

## Tuzigoot National Monument, Spatial Vegetation Data Metadata

### Identification\_Information:

#### Citation:

##### Citation\_Information:

Originator: U.S. Geological Survey

Originator: Department of Interior

Publication\_Date: 199603

##### Title:

Tuzigoot National Monument Spatial Vegetation Data; Cover Type /  
Association level of the National Vegetation Classification System

Geospatial\_Data\_Presentation\_Form: Map

##### Series\_Information:

Series\_Name: USGS-NPS Vegetation Mapping Program

Issue\_Identification: Tuzigoot National Monument

##### Publication\_Information:

Publication\_Place: Denver CO

Publisher: USGS, Biological Resources Division, Center for Biological Informatics

##### Other\_Citation\_Details:

Created in large part by Environmental Systems Research Institute, Inc.  
Redlands, CA under contract from USGS, BRD, CBI.

Online\_Linkage: <http://biology.usgs.gov/npsveg/tuzi/index.html>

### Description:

#### Abstract:

The vegetation units on this map were determined through the stereoscopic interpretation of aerial photographs supported by field sampling and ecological analysis. The vegetation boundaries were identified on the photographs by means of the photographic signature and collateral information on slope, hydrology, geography, and vegetation in accordance with the Standardized National Vegetation Classification System (October 1995). The mapped vegetation reflects conditions that existed during the specific year and season that the aerial photographs were taken. There is a margin of error inherent in the use of aerial photographs. Therefore, a detailed ground and historical analysis of a single site may result in a revision of the vegetation association boundaries established through photographic interpretation.

#### Purpose:

Provide National Parks with the necessary tools to effectively manage their natural resources.

### Time\_Period\_of\_Content:

#### Time\_Period\_Information:

##### Single\_Date/Time:

Calendar\_Date: 19950912

Currentness\_Reference: Source photography date

### Status:

Progress: Complete

Maintenance\_and\_Update\_Frequency: None Planned

### Spatial\_Domain:

Description\_of\_Geographic\_Extent: Tuzigoot National Monument and environs.

#### Bounding\_Coordinates:

West\_Bounding\_Coordinate: -112.028

East\_Bounding\_Coordinate: -112.017

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North\_Bounding\_Coordinate: 34.78583

South\_Bounding\_Coordinate: 34.6584

Keywords:

Theme:

Theme\_Keyword\_Thesaurus: None

Theme\_Keyword: vegetation

Theme\_Keyword: vegetation communication

Theme\_Keyword: vegetation mapping

Theme\_Keyword: National Park Service

Theme\_Keyword: U.S. Geological Survey

Theme\_Keyword: alliance

Theme\_Keyword: land cover

Theme\_Keyword: association

Place:

Place\_Keyword\_Thesaurus: None

Place\_Keyword: Arizona

Place\_Keyword: Tuzigoot National Monument

Taxonomy:

Keywords/Taxon:

Taxonomic\_Keyword\_Thesaurus: None

Taxonomic\_Keywords: vegetation classification

Taxonomic\_Keywords: Standardized National Vegetation Classification System

Taxonomic\_Keywords: alliance

Taxonomic\_Keywords: community association

Taxonomic\_System:

Classification\_System/Authority:

Classification\_System\_Citation:

Citation\_Information:

Originator: U.S. Government; Federal Geographic Data Committee

Publication\_Date: 19971022

Title: National Vegetation Classification Standard (NVCS)

Geospatial\_Data\_Presentation\_Form: document

Publication\_Information:

Publication\_Place: Washington D.C.

Publisher: Federal Geographic Data Committee

Online\_Linkage: [http://www.fgdc.gov/standards/projects/FGDC-standards-projects/vegetation/index\\_html](http://www.fgdc.gov/standards/projects/FGDC-standards-projects/vegetation/index_html)

Taxonomic\_Procedures:

Vegetation association were identified, no specimens nor vouchers were collected as a part of this process.

General\_Taxonomic\_Coverage:

Vegetation association of the National Vegetation Classification System (October 1995)

Taxonomic\_Classification:

Taxon\_Rank\_Name: Kingdom

Taxon\_Rank\_Value: Plantae

Access\_Constraints: None

Use\_Constraints:

Any person using the information presented here should fully understand the data collection and compilation procedures, as described in these metadata, before beginning analysis. The burden for determining fitness for use lies entirely with the user. For purposes of publication or dissemination, citations or credit should be given to the U.S. Geological Survey and the National Park Service.

Point\_of\_Contact:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Person: USGS-NPS Vegetation Mapping Program Coordinator

Contact\_Organization:

USGS Biological Resources Division, Center for Biological Informatics

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Contact\_Address:

Address\_Type: Physical Address  
Address: USGS  
Address: Biological Resources Division, CBI  
Address: Building 810, Room 8000  
City: Denver  
State\_or\_Province: Colorado  
Postal\_Code: 80225-0046  
Country: USA

Contact\_Address:

Address\_Type: Mailing Address  
Address: USGS  
Address: Biological Resources Division, CBI  
Address: PO BOX 25046, DFC, MS302  
City: Denver  
State\_or\_Province: Colorado  
Postal\_Code: 80225-0046  
Country: USA

Contact\_Voice\_Telephone: (303) 202-4220

Contact\_Facsimile\_Telephone: 303-202-4229

Contact\_Facsimile\_Telephone: 303-202-4219 (org)

Contact\_Electronic\_Mail\_Address: gs-b-npsveg@usgs.gov

Browse\_Graphic:

Browse\_Graphic\_File\_Name: <http://biology.usgs.gov/npsveg/tuzi/images/tuziveg.pdf>

Browse\_Graphic\_File\_Description: 509 Kbyte graphic image of map and key

Browse\_Graphic\_File\_Type: PDF

Browse\_Graphic:

Browse\_Graphic\_File\_Name: [http://biology.usgs.gov/npsveg/tuzi/images/tuziveg\\_large.pdf](http://biology.usgs.gov/npsveg/tuzi/images/tuziveg_large.pdf)

Browse\_Graphic\_File\_Description:

4.3 M graphic in map composition layout

Browse\_Graphic\_File\_Type: PDF

Native\_Data\_Set\_Environment: UNIX-ARC/INFO

Data\_Quality\_Information:

Attribute\_Accuracy:

Attribute\_Accuracy\_Report:

The mapped data have been revised by CBI personnel using data collected during accuracy assessment field work. As a result 50 polygons were reclassified. A contradictory classification in understory vegetation in woodland types resulted from comparison of the photographic examination with field-collected data. The accuracy assessment data, collected on the ground, were selected in preference to the original mapped data. the final spatial database is now considered to be 100% accurate.

Logical\_Consistency\_Report:

All polygon features are checked for topology using the ARC/INFO software. Each polygon begins and ends at the same point with the node feature. All nodes are checked for error so that there are no dangling features. There are no duplicate lines or polygons. All nodes will snap together and close polygons based on a specified tolerance. If the node is not within the tolerance it is adjusted manually. The tests for logical consistency are performed in ARC/INFO.

Completeness\_Report:

All data that can be photointerpreted is also digitized. This includes alliances/association classes, water, and unvegetated/landuse.

Positional\_Accuracy:

Horizontal\_Positional\_Accuracy:

Horizontal\_Positional\_Accuracy\_Report:

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Unknown. The positional accuracy of the base digital ortho image is not known. It is assumed the map meets National map Accuracy Standards. See Analysis of Accuracy Assessment Procedures at Tuzigoot National Monument.

Lineage:

Source\_Information:

Source\_Citation:

Citation\_Information:

Originator: Kenney Aerial mapping Company, Pheonix, AZ

Publication\_Date: 19950912

Title: Tuzigoot National Monument CIR Aerial Photography

Geospatial\_Data\_Presentation\_Form: image

Publication\_Information:

Publication\_Place: Phoenix, AZ

Publisher: Kenney Aerial Mapping Company

Other\_Citation\_Details:

The aerial photography is CIR and 1:6000 scale. The camera calibration report is USGS Report Number OSL/2066 dated January 10, 1995.

Source\_Scale\_Denominator: 6720

Type\_of\_Source\_Media: Transparency

Source\_Time\_Period\_of\_Content:

Time\_Period\_Information:

Single\_Date/Time:

Calendar\_Date: 19950912

Source\_Currentness\_Reference: Source photo date

Source\_Citation\_Abbreviation: tuzi Aerial Photos

Source\_Contribution:

These aerial photographs were the basis for the photointerpretation process.

Source\_Information:

Source\_Citation:

Citation\_Information:

Originator: Unknown

Publication\_Date: 1992

Title: Tuzigoot National Monument Digital Orthophotograph

Geospatial\_Data\_Presentation\_Form: remote sensing image

Publication\_Information:

Publication\_Place: unknown

Publisher: unknown

Other\_Citation\_Details:

The digital orthophotograph is a 1:2400 scale image. Horizontal and vertical accuracies are unknown. origin and publisher are also unknown.

Source\_Scale\_Denominator: 2400

Type\_of\_Source\_Media: Electronic Mail System

Source\_Time\_Period\_of\_Content:

Time\_Period\_Information:

Single\_Date/Time:

Calendar\_Date: 1992

Source\_Currentness\_Reference: Imagery date

Source\_Citation\_Abbreviation: tuzi Orthophoto

Source\_Contribution:

This digital orthophoto provided the project base map.

Source\_Information:

Source\_Citation:

Citation\_Information:

Originator: USGS, BRD, Center for Biological Informatics

Publication\_Date: 19960405

Title: Tuzigoot National Monument Sampling and Classification

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Geospatial\_Data\_Presentation\_Form: report

Publication\_Information:

Publication\_Place: Denver, CO

Publisher: USGS, BRD, Center for Biological Informatics

Other\_Citation\_Details:

This report was generated by the Nature Conservancy under contract to the USGS, BRD, CBI.

Online\_Linkage: <http://biology.usgs.gov/npsveg/tuzi/tuzirpt.pdf>

Type\_of\_Source\_Media: paper

Source\_Time\_Period\_of\_Content:

Time\_Period\_Information:

Single\_Date/Time:

Calendar\_Date: 19950912

Source\_Currentness\_Reference: Ground Condition

Source\_Citation\_Abbreviation: tuzi sampling and classification scheme

Source\_Contribution: This document provides the Field Key, the Vegetation categories, and the methodology used in the mapping process at Tuzigoot National Monument.

Source\_Information:

Source\_Citation:

Citation\_Information:

Originator: AIS (Aerial Information Systems)

Publication\_Date: Unpublished Material

Title:

Tuzigoot National Monument unpublished mylar overlays for aerial photographs

Geospatial\_Data\_Presentation\_Form: photo

Source\_Scale\_Denominator: 6720

Type\_of\_Source\_Media: mylar

Source\_Time\_Period\_of\_Content:

Time\_Period\_Information:

Single\_Date/Time:

Calendar\_Date: 19950912

Source\_Currentness\_Reference: photo date

Source\_Citation\_Abbreviation: tuzi mylar overlays

Source\_Contribution: contains the photointerpretation information

Source\_Information:

Source\_Citation:

Citation\_Information:

Originator: Karl Brown

Originator: NPS, BRMD, Natural Resource Program Center

Publication\_Date: 199705

Title:

Analysis of Accuracy Assessment Procedures at Tuzigoot National Monument

Geospatial\_Data\_Presentation\_Form: report

Publication\_Information:

Publication\_Place: Denver, CO

Publisher: USGS, BRD, Center for Biological Informatics

Online\_Linkage: [http://biology.usgs.gov/npsveg/tuzi/aa\\_rpt.pdf](http://biology.usgs.gov/npsveg/tuzi/aa_rpt.pdf)

Type\_of\_Source\_Media: Not applicable

Source\_Time\_Period\_of\_Content:

Time\_Period\_Information:

Single\_Date/Time:

Calendar\_Date: 199510

Source\_Currentness\_Reference: Ground Condition

Source\_Citation\_Abbreviation: Analysis of Accuracy Assessment Procedures at Tuzigoot National Monument

Source\_Contribution:

report of the accuracy assessment procedures at Tuzigoot National Monument

Source\_Information:

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Source\_Citation:

Citation\_Information:

Originator: USGS BRD Center for Biological Informatics

Publication\_Date: Unpublished Material

Title:

ESRI/AIS Tuzigoot National Monument Vegetation Map; Cover Type /  
Association level of the National Vegetation Classification System.

Geospatial\_Data\_Presentation\_Form: map

Other\_Citation\_Details:

Generated by Environmental Systems Research Institute, Inc. with a  
subcontractor; Aerial Information Systems, under contract to USGS BRD CBI.

Type\_of\_Source\_Media: digital

Source\_Time\_Period\_of\_Content:

Time\_Period\_Information:

Single\_Date/Time:

Calendar\_Date: 19950912

Source\_Currentness\_Reference: photo date

Source\_Citation\_Abbreviation:

ESRI/AIS Vegetation map of Tuzigoot National Monument

Source\_Contribution:

First version of Vegetation map of Tuzigoot National Monument

Process\_Step:

Process\_Description:

The following describes the tasks performed and methodologies used by Aerial Information Systems (AIS) of Redlands CA, during the vegetation data compilation for Tuzigoot National Monument. AIS was responsible for the photointerpretation, data rectification, automation, and in conjunction with The Nature Conservancy (TNC), the National Classification assignment. DATA COLLECTION VISIT Data collection is the first step in the photointerpretation process. The goal is to collect and evaluate the data sources available for the park. This includes reviewing the imagery, basemaps, and supplemental collateral sources, e.g. existing vegetation maps, soil surveys, etc. The data collection visit to Tuzigoot National Monument occurred in March 1995. (Refer to the "Tuzigoot National Monument, AIS Data Collection Report" dated May 15, 1995 for more information.) The two day visit consisted of a project meeting with park personnel to discuss the National Vegetation mapping program and tour the Monument. During the meeting, existing photography, vegetation maps and geographical basemaps were reviewed and evaluated. Potential study area boundaries and the minimum mapping unit (mmu) were also discussed. The end result was the establishment of the digital orthophoto as the project basemap. The study area boundary was defined as the extent of the orthophoto image, and the mmu was set at 1/4 hectare. Project scale and aerial photography were to be determined after a review of existing 1992 aerial photography not available for the initial meeting. Upon evaluation of the 1992 photography it was decided that new imagery should be acquired for the photointerpretation effort. The resulting project photography was color-infrared (CIR) stereo-paired diapositives, average scale 1:6,720, flown during September 1995. The project scale was established at 1:6720. A duplicate set of photo prints was sent to TNC for use in their field sampling effort. DEVELOPMENT OF MAPPING CRITERIA The mapping criteria is a set of documented working decision rules to facilitate the maintenance of accuracy and consistency of interpretation in the database. They assist the user in understanding the characteristics, definition, and context for each vegetation category. A field reconnaissance visit is performed to familiarize the

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photointerpreters with the vegetation types and their photo signatures prior to the actual mapping process. The reconnaissance is an important step in the development of the photointerpretation criteria and signature key. For the Tuzigoot mapping effort, the field reconnaissance task was not performed. Due to the small size of the study area, it was decided that enough information had been gathered during the initial visit to proceed with the photointerpretation process. The mapping criteria was developed using the standard mapping conventions as a base. Additions to the criteria pertaining to specific situations found at the Monument are described below. *Gutierrezia sarothrae*, classified as a sub-shrub, was placed in the herbaceous stature category. *Prosopis velutina*, which can occur as either a tree or a shrub, was mapped in both the tree stature and shrub stature categories. The tree form of *Prosopis* was mapped in the toeslope and bosque areas, while the shrub form was mapped in the drier desert plain locations.

Process\_Date: 1995

Source\_Produced\_Citation\_Abbreviation:  
tuzi sampling and classification scheme

Source\_Produced\_Citation\_Abbreviation: tuzi CIR Aerial Photography

Process\_Contact:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization: Aerial Information Systems

Contact\_Address:

Address\_Type: Physical Address

City: Redlands

State\_or\_Province: CA

Postal\_Code: Unknown

Country: USA

Contact\_Voice\_Telephone: Unknown

Process\_Step:

Process\_Description:

The following continues to describe the tasks performed and methodologies used by Aerial Information Systems (AIS) during the vegetation data compilation for Tuzigoot National monument.

**PHOTOINTERPRETATION OF VEGETATION:** Photointerpretation is the process of identifying map units based on their photo signature. All land cover features have a photo signature. These signatures are defined by color, texture, pattern, and tone on the aerial photography. By observing the context and extent of the photo signatures associated with specific vegetation types, the photointerpreter is able to identify and delineate the boundaries of the vegetation. Additional collateral sources, e.g. existing vegetation map, supplemental photography, soil data, etc., can be of great utility to the photointerpreter. Understanding the relationship between the vegetation and the context in which they appear is very useful in the interpretation process. Familiarity with regional differences also helps interpretation by establishing a context for a specific area. At Tuzigoot National Monument, the photointerpretation was done using a stereoscope to view the CIR stereo-paired diapositives. The delineations and codes representing the vegetation categories were annotated directly onto a mylar overlay registered to the CIR image. The delineations and codes were edgematched between photos to ensure a seamless coverage in the database. Any uncertain interpretations were flagged on the mylar overlay for review during the quality control step.

**QUALITY CONTROL OF PHOTOINTERPRETATIONS:** A quality control step is performed after the photointerpretation task to ensure the accuracy and

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consistency of the interpretations. Once the initial mapping was completed for the Monument, the photo overlays with the delineations and attributes were given to senior interpreters for review and comment. The interpreted overlays were checked for completeness, consistency, and adherence to the mapping criteria and guidelines. For those polygons flagged by the photointerpreter, the reviewer either assigned the appropriate vegetation code or left the polygon flagged for field verification. FIELD VERIFICATION: The field verification task ensures that the data layer produced is as error free as possible. The photos and interpreted mylar overlays are taken into the field by the photointerpreters. During the on-site visit, map units flagged during the photointerpretation effort are reviewed in the field and the necessary changes and corrections are made directly onto the photo overlays. At Tuzigoot National Monument, the field verification task was conducted over a three day period concurrent with TNC's field sampling effort in the latter part of October 1995.

Source\_Used\_Citation\_Abbreviation: tuzi CIR Aerial Photography

Process\_Date: 1995

Source\_Produced\_Citation\_Abbreviation: tuzi mylar overlays

Process\_Contact:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization: Aerial Information Systems

Contact\_Address:

Address\_Type: Physical Address

City: Redlands

State\_or\_Province: CA

Postal\_Code: Unknown

Country: USA

Contact\_Voice\_Telephone: Unknown

Process\_Step:

Process\_Description:

In conjunction with the photoverification and field sampling effort, NBS (now USGS, BRD, CBI) personnel performed a locational accuracy test comparing the accuracy of a global positioning system (GPS) versus manual location techniques. The TNC biologist "pin-pricked" all of the sample site locations onto the aerial photos while the NBS staff captured the location using GPS. The "pin-pricked" locations were subsequently input into the GIS database for comparison against the GPS locations for the same site.

Source\_Used\_Citation\_Abbreviation: tuzi CIR Aerial Photography

Process\_Date: 199510

Source\_Produced\_Citation\_Abbreviation: Analysis of Accuracy Assessment Procedures at Tuzigoot National Monument

Process\_Contact:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization: NPS Biological Resource Management Division, Natural Resource Management Center

Contact\_Person: Karl Brown

Contact\_Address:

Address\_Type: Mailing Address

Address: NPS

Address: BRMD, Natural Resource Program Center

Address: 1201 Oakridge Drive, Suite 200

City: Fort Collins

State\_or\_Province: Colorado

Postal\_Code: 80525

Country: USA



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Contact\_Voice\_Telephone: (970)225-3591

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Contact\_Electronic\_Mail\_Address: Karl\_Brown@nps.gov

### Process\_Step:

#### Process\_Description:

The following continues to describe the tasks performed and methodologies used by Aerial Information Systems (AIS) during the vegetation data compilation for Tuzigoot National monument. DATA CONVERSION: Typically, the first step of the data conversion process is the manual rectification of the delineations from the unrectified aerial photos to a hardcopy of the project basemap. However, the hardcopy orthophoto for Tuzigoot was of such coarse resolution that manual rectification was impossible. The manual rectification task was bypassed and the delineations were manuscripted directly from the non-rectified photos and scanned. The scanned images were then rectified to the digital orthophoto image in the computer. The computer rectification process included three major steps; the initial transformation where geographic coordinates were assigned to the data. This step involved picking a set of control points that corresponded to both the orthophoto image and the aerial photography. The second and third steps consisted of "refining" the rectified data. The second step consisted of selecting numerous "link" points in the computer over the entire study area to further tie the vegetation units to the orthophoto image. The third and final step was to locally adjust the vegetation units to the orthophoto image by repeating the "link" points procedure over small areas of the image. One of the biggest challenges encountered during the Tuzigoot mapping project was the computer rectification of the delineations. The reason for this was the CIR imagery and the orthophotos were not concurrent with one another: the CIR imagery was taken in 1995; the orthophoto was created from imagery taken in 1992. Even under normal circumstances it is difficult to correlate between imagery taken in different years or even different seasons in some instances. However, the rapidly changing environmental conditions compounded the problem at Tuzigoot. For example; due to recent flooding, the Verdy River has moved northward in the last three years. It's location was mapped according to the 1995 image which does not match the position of the river on the orthophoto. The user needs to be aware of the impact regarding this situation. Any questions regarding the delineation of vegetation polygons should be referenced back to the 1995 CIR imagery, not the orthophoto basemap. The next task was to join the attribute data to the spatial information in the computer. Normally, this step is done prior to scanning and the spatial and attribute data are joined together during the automation process. In order to input the attribute codes for Tuzigoot, a plot was created of the vegetation delineations. The attribute data was transferred from the photo overlays to a mylar overlay code sheet (CS) registered to the plot. Each polygon was assigned a unique sequence number identification. The attributes were keypunched into a spreadsheet format and then joined with the spatial data in the GIS. The attribute and spatial data were QC'd for accuracy and completeness of input. Edit plots were created for the vegetation delineations, the height, density and floristic composition characteristics and compared back to the original delineations and CS. Corrections were made as needed and input into the computer. A final quality control of the photointerpretation was performed by creating a "consist" program. The program pulled out inconsistencies in attribute coding, e.g. if tree taxa was listed for a polygon and there was no

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height/density attributes assigned, it would be flagged for investigation and correction. **CONVERSION OF PHOTO PRIMITIVES TO THE NATIONAL CLASSIFICATION:** The final step of the mapping process is the conversion of the photo primitives to the National Classification. Once the photo primitives were input into the GIS, they were converted to the National Classification through ecologist supported computer modeling techniques. Using field sample site information, the Alliance/Association classes were extrapolated to polygons sharing like aspects in the same regional area. A preliminary vegetation map was created and then reviewed by TNC field biologists for accuracy. If necessary, revisions to the delineations or the computer model were made and another map was produced for review. This process was repeated until the TNC biologists approved of all classification assignments. The photo primitives mapped for Tuzigoot National Monument were converted to the national Classification during a two day meeting at AIS. A preliminary vegetation map with the national Classification designations and sample site locations was produced using computer modeling techniques. TNC, working in conjunction with AIS, reviewed the preliminary map by comparing it back to the CIR photos and TNCs field data sheets. Additional delineations were added to the database, separating the classes on the basis of abiotic factors, e.g. landform type and past environmental conditions. The computer model was adjusted and another map was created, reviewed, and revised, using the same methodology as described above. In all, there were five iterations of this process before the final classification assignments were completed. as a result of this process, the National Classification for the Monument was revised to include four additional classes.

Source\_Used\_Citation\_Abbreviation: tuzi mylar overlays

Source\_Used\_Citation\_Abbreviation: tuzi orthophoto

Process\_Date: 1995

Source\_Produced\_Citation\_Abbreviation:

ESRI/AIS Vegetation map of Tuzigoot National Monument

Process\_Contact:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization:

Environmental Systems Research Institute, Inc. (ESRI)

Contact\_Address:

Address\_Type: Mailing and Physical Address

Address: 380 New York Street

City: Redlands

State\_or\_Province: California

Postal\_Code: 92373-8100

Country: USA

Contact\_Voice\_Telephone: (909)793-2853

Process\_Step:

Process\_Description:

The mapped data were revised by USGS BRD CBI personnel using data collected during accuracy assessment field work. As a result 50 polygons were reclassified. A contradictory classification in understory vegetation in woodland types resulted from comparison of the photographic examination with field-collected data. The accuracy assessment data, collected on the ground, were selected in preference to the original mapped data.

Source\_Used\_Citation\_Abbreviation:

ESRI/AIS Vegetation map of Tuzigoot National Monument

Process\_Date: 1997

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Process\_Contact:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization: NPS Natural Resource Program Center

Contact\_Person: Karl Brown

Contact\_Address:

Address\_Type: Physical & Mailing Address

Address: NPS

Address: BRMD, Natural Resource Program Center

Address: 1201 Oakridge Drive, Suite 200

City: Fort Collins

State\_or\_Province: Colorado

Postal\_Code: 80525

Country: USA

Contact\_Voice\_Telephone: (970) 225-3591

Contact\_Facsimile\_Telephone: (970) 225-3585

Contact\_Electronic\_Mail\_Address: Karl\_Brown@nps.gov

Cloud\_Cover: 0 <= Cloud Cover <= 100

Spatial\_Data\_Organization\_Information:

Indirect\_Spatial\_Reference:

The Ecology Field Sites were digitized to indicate the area for which a TNC ecologist conducted an ecological field sampling.

Direct\_Spatial\_Reference\_Method: Vector

Spatial\_Reference\_Information:

Horizontal\_Coordinate\_System\_Definition:

Planar:

Grid\_Coordinate\_System:

Grid\_Coordinate\_System\_Name: Universal Transverse Mercator

Universal\_Transverse\_Mercator:

UTM\_Zone\_Number: 12

Transverse\_Mercator:

Longitude\_of\_Central\_Meridian: -111

Latitude\_of\_Projection\_Origin: 0

False\_Easting: 500000

False\_Northing: 0

Scale\_Factor\_at\_Central\_Meridian: .9996

Planar\_Coordinate\_Information:

Planar\_Coordinate\_Encoding\_Method: Coordinate Pair

Coordinate\_Representation:

Abscissa\_Resolution: 1

Ordinate\_Resolution: 1

Planar\_Distance\_Units: Meters

Geodetic\_Model:

Horizontal\_Datum\_Name: North American Datum of 1983

Ellipsoid\_Name: Geodetic Reference System 80

Semi-major\_Axis: 6378137

Denominator\_of\_Flattening\_Ratio: 298.257

Entity\_and\_Attribute\_Information:

Overview\_Description:

Entity\_and\_Attribute\_Overview:

The system is organized hierarchically to support conservation and resource stewardship applications across multiple scales. The upper levels of the hierarchy are based on the physical form or structure of the

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vegetation (physiognomy) and have been refined from the international standards developed by the United Nations Educational, Scientific, and Cultural Organization (UNESCO). The two most detailed levels of the hierarchy are based on the species composition of existing vegetation (floristics) and reflect the phyto-sociological standards that were originally developed by European ecologists. The vegetation classification is continually advanced through the collection and analysis of new field data and will be greatly strengthened during the course of the NBS/NPS mapping efforts.

Data file attributes include vegetation height, density, species, alliance, community element, and land cover. LAYER CHARACTERISTIC CODES: STATURE (1 digit) 1=Tree 2=Shrub 3=Herbaceous 8=Water 9=Land Use / Unvegetated HEIGHT (1 digit) 1=<0.5 meters 2=0.5-2 meters 3=2-5 meters 4=5-15 meters 5=15-35 meters 6=35-50 meters 7=>50 meters 9=Not Applicable ABSOLUTE CROWN DENSITY (1 digit) 1=Closed/Continuous: >60% 2=Discontinuous: 40% - 60% 3=Dispersed: 25% - 40% 4=Sparse: 10%-25% 5=Rare: 2% - 10% 9=Not Applicable FLORISTIC COMPOSITION: TREES (3 digits) (Up to three floristic composition types per layer) 01=Populus fremontii (Fremont's cottonwood) 02=Celtis reticulata (Hackberry) 03=Quercus turbinella (Oak) 04=Salix gooddingii (Gooding's willow) 05=(Not used) 06=Prosopis Velutina (Mesquite) 08=Dead 09=Unvegetated W=Water body SRUBS/VINES DWARF SHRUBS (3 digits) (Up to three floristic composition types per layer) 01=Acacia greggii (Catsclaw acacia) 02=Atriplex canescens (Four-winged saltbush) 03=Baccharis salicifolia (Seep willow) 04=Canotia holocantha (Crucifixion thorn) 05=Chilopsis linearis (Desert Willow) 06=(Not used) 07=(Not used) 08=Krameria parvifolia (Range ratany) 09=Larrea divaricata (Creosote bush) 10=Mahonia trifoliata (Barberry) 11=Parthenium incanum (Mariola) 12=Prosopis velutina (Mesquite) 13=(Not used) 14=(Not used) 15=Shrubs 16=Juniperus spp. (Juniper) 17=Eriogonum deflexum (Flat-top buckwheat) 18=(Not used) 19=Celtis reticulata (Desert hackberry) 88=Dead 99=Unvegetated W=Water HERBACEOUS (6 digits) (Up to three floristic composition types per layer) 01=Ambrosia ancanthocarpa (Ragweed) 02=Aristida purpurea (Purple three-awn) 03=Cynodon dactylon (Bermuda grass) 04=Cirsium spp. (Prickly thistle) 05=Distichlis stricta (Saltgrass) 06=Aquatic 07=Graminoid (dry) 08=Graminoid (wet) 09=Kochia scoparia (Fireweed) 10=Muhlenbergia asperifolia (Alkalai muhly) 11=Muhlenbergia porteri (Bush muhly) 12=Salsola kali (Tumbleweed) 13=Scirpus validus (Bulrush) 14=Solanum douglassii (Nightshade) 15=Typha angustifolia (Cattails) 16=Forbs >than .5 m in height 17=Eleocharis parishii (Spike rush) 18=Hordeum jubatum (Foxtail barley) 19=Gutierrezia sarothrae (Snakeweed) 20=Eragrostis lehmanniana (Lehmann's lovegrass) 88=Dead 99=Unvegetated W=Water LAND USE (3 digits) 100=Urban or Built-Up 110=Residential 120=Commercial and Services 130=Industrial 140=Transportation, Communications, and Utilities 150=Mixed Commercial and Industrial 160=Mixed Urban 170=Under Construction 180=Open Space and Recreation 190=Vacant within Urban Context 200=Agriculture 300=Mining 400=National Park/Monument Facilities 401=Visitors Center 402=Road 403=Parking Area 404=Archaeological Site 405=Residence 500=Water 600=Vacant NATIONAL VEGETATION CLASSIFICATION FOR TUZIGOOT NATIONAL MONUMENT 100=Populus fremontii Alliance 101=Populus fremontii/Salix gooddingii Association 102=Populus fremontii/Prosopis velutina Association 103=Populus fremontii/Hordeum jubatum Association 110=Juniperus erythrocarpa Alliance 111=Juniperus erythrocarpa/Canotia holocantha Association 120=Celtis reticulata Alliance 121=Celtis reticulata/Quercus turbinella Association 130=Canotia holocantha Alliance 131=Canotia

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holocantha/Aristida purpurea Association 140=Larrea tridentata Alliance  
141=Larrea tridentata/Aristida purpurea Association 150=Chilopsis linearis  
Alliance 160=Atriplex canescens Alliance 161=Atriplex  
canescens/Muhlenbergia porteri Association 170=Prosopis velutina Alliance  
171=Prosopis velutina/Hordeum jubatum Association 172=Prosopis  
velutina/Celtis reticulata Association 173=Prosopis velutina/Distichlis  
stricta Association 174=Prosopis velutina/Gutierrezia sarothrae  
Association 180=Aristida purpurea Alliance 181=Aristida purpurea/Krameria  
parvifolia Association 190=Typha angustifolia Alliance 200=Cynodon  
dactylon Alliance 210=Muhlenbergia asperifolia Alliance 211=Muhlenbergia  
asperifolia/Eleocharis parishii Association 220=Eragrostis lehmanniana  
Alliance 230=Short perennial forb form 231=Short perennial forbs  
(semi-natural) 232=Short perennial forbs (semi-cultivated) 240=Herbaceous  
vegetation - annual graminoids or forbs 250=Intermittently flooded  
cold-deciduous shrubland

Entity\_and\_Attribute\_Detail\_Citation:

Grossman, D. Et al. 1994. National Park Service/ National Biological  
Service Vegetation Mapping Project, Standardized National Vegetation  
Classification System 209 pp.

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### Standard\_Order\_Process:

Digital\_Form:

Digital\_Transfer\_Information:

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Network\_Resource\_Name: <http://biology.usgs.gov/npsveg/tuzi/index.html>

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Metadata\_Standard\_Name: FGDC-STD-001.1-1999 Content Standard for Digital Geospatial Metadata, 1998 Part 1:  
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Metadata\_Standard\_Version: FGDC-STD-001-1998

Metadata\_Extensions:

Online\_Linkage: [http://metadata.nbii.gov/portal/community/Communities/Toolkit/Metadata/FGDC\\_Metadata/](http://metadata.nbii.gov/portal/community/Communities/Toolkit/Metadata/FGDC_Metadata/)

Profile\_Name: Biological Data Profile FGDC-STD-001.1-1999