Protected Areas Database of the United States

Presentation for the National Geospatial Advisory Committee
June 30, 2021
Roadmap

- Topics
  - PAD-US overview
  - Current applications
  - 30x30 and climate opportunities

- Q&A
Core Science Systems

Science Synthesis, Analysis and Research Program

➢ Underpins USGS Science
  ○ Nationally-consistent, foundational geological, geophysical and biodiversity data used in landscape scale conservation, risk assessment, and resource management decision-making
  ○ Advanced Research Computing - high performance computing and training
  ○ Science Data Management - tools, expertise, best practices

➢ Accelerates research and decision making
  ○ Analytical tools, maps, and data synthesis provide decision makers with actionable intelligence
  ○ John Wesley Powell Center for Analysis and Synthesis

➢ Provides long-term preservation of scientific data and collections
  ○ USGS Library, ScienceBase, Geological Materials Repository
What is PAD-US?
What is PAD-US?
PAD-US is geospatial (GIS) data
Many data elements

- Fee lands
- Designation
- Easements
- Marine
- Proclamation
- Combined

Diagram showing various data elements such as easements, fee ownerships, marine protected areas, and proclamation and other planning boundaries.
Many users and uses

- Recreation planning
- Wildfire management
- Energy facility siting
- Biodiversity conservation
- Public health
- Emergency management
- Land use planning
- And more...
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Conservation and recreation measures

Current U.S. Status
12% Protected Areas
18% Multiple Uses
Local to global assessments

PAD-US

NAWPA North American PAD

UNEP-WCMC World Database on Protected Areas
How is PAD-US Built?
Collaboration builds PAD-US

States

Federal

Nonprofit

How PAD-US is Built

State stewards develop statewide data for fee-owned lands

USGS GAP integrates all and publishes products

Data sharing, coordination: National Conservation Easement Database

US and global data products published
Federal Lands Workgroup

- 14 land managing and related agencies
- Collaboration to aggregate federal land ownership and management designations into PAD-US
- Sharing best practices, improving GIS systems, and automating updates to support applications

www.communities.geoplatform.gov/ngda-govunits/federal-lands-workgroup/
State Stewards

- In each state: 1-2 agencies, universities, NGOs
- Compiles nonfederal lands data
- Many states with effective systems
- Other states need improvement
- Learn more about Data Stewards at: ProtectedLands.net
Nonprofit Partners

- Nonprofits share data with USGS and refine data standards
- Help States ‘catch up’ and improve inventories as needed
- TPL and DU manage NCED – sole source of easements
Foundational Data for 30x30
Contributions towards 30x30 Goals

Established partners, standards, and baseline data

PAD-US data partners

- Federal, States, NGOs

Opportunities

- Tribes
- Broader conservation stakeholder groups

PAD-US publishing & delivery

- Last update Fall 2020 (annual Federal updates)
- Analytics for land management and protection status
PAD-US Current Applications

Local to Global Applications - Biodiversity Protection Status, Climate, Connectivity, Park Access

- **Land Ownership and Management** - Definitive source for how much land is owned and managed (National Park Service)
- **Fire Risk Assessment** - Data from single source in support of wildland fire (National Wildfire Coordinating Group)
- **Conservation Planning** - States rely on PAD-US for planning Conservation Opportunity Areas (State Wildlife Action Plans)
- **Recreation & Healthy Communities** – CDC and NPS goals to get people outdoors more frequently (Centers for Disease Control, Department of the Interior)
- **Global Assessments** – Conservation analysis and data sharing globally (NAWPA*, World Conservation Monitoring Centre)

* North American Committee on Cooperation for Wilderness and Protected Areas Conservation
PAD-US in Action

Supporting National Wildfire Coordinating Group

Protected Areas Database of the United States (PAD-US) included in Wildland Fire Decision Support for:

- Decision-making related to wildland fires by providing ownership and management designation boundaries
PAD-US in Action

Protected Land for Wildlife Corridors

• PAD-US data used to prioritize wildlife corridors for a connected network of protected lands.

• Protected areas form the core of a network with corridors to prevent isolation of ecosystems and populations.

• Study investigated which land units were most important for maintaining connectivity.

From Belote et al. 2016: Composite corridor value for providing connectivity between core protected areas.


USGS
PAD-US in Action

Habitat Connectivity with Shifting Climate

PAD-US protection status used to define “natural lands” which were then used to assess habitat connectivity in relation to climate change in landscapes.

Patterns of climate connectivity: “...spatial configuration of natural lands allows species to track their current climatic conditions during projected climate change.”

By examining these climate change-rated corridors in relation to protected lands, researchers and policy makers can better focus conservation resources to protected lands that fill in this corridor pattern.

From McGuire et al. 2016: Corridor efficiency. Patches are gray, and corridors are blue to red from highest to lowest relative efficiency for movement and conservation.

**PAD-US in Action**

**Getting people outdoors, exploring parks for all communities**

- PAD-US has historically contributed to recreation initiatives with multi-sector partners
- Serves as an integrated layer for federal, state, and NGO lands for human health initiatives, and local communities
  - CDC Health Impact Assessment Toolkit
  - 2020 Census for local references
  - RV Apps – US Public Lands

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**Introduction**

Well-designed parks and trails are vital parts of our environment. Research examining the connection between parks, trails, and health has revealed many benefits, including mental health, physical health, and social health gains. Parks and trails can provide access to nature, promote physical activity, and connect people with their communities.

**What is a Health Impact Assessment?**

A Health Impact Assessment (HIA) is a tool used to assess the potential health effects of a policy, project, or program on the health of a population. HIA can be used to help decision-makers understand and mitigate potential health impacts, including positive health outcomes and adverse health effects. HIAs are conducted in several stages: scoping, data collection and analysis, synthesis and evaluation, and dissemination. The process is designed to be iterative, allowing for adjustments as new information becomes available.

**Data from PAD-US enabled the development of a new map highlighting federal recreation lands and waters in the U.S.**

The US Federal Government owns nearly 550 million acres of land, almost 50 percent of the land area of the United States. The 3% of the Federal Lands are managed for public use, including recreation, wildlife, and scientific research. The new map was developed using data from PAD-US and is available on the USGS website. The map provides a comprehensive view of the federal lands managed for recreation, including national parks, forests, and wildlife refuges.
**PAD-US Contributions to 30x30 and Climate Science**

**Biodiversity Protection Status, Climate Change Vulnerability and Mitigation, Connectivity, Park Access**

PAD-US enables the priority conservation goal of 30% of U.S. lands and oceans by 2030 through assessing the benefits of protected areas and the integration of additional data

- **Local to global protection status** - land and water
- **Land cover/land use change** - habitat assessments, threats
- **Species decline** - status of rare species
- **Climate change vulnerability** – biodiversity assessments
- **Climate change mitigation** – corridors, fire, flood
- **Park equity** - equitable access to nature

**Protected Areas and Habitat Analysis**

Protection status designations of lands managed to maintain biodiversity (GAP Status 1&2) for the continental US. Percent area based on the area of each USNVC Group within each protection status divided by the total area of each of the natural USNVC Group across the conterminous U.S. Boundaries are EPA EcoRegion Level II. Areas in pink represent ruderal and plantation vegetation and gray areas are intensively managed or urbanized land uses. (McKerrow A. et al. In Press)

Data: PAD-US v2.1; National Gap Land Cover; LANDFIRE
PAD-US Summary

- Authoritative inventory of America's protected lands
- Long history of supporting conservation and land management needs
- Single integrated Federal, State, and NGO lands database
- Standards-based approached
- Contributes to baseline to track and monitor 30x30 performance
- Contributes to climate goals

Data from PAD-US enabled the development of a new map highlighting federal recreation lands and waters in the U.S. The map highlights recreation lands managed by seven federal agencies.
Questions and Discussion

- Cheryl Morris, Program Coordinator, Science Synthesis, Analysis and Research (SSAR)
- Mike Frame, Associate Program Coordinator, SSAR
- Mark Wiltermuth, Biogeographic Science Branch Chief, SSAR

Explore PAD-US: maps.usgs.gov/padus
PAD-US Website: www.usgs.gov/gapanalysis/PAD-US
Announcements: pad-us@usgs.gov