

Wind Cave National Park, Spatial Vegetation Data Metadata

Identification_Information:

Citation:

Citation_Information:

Originator:

Remote Sensing and GIS Group, Technical Service Center, US Bureau of Reclamation, Mail Code D-8260, POB 25007, Denver CO 80225

Publication_Date: 1999

Title:

Wind Cave National Park 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: None

Publication_Information:

Publication_Place: Denver, CO

Publisher: USGS-BRD

Other_Citation_Details: Created under contract to the USGS-BRD-CBI

Online_Linkage: <http://www.usbr.gov/pmts/rsgis/>

Online_Linkage: <http://biology.usgs.gov/npsveg/wica/index.html>

Description:

Abstract:

This geospatial database covers vegetation land cover and land use for Wind Cave National Park and surrounding areas and is authorized as part of the USGS/NPS Vegetation Mapping Program <http://biology.usgs.gov/npsveg>. The program is administered by the Biological Resources Division (BRD) of the United States Geological Survey (USGS). This mapping effort was performed by the US Bureau of Reclamation's (USBR) Remote Sensing and GIS Group, Technical Service Center, Denver, CO. The vegetation mapping program is part of a larger Inventory and Monitoring (I&M) program started by the National Park Service (NPS) <http://science.nature.nps.gov/im/>. I&M goals are, among others, to map the vegetation of all national parks and monuments and provide a baseline inventory of vegetation. The USGS/BRD is responsible for overall management and oversight of all ongoing mapping efforts. 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 alliance boundaries established through photographic interpretation.

Purpose:

The purposes of the mapping effort are varied and include the following: Provides support for NPS Resources Management; Promotes vegetation-related research for both NPS and USGS/BRD; Provides support for NPS Planning and Compliance; Adds to the information base for NPS Interpretation; and Assists in NPS Operations.

Supplemental_Information:

The following vegetation and land use classes were mapped for this project: LAND USE: 51 Transportation Communications, and Utilities; 52 Mixed Urban or Built-up Land; 53 Croplands and Pasture; 55 Other

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Agricultural Land; 57 Open Water; 59 Strip Mines, Quarries, and Gravel Pits. VEGETATION: 1 Purple three-awn - Fetid marigold Herbaceous Vegetation; 2 Ponderosa pine Limestone Rock Outcrop; 3 Red Beds Spares Vegetation; 4 Black Hills Rock Outcrop Sparse Vegetation; 6 Bison Wallows; 11 Little Bluestem -Sideouts grama Herbaceous Alliance (with burned ponderosa pine; 12 Chokechery Shrubland with burned ponderosa pine; 13 Western Wheatgrass - Kentucky Complex with burned ponderosa pine; 14 Emergent Wetland Herbaceous Vegetation 15 Little Bluestem - Grama Grass Herbaceous Vegetation; 16 Western Wheatgrass - Kentucky Bluegrass Complex; 17 Introduced Weedy Graminoid Herbaceous Vegetation ; 18 Needle-and-thread - Blue Grama-Threadlead Sedge Herbaceous Vegetation; 30 Mt Mahogany / Sideoats Grama Shrubland I; 31 Mt Mahogany / Sideoats Grama Shrubland II ; 32 Lead Plant Shrubland; 33 Chokecherry Shrubland; 34 Bebb Willow Shrubland; 35 Western Snowberry Shrubland; 40 Plains Cottonwood / Western snowberry Woodland; 41 Boxelder / Chokecherry Forest; 42 Bur Oak Stand; 43 Green Ash - American Elm / Chokecherry Forest; 44 Birch - Aspen Stand; 45 Ponderosa Pine Woodland Complex I; 46 Ponderoas Pine / Little Bluestem Woodland; 47 Ponderosa Pine / Chokecherry Forest; 48 Ponderosa Pine Woodland Complex II; 49 Young Ponderosa Pine Dense Cover Complex.

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 199706

Currentness_Reference: Source Photography Date

Status:

Progress: Complete

Maintenance_and_Update_Frequency: None Planned

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -103.6194

East_Bounding_Coordinate: -103.3222

North_Bounding_Coordinate: 43.65139

South_Bounding_Coordinate: 43.50639

Description_of_Geographic_Extent:

Wind Cave National Park, SD including approx 5 mile buffer around park which includes private lands and portions of Custer State Park and Black Hills National Forest.

Keywords:

Theme:

Theme_Keyword_Thesaurus: None

Theme_Keyword: association

Theme_Keyword: alliance

Theme_Keyword: land cover

Theme_Keyword: land use

Theme_Keyword: vegetation

Theme_Keyword: National Park Service

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: Wind Cave

Place_Keyword: Pringle

Place_Keyword: South Dakota

Place_Keyword: National Park

Place_Keyword: Wind Cave National Park

Taxonomy:

Keywords/Taxon:

Taxonomic_Keyword_Thesaurus: None

Taxonomic_Keywords: Plants

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Taxonomic_Keywords: vegetation

Taxonomic_Keywords: National Vegetation Classification System

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

Taxonomic_Procedures:

Sequence of field test data and observation plots, and CIR photo signature field observations.

General_Taxonomic_Coverage:

Refer to complete listing of mapped plant alliances/associations under Supplemental Information above.

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 the 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, and the U.S. Bureau of Reclamation.

Point_of_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: USGS-NPS Vegetation Mapping Program Coordinator

Contact_Organization: U.S. Geological Survey, Center for Biological Informatics

Contact_Address:

Address_Type: mailing and physical address

Address:

U.S. Geological Survey, Center for Biological Informatics, MS 302, Room 8000, Building 810,
Denver Federal Center

City: Denver

State_or_Province: Colorado

Postal_Code: 80225

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/wica/images/wicaveg.pdf>

Browse_Graphic_File_Description:

Graphic file showing vegetation distribution of Wind Cave NP and environs, by ecological subgroups. Low resolution for web browser - 424 KB file size.

Browse_Graphic_File_Type: PDF

Data_Set_Credit: Jay Carlson, Dan Cogan, Doug Crawford, Trudy Myer, and Jim Von Loh of USBR

Native_Data_Set_Environment: UNIX-ARC/INFO

Data_Quality_Information:

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Attribute_Accuracy:

Attribute_Accuracy_Report:

These data have an overall accuracy of 73 % (69.8% Kappa index) within a 90% confidence interval of 77.6% upper limit and 68.4% lower limit.

Logical_Consistency_Report:

All polygon features are checked for topology and existence of label points 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 unintentional 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 using certain commands.

Completeness_Report:

All data that can be photo-interpreted is digitized in accordance with the minimum mapping unit of .5 hectares. This includes features that fall into the NVCS vegetation (landcover) classification and the Anderson Level II land use classification. Minimum mapping unit is .5 hectares but some classes below the MMU are included such as wetlands; prominent stands of vegetation; and polygons cut off by other features and borders. Roads (out to visible disturbed ground right-of-way or fence line) wider than approx 10 meters were digitized as polygons and attributed accordingly. Roads visible on the DOQQ's but thinner than 10 meters were digitized as lines. Wet drainages were digitized as lines and attributed with code #14. Dry drainages thinner than 10 meters were not digitized.

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

USGS DOQQ's were used as basemap to acquire geospatial horizontal locations.

Lineage:

Methodology:

Methodology_Type: Field and Remote Sensing

Methodology_Identifier:

Methodology_Keyword_Thesaurus: None

Methodology_Keyword: photo-interpretation

Methodology_Keyword: Field Methods for Vegetation Mapping

Methodology_Keyword: ground truth

Methodology_Keyword: reconnaissance

Methodology_Keyword: gradsect

Methodology_Keyword: observation

Methodology_Keyword: plot

Methodology_Keyword: photo signatures

Methodology_Keyword: ground verification

Methodology_Keyword: stereoscope

Methodology_Description:

All vegetation and land use classes were interpreted and mapped from 1:12,000 scale, color infrared photography flown in June 1997. Color prints were developed from the CIR negatives and have an approximate 20% overlap east-to-west and 60% north-to-south. Data from the photos was interpreted on mylar overlays. Vegetation was delineated and classified on the mylars using a combination of field and remote sensing techniques. Field techniques followed the standards described in Field Methods for Vegetation Mapping (The Nature Conservancy, 1994). These included preliminary reconnaissance, environmental stratification of the study area using a gradsect approach (Austin and Heyligers, 1989), and observation point and detailed plot data collection. Multiple plot and

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observation data were collected for each unique vegetation association found within the study area. Biological, environmental, locational, and biological interactions/historical/disturbance data were collected at each sample point using the standard plot survey or observation point form developed by The Nature Conservancy (1994). Remote sensing techniques included ground verification of unique photo signatures, stereoscopic magnification, and photo interpretation of the vegetation and land-use practices using standard photo interpretation characteristics such as tone, texture, color, pattern, topographic position, and shadow. Soil maps were also used to aid in proper interpretation. Photographs were examined using a stereoscope as needed and light tables. A detailed photo-interpretation key is provided in the USBR Technical Memorandum cited elsewhere in this document.

Methodology_Citation:

Citation_Information:

Originator: Austin, M.P. and P.C. Heyligers

Publication_Date: 1989

Title:

Vegetation survey design for conservation: Gradsect sampling of forests in northeastern New South Wales

Geospatial_Data_Presentation_Form: document

Edition: Biological Conservation, Vol 50

Other_Citation_Details: pp 13-32

Methodology:

Methodology_Type: Field

Methodology_Description: See above

Methodology_Citation:

Citation_Information:

Originator: The Nature Conservancy

Publication_Date: 1994

Title: Field Methods for Vegetation Mapping

Geospatial_Data_Presentation_Form: document

Edition: NPS Vegetation Mapping Program, Final Draft

Online_Linkage: <http://biology.usgs.gov/npsveg/fieldmethods/index.html>

Source_Information:

Source_Citation:

Citation_Information:

Originator: Horizons, Inc., POB 3134, Rapid City, SD 57709

Originator: Voice: 605-343-0280; Fax: 605-343-0305

Originator: EMail: eng@horizonsinc.com

Publication_Date: 199706

Title: Aerial CIR Photos

Geospatial_Data_Presentation_Form: image

Online_Linkage: <http://www.horizonsinc.com>

Online_Linkage: <http://biology.usgs.gov/npsveg/wica/photos.pdf>

Source_Scale_Denominator: 12000

Type_of_Source_Media: Color Prints

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 199706

Source_Currentness_Reference: Ground Condition

Source_Citation_Abbreviation: None

Source_Contribution:

These aerial photographs were the basis for the photointerpretation process.

Source_Information:

Source_Citation:

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Citation_Information:

Originator: USGS

Publication_Date: 1997

Title: Digital Orthophoto Quarter Quadrangles (DOQQ)

Geospatial_Data_Presentation_Form: Remote-Sensing Image

Series_Information:

Series_Name: Boland Ridge, Butcher Hill, Cicero Peak, Mt Cooldige, Pringle, & Wind Cave

Issue_Identification: USGS 7.5m quads in South Dakota

Other_Citation_Details: Refer to USGS web site for metadata information

Online_Linkage: <http://edcsns17.cr.usgs.gov/EarthExplorer/>

Source_Scale_Denominator: 12000

Type_of_Source_Media: Digital

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 1995

Source_Currentness_Reference: Ground Condition

Source_Citation_Abbreviation: None

Source_Contribution: The DOQQ's were used as basemap for transfer work.

Source_Information:

Source_Citation:

Citation_Information:

Originator: USGS/BRD, Center for Biological Informatics

Publication_Date: 19990430

Title: Vegetation Procedure Report

Geospatial_Data_Presentation_Form: report

Series_Information:

Series_Name: Boland Ridge, Butcher Hill, Cicero Peak, Mt Cooldige, Pringle, & Wind Cave

Issue_Identification: USGS 7.5m quads in South Dakota

Other_Citation_Details: Refer to USGS web site for metadata information

Online_Linkage: <http://edcsns17.cr.usgs.gov/EarthExplorer/>

Online_Linkage: <http://biology.usgs.gov/npsveg/wica/wicarpt.pdf>

Source_Scale_Denominator: 12000

Type_of_Source_Media: Digital

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 1995

Source_Currentness_Reference: Ground Condition

Source_Citation_Abbreviation: None

Source_Contribution: The DOQQ's were used as basemap for transfer work.

Process_Step:

Process_Description:

Vegetation information on the mylars (discussed above under methods) were transferred into the GIS database using two methods, either heads-up digitizing or scanning. METHOD I: Heads-up digitizing will be used in areas where there are strong visible transitions between vegetation types (i.e., have boundaries that are easy to see on the digital ortho image). Briefly, heads-up digitizing is a procedure whereby the operator digitizes by hand and eye on a computer terminal screen showing a digital image of an ortho-rectified photo. By looking at similar features on both the aerial photograph (from which the classification was made on mylar) and on the orthophoto, the line drawn on the aerial photo overlay is transferred to the digital image, which is registered to coordinates on the earth. This technique should produce good results except where there is little feature contrast on the ortho, in which

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case the operator will usually scan the photo to transfer those features. METHOD II: Photos that are too difficult to accurately transfer via heads-up will be scanned, ie, the mylars will be scanned, not the actual CIR photo. Before the mylar is scanned, it will be marked with control points that correspond to visible points on the DOQQ. Six control points should be located for best results though a minimum of 4 are required for a projective transform. The GIS software was used to convert the scanned mylar into a geo-referenced coverage which was then attributed and combined with the larger vegetation coverage associated with the quarter quad area. The entire transfer and editing sequence was automated via an in-house ARC/INFO AML. The final vegetation coverages consist of (1) Quarter-quad boarder, (2) Park and GIS project area boundary arcs, if applicable, and (3) vegetation polygons and linear features. Another step involved heads-up digitizing of roads visible on the CIR/DOQQ in accordance with the criteria discussed under the Completeness Report above.

Process_Date: 1998

Process_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization:

Remote Sensing and GIS Group, Technical Service Center, US Bureau of Reclamation

Contact_Address:

Address_Type: Mailing Address

Address: POB 25007

City: Denver

State_or_Province: CO

Postal_Code: 80225

Country: USA

Contact_Voice_Telephone: 303-446-2283

Contact_Facsimile_Telephone: 303-445-6337

Contact_Electronic_Mail_Address: jvonloh@do.usbr.gov

Hours_of_Service: 7:30 a.m. to 4:00 p.m. Monday Thru Friday, MST

Process_Step:

Process_Description:

Data plot and obseravtion coverages: Coverages for the plot and observation data points were created from the plot and observation data sheets. The coordinates on the data sheets were in datum NAD27. Once the coverages were finalized they were reprojected into datum NAD83.

Process_Date: 1998

Spatial_Data_Organization_Information:

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: 13

Transverse_Mercator:

Longitude_of_Central_Meridian: -105

Latitude_of_Projection_Origin: 0

False_Easting: 500000

False_Northing: 0

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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:

VEGETATION COVERAGES: Due to the large size of the database, vegetation coverages were named according to associated USGS 7.5m quads and the quarterquad quadrant as follows: <quadname>_veg# with # referring to the quarter quadrant as follows: 1 - Northwest quadrant; 2 - Northeast quadrant; 3 - Southeast quadrant; 4 - Southwest quadrant. Coding Information: Polygon coverage with labels in each polygon with the following custom items: (veg_code - 3 3 I) coded with vegetation classification number. See Supplemental Info under Id Info above for complete listing of attribute codes and their descriptions; (photo - 6 6 I) coded with associated CIR photo number; (location - 6 6 C) coded according to whether the polygon is in the park or buffer area. Also, each arc was coded as follows: (digtype - 2 2 I) coded to identify how the arc was transferred into the database or type of arc as follows: 1 = heads-up, on screen digitizing; 2 = scanned mylar; 3 = arc associated with gis study area border; 4 = arc associated with quarterquad border; 5 = arc associated with park border. (veg_code - 3 3 I) linear wetland features coded with vegetation classification number. BOUNDARY COVERAGES: bndrypark - Park boundary coverage. This coverage was digitized from USGS 7.5m quads. bndryproj - GIS mapping project area. This coverage was derived from markings on a 1:100k map provided to us by the USGS/BRD. bndryquad - Boundaries of all the 7.5m quads. This coverage was created via an in-house AML that creates tics based on lower left and upper right coordinates for the desired area. The program created tics every 7.5 minutes and then arcs were snapped to the tics to create the quad borders. Coding Information: bndrypark - line coverage - no custom attributing. bndryproj - line coverage - no custom attributing. bndryquad - polygon coverage with labels in each quad polygon with the following items: (quadname - 8 8 c) - abbreviated name for each quad; (fullname - 20 20 c) - full quadname. DATA COVERAGES: dataobsv - Point coverage of observation data points. dataplot - Point coverage of plot data points. Coding Information: Label points with items as follows: (plot_code - 3 3 n) coded with plot number from plot data sheets; (veg_code - 14 14 c) coded with veg class text; (type - 10 10 c) coded with broad vegetation class (eg: woodland). Note1: x-coord and y-coord added with ARC/INFO "addxy" command. Note2: Field data points were collected with GPS units set to datum NAD27. All coverages were re-projected into Datum NAD83 so the x- y- coordinates will not match those shown on the data sheets. OTHER COVERAGES: sec_roads - Line coverage of secondary roads digitized from USGS DOQQ. The parks projects will be using DOQQ's as the basemap for transfer of information from the CIR photos to the GIS database. The DOQQ's are standard USGS

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product and are in datum of NAD83.

Entity_and_Attribute_Detail_Citation:

Wind Cave National Park, USGS/NPS Vegetation Mapping Program, Technical Memorandum No. 8260-99-03, USBR

Distribution_Information:

Distributor:

Contact_Information:

Contact_Person_Primary:

Contact_Person: USGS-NPS Vegetation Mapping Program Coordinator

Contact_Organization:

U.S. Geological Survey, Center for Biological Informatics

Contact_Address:

Address_Type: mailing and physical address

Address:

U.S. Geological Survey, Center for Biological Informatics, MS 302, Room 8000, Building 810,
Denver Federal Center

City: Denver

State_or_Province: Colorado

Postal_Code: 80225

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

Resource_Description: Wind Cave National Park Vegetation Map

Distribution_Liability:

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The information contained in these data is dynamic and may change over time. The data are not better than the original sources from which they were derived. It is the responsibility of the data user to use the data appropriately and consistent within the limitations of geospatial data in general and these data in particular. Any related graphics (if available) are intended to aid the data user in acquiring relevant data; it is not appropriate to use the related graphics as data.

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Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Format_Name: HTML

Digital_Transfer_Option:

Online_Option:

Computer_Contact_Information:

Network_Address:

Network_Resource_Name: <http://biology.usgs.gov/npsveg/wica/index.html>

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Fees: None

Metadata_Reference_Information:

Metadata_Date: 20012022

Metadata_Review_Date: 20080508

Metadata_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: USGS-NPS Vegetation Mapping Program Coordinator

Contact_Address:

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Room 8000, Building 810, Denver Federal Center

City: Denver

State_or_Province: Colorado

Postal_Code: 80225

Country: USA

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Contact_Facsimile_Telephone: (303) 202-4219

Contact_Electronic_Mail_Address: gs-b-npsveg@usgs.gov

Metadata_Standard_Name: FGDC-STD-001.1-1999 Content Standard for Digital Geospatial Metadata, 1998 Part 1:
Biological Data Profile, 1999

Metadata_Standard_Version: FGDC-STD-001-1998

Metadata_Extensions:

Online_Linkage: http://metadata.nbii.gov/portal/community/Communities/Toolkit/Metadata/FGDC_Metadata/
Profile_Name: Biological Data Profile FGDC-STD-001.1-1999