

Protected Areas Database of the United States – PAD-US



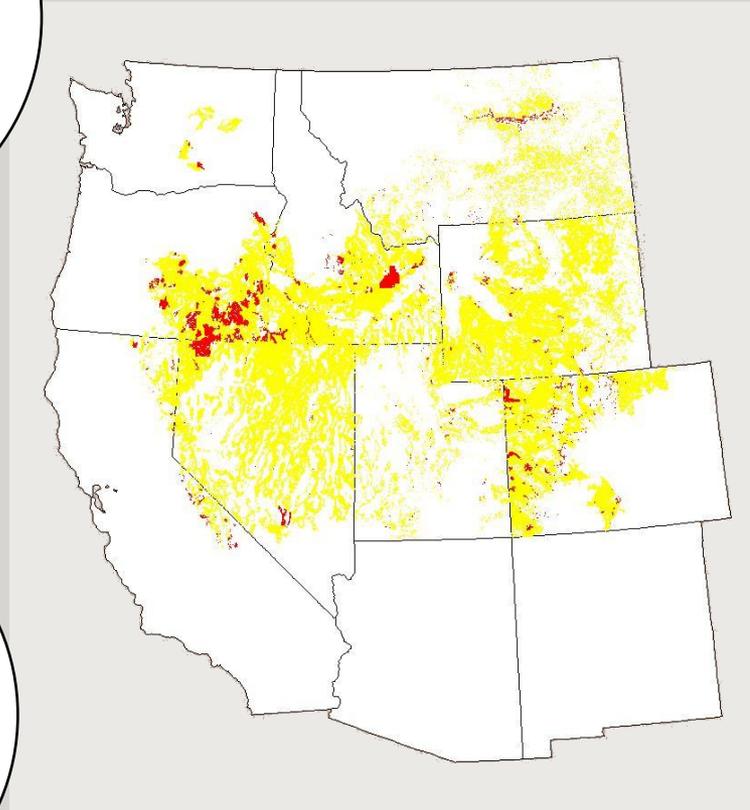
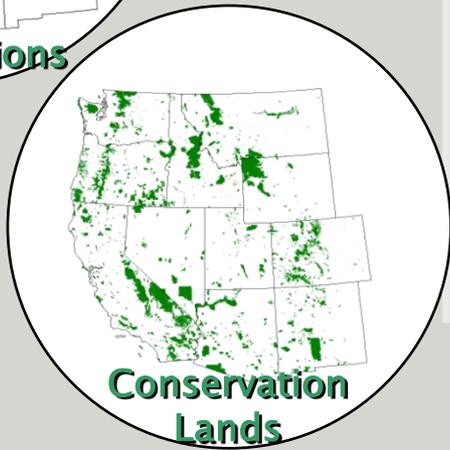
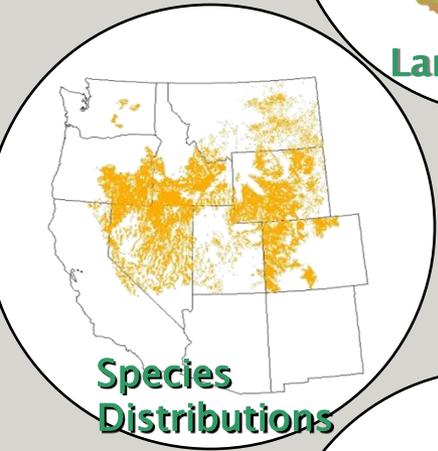
Biodiversity and Ecosystem Informatics Working Group



May 14, 2009

John Mosesso

The National Gap Analysis Program

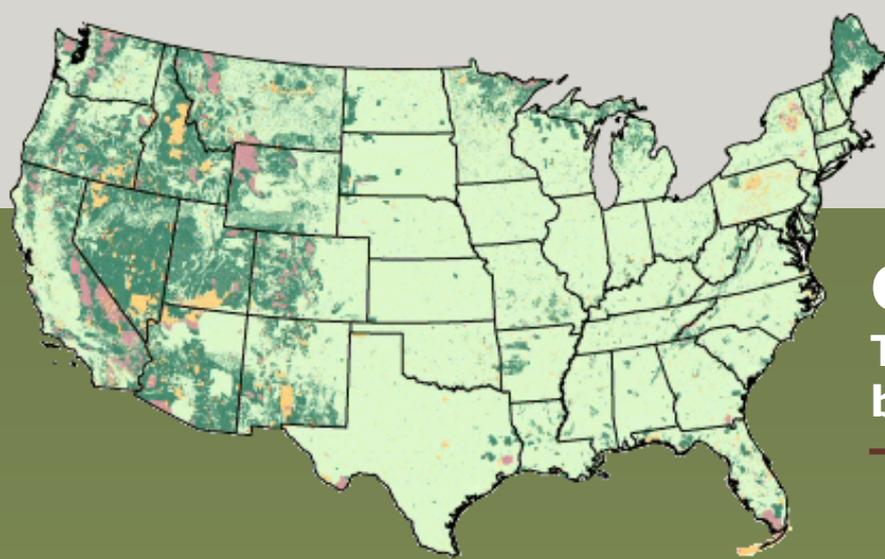


-  Sage Grouse Distribution
-  Conservation Lands



Sage Grouse Gap Analysis
Centrocercus urophasianus

Protection is currently <6% of its western range.



GAP "protection" concepts

The lower the number, the better for biodiversity conservation

Status 1

Land unit having **permanent protection** ... and a mandated management plan within which disturbance events are allowed to proceed or are mimicked through management

Status 2

Land unit having **permanent protection** ... but which may receive use or management practices that degrade quality of existing natural communities

Status 3

Land unit having **permanent protection** ... for the majority of area but subject to extractive uses (i.e. logging, mining) ...

Status 4

Land unit with lack of irrevocable easement or mandate to prevent conversion of natural habitat ... (or unknown)



Master Stewardship List and IUCN Classification

Class	Owner/Manager		Management Designation		IUCN Category
1000	<i>Federal Land</i>				
	1300	Fish and Wildlife Service (FWS)			
			1301	National Wildlife Refuge (FWS)	IV if GAP 1 or 2, otherwise PU
	1400	Forest Service (USFS)			
			1411	Wild, Scenic & Recreation River (USFS)	V if GAP 1 or 2, otherwise PU
3000	<i>State Land</i>				
	3100	State Park & Recreation			
			3101	State Park	> 5,000 acres II < 5,000 acres V , If GAP 1 or 2
	3150	State Department of Conservation			
			3156	State Natural Area	V if GAP 1 or 2, otherwise PU
	3300	State Fish and Game			
			3301	State Wildlife Management Area	IV if GAP 1 or 2, otherwise PU
6000	<i>Non-Governmental Organization Land</i>				
			6302	Nature Conservancy Preserve (TNC)	If GAP 1 then Ia If GAP 2 then V
7000	<i>Private Land</i>				
	7100		7101	Private Conservation Deed Restriction	Temporarily Unassigned





PAD-US Project

- Build on USGS GAP experience and databases
- Need design next generation
- Public-private focus
- www.protectedlands.net

Protected Areas Database of the United States
Improving the nation's data on natural resources and park lands.

DATA PORTAL **DESIGN PROJECT** **PROJECT TEAMS**

Home Report Overview FAQ Publications Resources Help/Support

Protected Areas Database - U.S.

Good data about protected open space in America is critical for conservation and land use planning, decisions about acquiring lands or easements, access to recreation opportunities, program evaluation and much more.

While there has been significant progress inventoring federal, state, local and non-governmental holdings of open lands, we still need improvements that will capture all protected areas and key data about them, and do so reliably, year after year - an ongoing Protected Areas Database of the United States (PAD-US).

With its start in April 2000, the PAD-US Design Project will recommend next steps for an improved national inventory of protected areas. This \$250,000 project is funded by the Carol Duke Charitable Foundation and the U.S. Geological Survey, and is being coordinated by GreenNet and the Conservation Biology Institute. A project information sheet is available (link to FDP, to be added): [FDP/USGS_02](#)

[Download PDF version](#)

[Project Summary Poster \(link removed\)](#)

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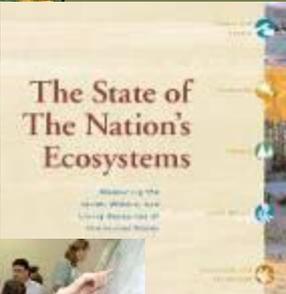
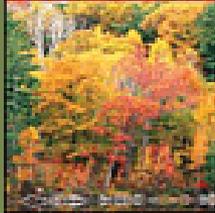
Project Objectives



- Establish partnership (NGO and government)
- Create data model, prototype structure, initial databases
- Build and begin business plan
- Secure next step support

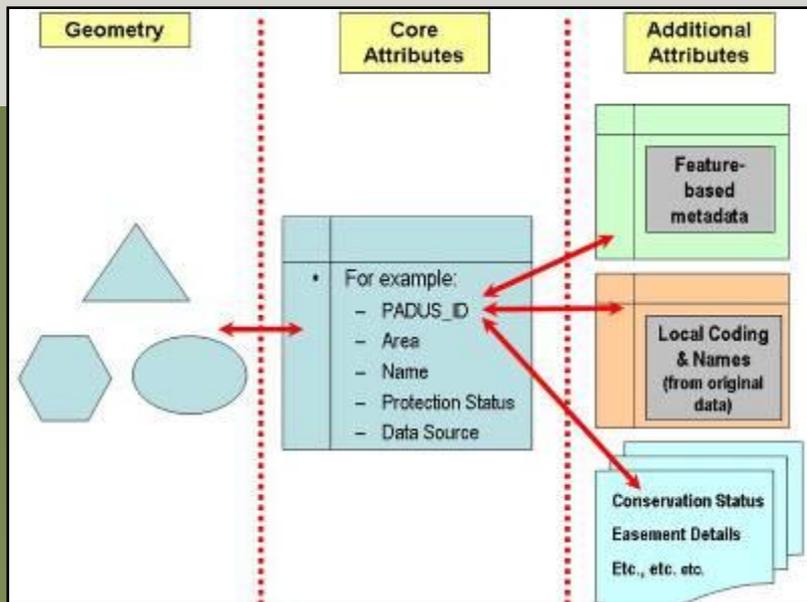


Why Do We Need Better Data?

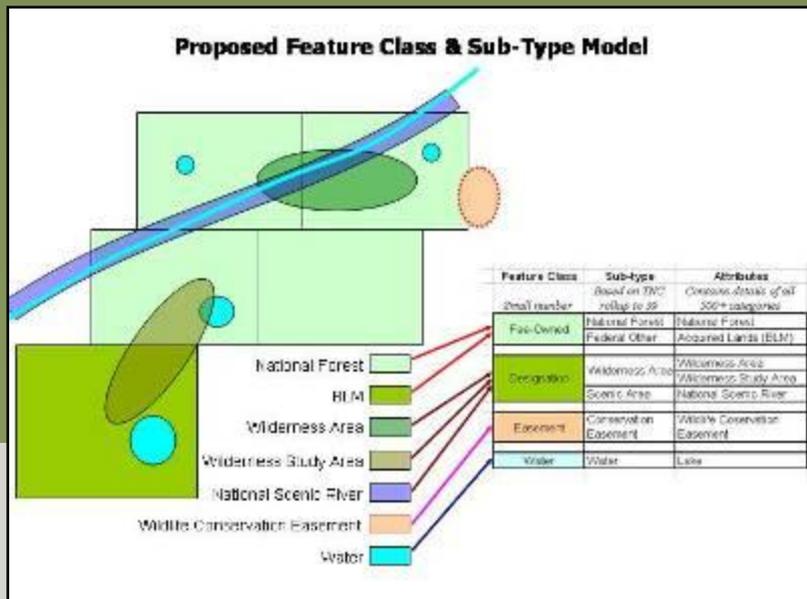


- Planning (open space, land use, acquisition)
- Monitoring and Reporting
- Problem Solving
- And much more..

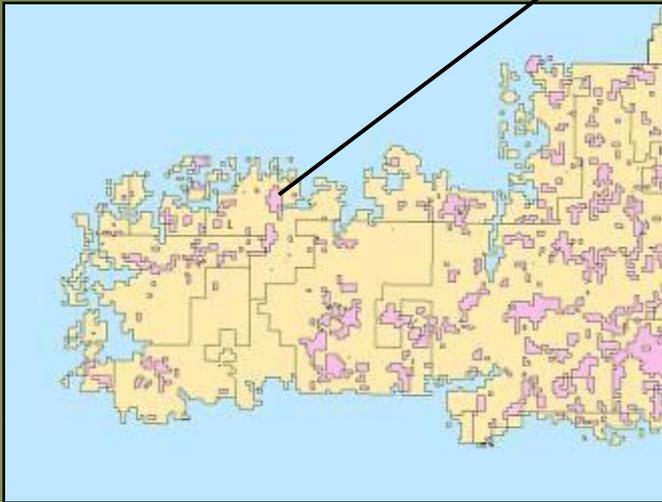
New Database Structure



- Standardized Data Handling Process
- GeoDatabase
- Several Feature Classes & Subtypes
- Core Attribute Table
- Additional Attribute Tables



Core Attribute Table



GUID	Main Parcel Designation
Type - Fee or Easement	Status
Owner	State
Agency	IUCN-CAT
Area Name	GAP-CAT
Main Parcel Name	Source
Manager	Source Date
Local Designation	GIS Area
Standard Designation	Comments

Partner Involvement: Now and In the Future

Currently:

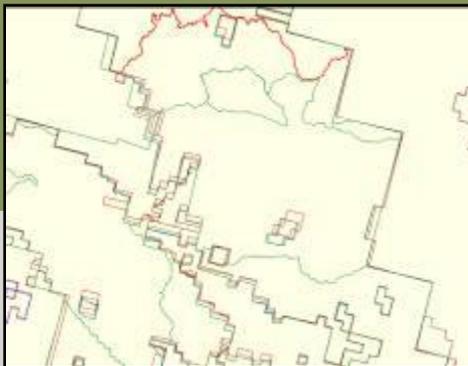
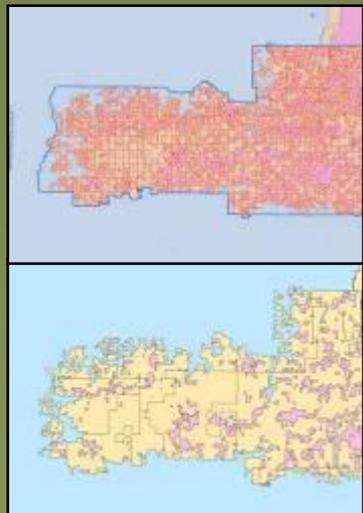
- State input through technical committees: VA, OR and CO
- Some states have populated the project web-site state profile

In the future:

- Further input on design from State GIS Programs
- Formal data sharing partnerships
- Consideration of elements of the PAD-US standard that work for states
- Funding support to states to foster the creation of better state inventories



Complexities



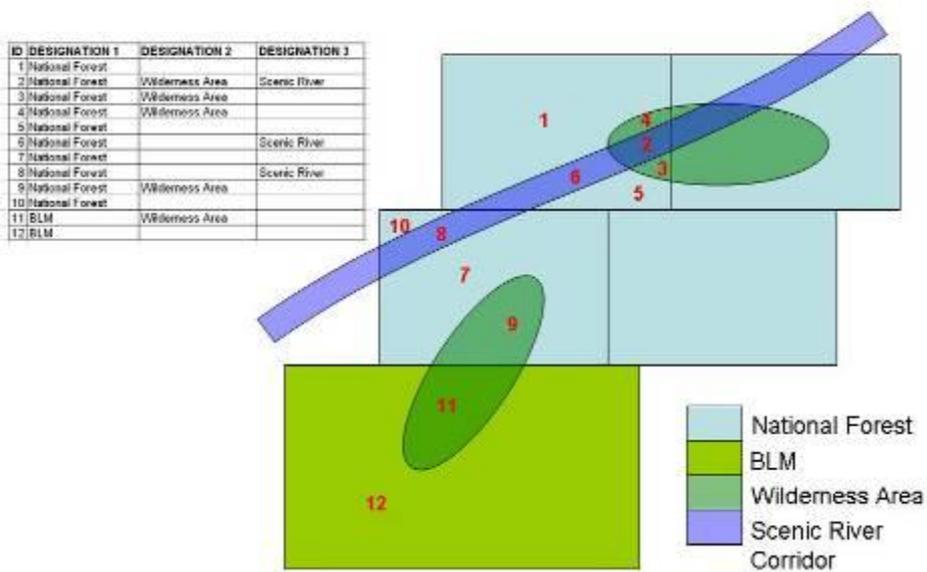
- Putting 50+ puzzle pieces together
 - Boundary issues
 - Level of spatial aggregation
 - Different scale/accuracy practices
- Conflicting geometry and attributions between contributors
- Thinking about a future with nationwide parcels

Complexities

- These are inherently complex data
 - It's much more difficult than it sounds!
- Overlapping designations
 - Degree of overlap impacts conservation measurement
- Accounting for water
 - Which coastline?
 - Conservation status of water

Topological and Feature Class Modeling Complexities

Feature overlap and managing multiple "area name" and "designation" fields



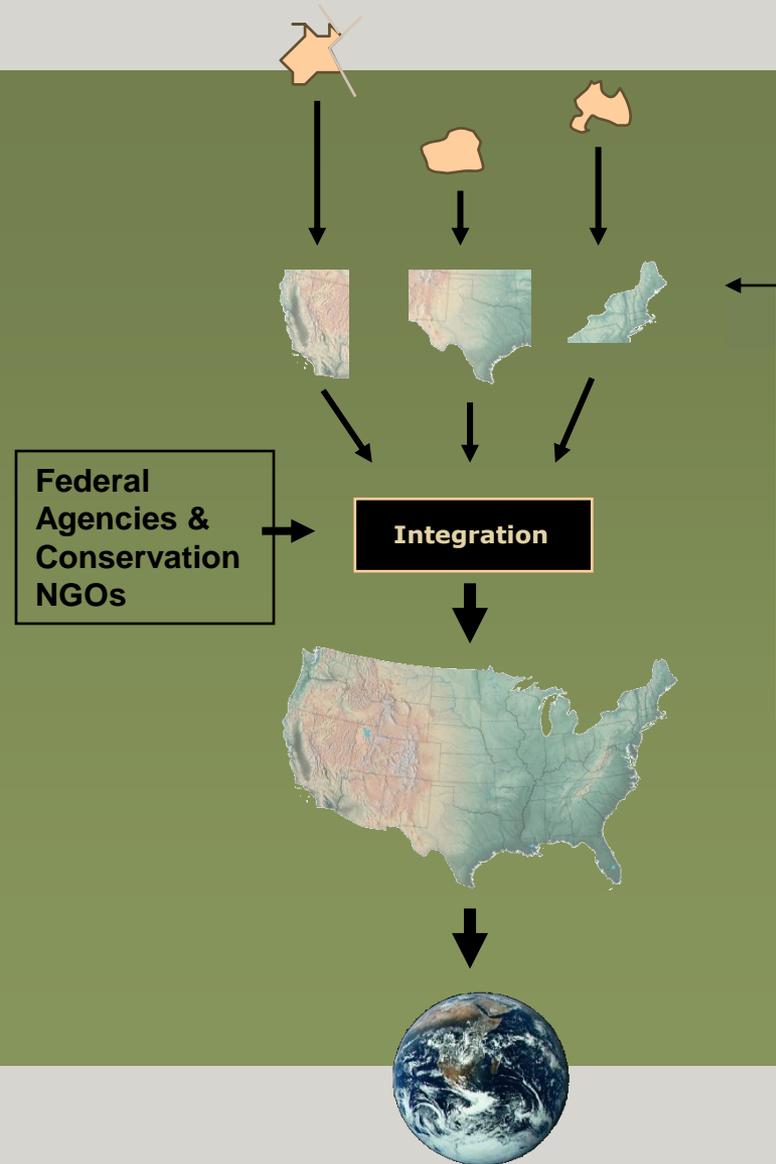
Protected Area Vision



- Permanently protected +
- Protected for biodiversity, recreation, resource use and more
- Easements
- Freshwater characterization
- Marine areas eventually. . .



PAD-US Elements



- Database structure and standards
- Data gathering network
- Integration processes
- Publication of many products
- Strong support for states, improved coordination among federals & NGOs

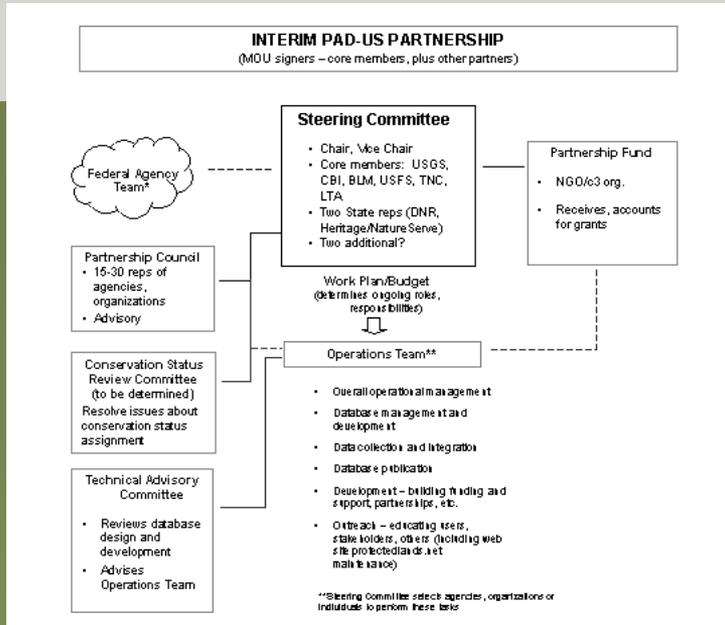
States Are Key

- Most federal land is inventoried
- Some states have good inventories but many lack good data below state level lands
- Different emphases, formats, attribute content, accuracy standards, and processes
- PAD-US designed to build from strong state and federal data using good standards

The image displays three overlapping browser windows. The top window shows the Massachusetts GIS Database with a search bar and navigation menu. The middle window shows the Virginia Department of Conservation and Recreation (DCR) website, featuring a map of Virginia and various program areas. The bottom window shows the California Protected Areas Database (CPAD) website, which includes a map of California, a list of protected lands, and a 'download CPAD' button.



PAD-US Partnership



■ Initial members: USGS, USFS, BLM, CBI, TNC, ...

■ MOU-basis

■ Provide data and best efforts to support overall funding

■ Virtual staffing – common workplan among core staffing group

■ Evolve over time



Data Partnerships & Workflows

Engagement Level 1:

Data Contributors have:

- Protected lands data of interest
- Ability to provide an electronic copy
- Need for manual process for data loading

Small Organization
(e.g. Local Land Trusts,
Small Local Govts.)

Engagement Level 2:

Cooperating Partners have:

- Documented protected lands data (i.e. metadata)
- Available for regular data acquisition by PADUS in a consistent, repeatable format
- Repeatable ETL process for data loading

**Statewide
Collections**

Engagement Level 3:

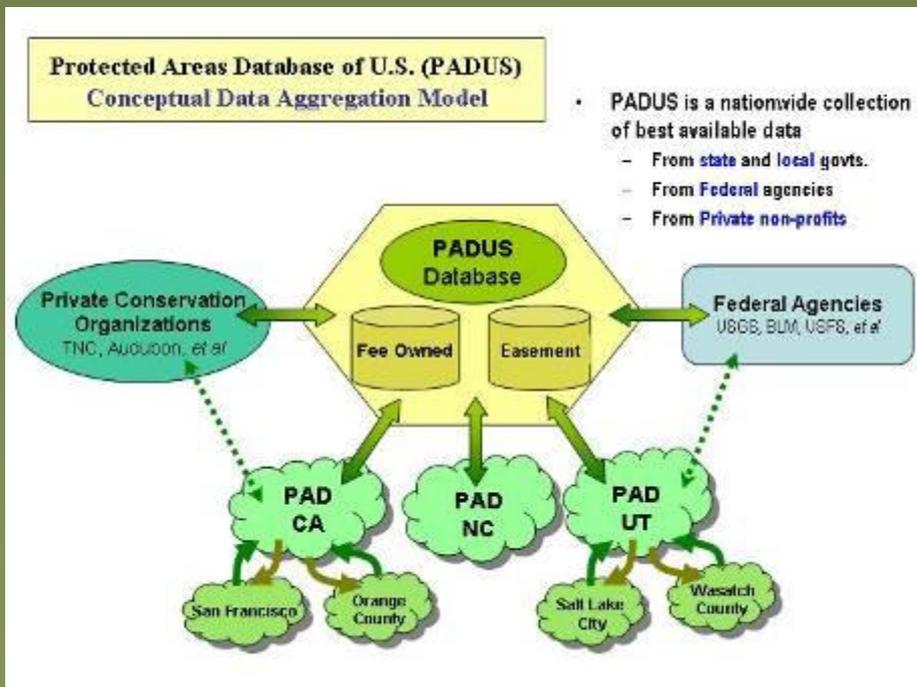
Formal Partners have:

- Committed to frequent data exchange
- Adhere to PADUS data standards
- Validated conservation measurements
- Support automated, data exchange technology (e.g. replication)

**Federal
Agencies,
TNC**

- Over time, increasing numbers of formal partners
- Someone needs to manage this process
 - Key need for funding

Technical Framework – Phased Approach



- Short-term, best aggregation of existing data

- Simple data structure
- Aggregation from states, federal agencies, and NGOs

- Long-term, increasing levels of detail

- More sophisticated database structure
- Reduce handwork
- Repeatable processes, move toward automation

Where do we stand now?



- We have 80–90% of protected areas at federal and state levels
- BUT...
 - Seriously lacking below state
 - Lack of consistent spatial accuracy
 - Lack of single set of standards
 - Issues about conservation ranking
 - No sustainable funding to maintain

How Much Open Land is Protected in the Continental U.S.?



○ 560 million acres - Federal, State, Local

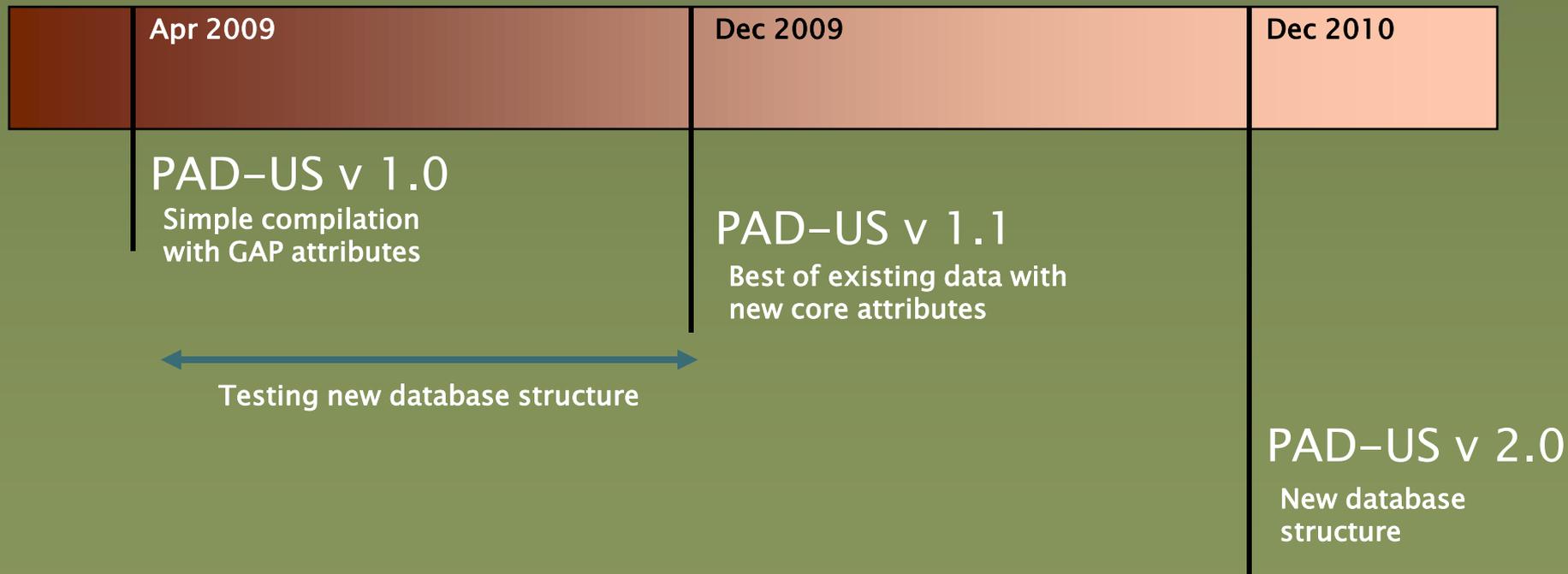
2005 data; not incl. ANILCA or tribal lands; estimated figure for local

○ 37 million acres - Land Trusts

2007, from LTR



Phased Approach



Conclusion



- We've come so far
- Coming together of many efforts, great opportunity
- Tough times but modest funding needs
- Huge benefits

Conclusion



- John Mosesso

- Gapanalysis.nbii.gov/PADUS

