:04:005	Tonto National Forest	1
U:08:001	Tonto National Forest	1
U:08:002	Tonto National Forest	1
U:08:003	Tonto National Forest	1
U:08:004	Tonto National Forest	1
U:08:005	Tonto National Forest	1
U:08:006	Tonto National Forest	2
U:08:007	Tonto National Forest	1
U:08:008	Tonto National Forest	1
U:08:009	Tonto National Forest	1
U:08:010	North Shore, Roosevelt Lake	8
U:08:011	Tonto National Forest	1
U:08:012	Tonto National Forest	2
U:08:023	Tonto National Forest	2
U:08:024	Schoolhouse Point	4
U:08:026	Unknown	1
U:08:029	Tin Cave	6
U:08:033	Tonto National Forest	2
U:08:034	Tonto National Forest	2
U:08:035	Tonto National Forest	1
U:08:036	Tonto National Forest	1
U:08:037	Tonto National Forest	1
U:08:038	Tonto National Forest	1
U:08:039	Tonto National Forest	2
U:08:040	Tonto National Forest	1
U:08:041	Tonto National Forest	1
U:08:042	Tonto National Forest	7
U:08:043	Tonto National Forest	2
U:08:044	Tonto National Forest	5
U:08:045	Tonto National Forest	1
U:08:046	Tonto National Forest	2
U:08:612	Unknown	81

Table 2. Site numbers and associated artifact counts from sites located outside the Monument's boundaries.

ASM #	Site Name	Number of Artifacts Found
U:08:047	Lower Cliff Dwelling (Tonto National Monument)	681
U:08:048	Upper Cliff Dwelling (Tonto National Monument)	4397
U:08:047	Tonto National Monument Lower Annex (Tonto National Monument)	37
U:08:088	Tonto National Monument	1
U:08:089	Tonto National Monument	0
U:08:090	Tonto National Monument	2
U:08:091	Tonto National Monument	2
U:08:092	Tonto National Monument	7
U:08:093	Tonto National Monument	0
U:08:094	Tonto National Monument	1
U:08:095	Tonto National Monument	2
U:08:096	Tonto National Monument	0
U:08:097	Tonto National Monument	0
U:08:098	Tonto National Monument	0
U:08:099	Tonto National Monument	0
U:08:100	Tonto National Monument	0
U:08:101	Tonto National Monument	1
U:08:102	Tonto National Monument	2
U:08:103	Tonto National Monument	0
U:08:104	Tonto National Monument	0
U:08:018	Tonto National Monument	1
U:08:105	Tonto National Monument	1
U:08:106	Tonto National Monument	0
U:08:107	Tonto National Monument	0
U:08:108	Tonto National Monument	1
U:08:109	Tonto National Monument	0
U:08:013	Teddy Bear Knoll (Tonto National Monument)	6
U:08:014	Tonto National Monument	2
U:08:015	Tonto National Monument	0
U:08:110	Tonto National Monument	1
U:08:111	Tonto National Monument	1
U:08:112	Tonto National Monument	2
U:08:113	Tonto National Monument	0
U:08:114	Tonto National Monument	1
U:08:115	Tonto National Monument	1
U:08:116	Tonto National Monument	3
U:08:117	Tonto National Monument	0
U:08:118	Tonto National Monument	1
U:08:119	Tonto National Monument	0
U:08:120	Tonto National Monument	0
U:08:016	Tonto National Monument	5
U:08:121	Tonto National Monument	1
U:08:122	Tonto National Monument	6
U:08:123	Tonto National Monument	3
U:08:124	Tonto National Monument	0
U:08:020	Tonto National Monument	2
U:08:126	Tonto National Monument	2
U:08:127	Tonto National Monument	0

U:08:128	Tonto National Monument	0
U:08:129	Tonto National Monument	0
U:08:130	Tonto National Monument	2
U:08:131	Tonto National Monument	7
U:08:132	Tonto National Monument	1
U:08:133	Tonto National Monument	1
U:08:134	Tonto National Monument	0
U:08:082	Tonto National Monument	0
U:08:021	Tonto National Monument	3
U:08:022	Tonto National Monument	0
U:08:135	Tonto National Monument	0
U:08:136	Tonto National Monument	0
U:08:137	Tonto National Monument	4
U:08:138	Tonto National Monument	1
U:08:019	Tonto National Monument	5

Table 3. Site numbers and associated artifact counts for sites located inside of the Monument's boundaries.

Database Requirements

Each of the Task's databases are linked to photographs, PDF documents and digital maps. It is imperative that the structure and location of each folder not be changed. If the location or structure is altered; the hyperlinks will not function correctly. Listed below is the location of each file within the database structure.

“Databases”-The main file by which all other files are located, contains all task information.

“Site Maps”-Contains JPG. format maps of replaced and prehistoric wood elements at the Upper and Lower Cliff Dwellings.

“Artifact Data”-Contains the Artifact database and digital copies of all linked artifact photographs.

“Dendro Data”- Contains the bibliographic database for all dendrochronology resources, all PDF format linked documents (Scanned Files), and the Dendrochronology Database.

“Replaced Wood Elements”- Contains a complete bibliography of resources and the Replaced wood database.

References Cited

Clark, Jeffery J.
1997 *Archeological Investigations Along Tonto Creek: Vol. 1. Site Descriptions. Anthropological Paper.* Center for Desert Archeology, Tucson.

Appendix 1

Please use the link to connect with Appendix 1: [Appendix 1](#)