PAD-US (CBI Edition) Version 2.1: Standards and Procedures

January 1, 2015

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Preferred Citation

National coverage:

The Conservation Biology Institute. October 2014. PAD-US (CBI Edition) Version 2.1. Corvallis, Oregon.

Single state:

The Conservation Biology Institute. October 2014. Protected Areas - [state name], USA. Corvallis, Oregon.

Introduction to PAD-US (CBI Edition) Version 2.1

Protected areas are the cornerstones around which regional, national and international conservation strategies are developed. Through these designations, lands are set aside in perpetuity to preserve functioning natural ecosystems, provide refuges for species and maintain ecological processes. Working from this foundation, public agencies, private organizations and corporations develop and implement complementary conservation strategies to designate land for the sustainable use of natural resources, the protection of significant geologic or cultural features and for the provision of ecosystem services.

On December 31, 2014 the Conservation Biology Institute released PAD-US (CBI Edition) Version 2.1. This dataset enhances the previous version of CBI's database of the nation's protected areas by including establishment dates. The establishment dates are included along with the standardized spatial geometry and numerous valuable attributes on land ownership, management designations and conservation status (using national GAP and international IUCN coding systems) of previous versions. PAD-US (CBI Edition) defines *protected area* to include all fee lands designated to the preservation of biological diversity and to other natural, recreation and cultural uses, and managed for these purposes through legal or other effective means (adapted from IUCN definition). The dates these lands are designated for specific management is called the establishment date. The establishment date is assigned to the protected area report in the PAD-US (CBI Edition) database to document the temporal element of these protected lands and water.

This GIS-based dataset was created to make it easier to integrate protected areas data into mapping, planning, analyses, and problem-solving. For example, this database enables users to address important conservation and resource questions pertaining to climate change adaptation, green energy development, infrastructure planning, and wildlife connectivity. For state and regional planners and managers, this dataset can provides critical contextual information. Institutions responsible for national and international reporting will find this database full of reliable, accurate information. The scientific and conservation community will similarly benefit from having this standardized base map to carry out research and planning objectives.

Policies and Procedures for Populating Establishment Dates and Reviewing PAD-US (CBI Edition) Version 2.1

PAD-US (CBI Edition) Version 2.1 is a comprehensive geospatial data set of United States protected areas, including detailed information on land ownership, management, conservation status and now establishment date. Our goal is to regularly compile and publish national, state and local protected areas information (public and private) that we obtain through an established network of data providers. Protected areas data are collected from these sources, reviewed, and aggregated into a standard framework. Challenges related to the incompleteness of source data, varied formats, data structures and accuracy are reconciled as much as possible, but this effort is an ongoing process of steady improvement. A collaborative process with leading data providers across the nation ensures that source information flows into this database and back to the providers in an iterative fashion. PAD-US (CBI Edition) Version 2.1 provides the spatial foundation by which users can conceptualize our national conservation landscape.

To build PAD-US (CBI Edition) Version 2.1, CBI utilized ESRI's geodatabase technology. The purpose of this document is to define the policies and procedures used to update the protected areas data into the PAD-US (CBI Edition) Version 2.1 staging and production database.

I. Compile and review data sources and documentation

Data on protected area establishment dates were acquired for lands held by federal agencies. These include:

Designation Type	Data Source
BLM Area of Critical Environmental Concern	State Office websites
BLM National Conservation Area	http://www.blm.gov/wo/st/en/prog/blm_special_areas/NLCS/National_Conservation_Areas.html
National Wildlife Refuge	http://training.fws.gov/history/ListsRefugeDates.html
National Forest	http://www.fs.usda.gov/detail/r5/learning/history-culture/?cid=stelprdb5305138
National Grassland	http://www.fs.usda.gov/detail/r5/learning/history-culture/?cid=stelprdb5305138
National Park	http://www.nps.gov/findapark/index.htm
Wilderness Area	http://www.wilderness.net/NWPS/advResults#
Wild, Scenic and Recreation River	http://www.rivers.gov/documents/rivers-table.pdf

II. Add field and assign establishment dates

1) **Field added (text: 50 characters)**

2) **Add data from aggregated source**

   a) Join matching records from aggregated dataset, USGS National Water-Quality Assessment (NAWQA), 2014, in-progress land-use work (unpublished)

       I.   Establishment dates populated for protected with GAP status 1 or 2, and larger than 2,500 acres

   b) Calculate establishment dates from spreadsheet to database records

3) **Join spreadsheet with database records**

   a) Review and correct protected areas (field: p_des_nm) spelling in the database

   b) Join spreadsheets (See PADUS_CBIEdition_v2_1_table.xls) to PAD-US (CBI Edition) data reports in ArcMap, using p_des_nm

   c) Calculate establishment dates from spreadsheet to database records

4) **Cross-check identical protected areas records and establishment dates**

   a) Cross-check data sources and aggregated dataset, USGS National Water-Quality Assessment (NAWQA), 2014, in-progress land-use work (unpublished), establishment dates where identical records are assigned

III. Record Data Completeness

   a) Document the protected areas in PAD-US (CBI Edition) Version 2.1 in a reference spreadsheet by designation type (see below)

Designation Type	Number in Database: Number of PA's
Area of Critical Environmental Concern	690:1042
National Conservation Area	14:18
National Forest	118:118
National Grassland	15:15
National Park	69:73
National Wildlife Refuge	549:559
Wild, Scenic and Recreation River	88:208
Wilderness Area	753:764

IV. <u>National Wildlife Refuges</u>

1) Compare PAD-US (CBI Edition) and 2015 USFWS National Wildlife Refuge Simplified Boundaries (http://www.fws.gov/GIS/data/cadastralDB/index.htm)

2) Identify National Wildlife Refuges with simple geometry, added 30 protected areas boundaries

IV. <u>QA/QC Review</u>

1) **Internally review of database for QA/QC**

   a) Review the protected areas with establishment dates assigned to ensure the combination of updates to p_des_nm and Est_date are correct

   b) Validate spatial geometry and attribute information for newly added National Wildlife Refuge boundaries.

Consideration of future needs

CBI has released PAD-US (CBI Edition) Version 2.1 as an intermediate update to existing protected areas in the database to continue the sustained effort to improve the database with available funding. We identify the following needs for consideration in future versions.

1) A collaborative network of data providers: Aggregating a nation's protected areas into a national standard is a collaborative process. Each edition is built in partnership with numerous data providers and reviewers. Only by working together can we assure the highest quality. Before we commence work on the next version, we will communicate with our data network to identify important additions and synchronize update schedules. Several sources published new state and regional protected areas datasets close to our release date. Therefore, these datasets could not be

incorporated into PAD-US (CBI Edition) Version 2, but will be added to the next version.

2) Line-work conflicts: When aggregating multiple source datasets in a geographic region, the geometric representations of protected area polygons and boundaries often do not agree among the different sources. CBI will continue to develop sustainable mechanisms for detecting, avoiding and resolving the conflicts that will be present in data provided by our sources.

3) Improvements to the standard designations: Our current list of standard designations is an adaption of the PAD-US Master Stewardship Codes. We represent standard designations rather than codes with the purpose of providing users with the summary information they need to assess, summarize and communicate the scope of their choosing. Our database does not distinguish a protection threshold above which biodiversity is considered secure. Instead, a complete suite of protected area attributes are provided for each polygon with the purpose of giving users the information they need to define the most relevant conservation thresholds for their own objectives and requirements. We plan to work with our user community to better tailor our standardizations to their needs.

4) Incorporation of local review: With a large database of this type, errors do occur. For our vision to be achieved, the conservation landscape represented in CBI products should match your understanding. A process is being developed on the Data Basin Protected Areas Center for soliciting, documenting and incorporating local review in the development of future products. We will request feedback on the following: Known and digitized protected lands are accurately represented; attributes related to owner, manger, designation, etc. are correct; and linework accurately represents protected area boundaries. This information allows us to establish the proper communication channels and relationships to ensure the corrections are made and future errors are avoided.

Appendix A: PAD-US (CBI Edition) Version 2.1 Attribute Table

Field Name	Description	Domain
Owner Type	General land owner description (e.g. Federal Land, Native American Land, State Land, Local Land, Private Conservation Land and Private Land) standardized for nation	Look up table
Owner Name	Primary agency or entity who owns the parcel, detailed name	
Manager Name Detailed	Primary agency or entity responsible for the management of the parcel, detailed manager name	
Primary Designation Type	Primary land management description or designation expected to overlap another designation, standardized for national (e.g. Wilderness Area resides in this field while National Forest General Public Land resides in Secondary Manager Description)	Look up table
Primary Local Designation Type	Primary land management description or designation as provided by data source, not standardized for nation	
Primary Designation Name	Name of parcel standardized to enable searches for protected area by name	Standardized field
Primary Local Name	Name of parcel as provided by source, not standardized	
Secondary Designation Type	Overarching management of a polygon under which another may overlap (e.g. a National Forest is listed here, when a Wilderness Area "overlaps" and therefore is the primary designation type)	Look up table
Secondary Local Designation Type	Land management description or designation as provided by data source, not standardized for nation	
Secondary Designation Name	Name of parcel standardized to enable searches for protected area by name	Standardized field
Secondary Local Name	Name of parcel as provided by source, not standardized	
Tertiary Designation Type	Tertiary land management description or designation expected to overlap two other designations, standardized for the nation	
Tertiary Local Designation Type	Land management description or designation as provided by data source	
Tertiary Designation Name	Name of parcel standardized to enable searches for protected area by name	
Tertiary Local Name	Name of parcel as provided by source.	
Status	**Proposed** - Site has approval on a local government level but is awaiting legal declaration/decree; **Designated** - Site has been legally decreed; **Recommended** - Site has been put forward by local/international, non-governmental organization or national agency	
State Name	Name of state spelled out	State Domain
GAP Status Code	Measure of long-term biodiversity protection according to GAP 1-4 scale. GAP "Unknown" is where GAP codes are currently unavailable	GAP Codes (1-4)

IUCN Category	IUCN management categories, codes assigned using Designation Type Crosswalk List	IUCN code (Ia, Ib, II, III, IV, V, VI)
GIS Source	Source of GIS spatial and attribute information.	
GIS Source Date (Year)	Date GIS information was published according to source field metadata	
GIS Acres	Acres calculated from polygons-calculate geometry command	
Comments	Any comments from either the source or the aggregator	
FIA Owner Code	Forest Inventory Assessment ownership code (11= National Forest, 12= National Grassland, 13= Other Forest Service, 21= National Park Service, 22= Bureau of Land Management, 23= Fish and Wildlife Service, 24= Department of Defense/Energy, 25= Other Federal, 31= State, 32= Local, 33= Other Non Federal Pubic, 40= Private Lands)	
Reserve Status	Identifies federal lands that are reserved or not reserved based on PA designation type. Reserved land is withdrawn by law(s) prohibiting the management of land for the production of wood products (not merely controlling or prohibiting wood-harvesting methods). Such authority is vested in a public agency or department, and supersedes rights of ownership. The prohibition against management for wood products cannot be changed through decision of the land manager (management agency) or through a change in land management personnel, but rather is permanent in nature.	
Establishment Date	Establishment Date (the date the protected area was designated under a land management type, e.g. National Forest)	
Establishment Date Comment	Establishment date comments, including references to supporting materials	
Shape Length	Shape Length, meters	
Shape Area	Shape Area, meters	