



# **Linking Conservation and Transportation Planning: Standard Methods & Tools**

**Little Rock, Arkansas  
Workshop  
May 31 – June 1, 2006**

# Agenda

## § Day One

- § Transportation Planning
- § Natural Heritage Program
- § State Wildlife Action Plan
- § Conservation initiatives
- § Transportation initiatives

*Focus on: Transportation and Conservation Planning Approaches*

## § Day Two

- § NatureServe Vista
- § Quantm
- § CommunityViz
- § GeoStor
- § Current streamlining initiatives
- § Discussion, Discussion, Discussion

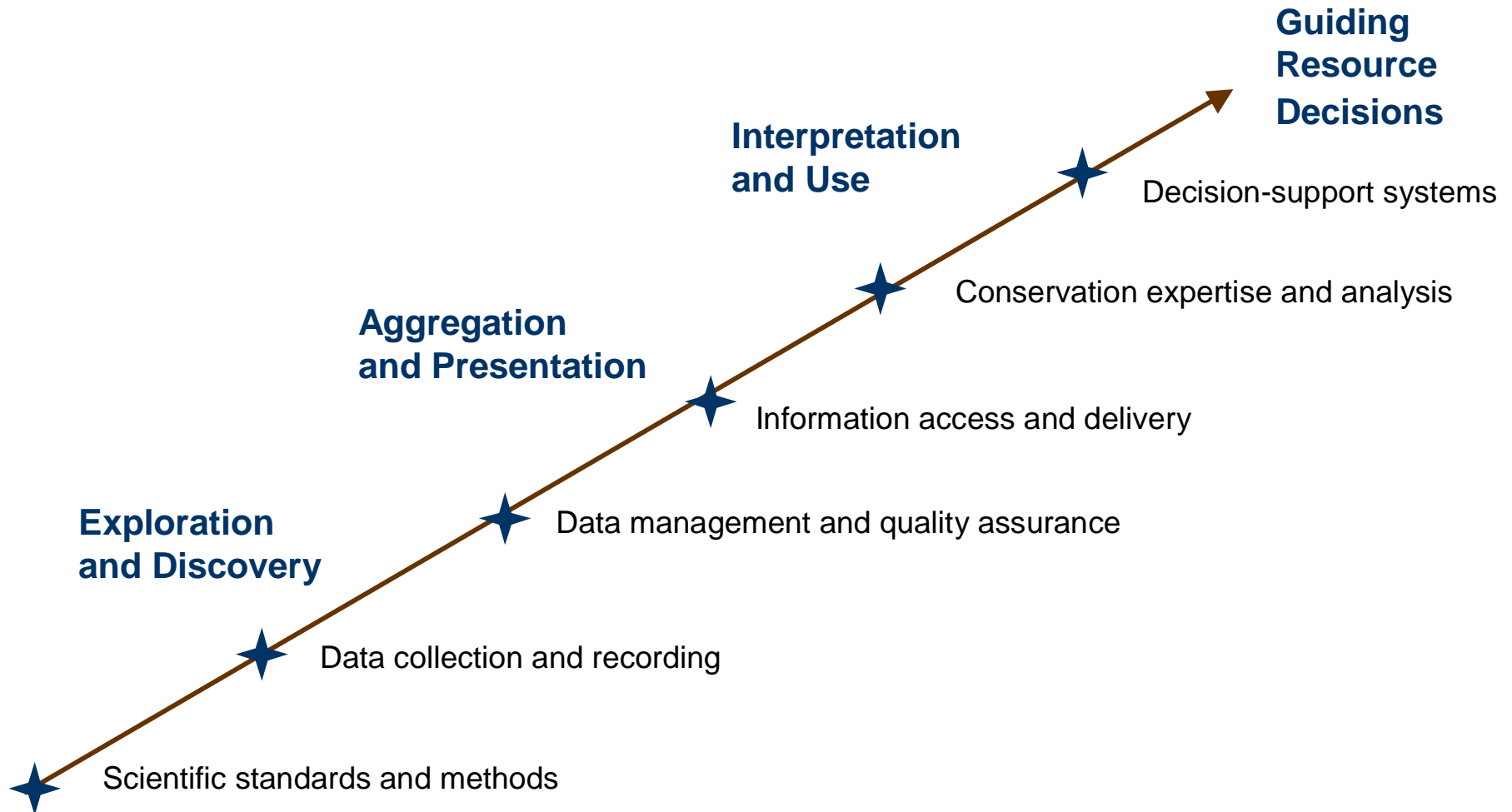
*Focus on: Conservation Methods and Tools*

# NatureServe in Brief

- § An independent, non-profit conservation organization
- § Carrying forward 30 years of scientific experience
- § Provides the scientific basis for effective conservation and natural resource management
- § Coordinates and supports the network of state natural heritage programs (public-private partnership)
- § Collaboration and service to all sectors—government, conservation NGOs, academia, and industry.



# NatureServe Information Value Chain



# The NatureServe Network

## Nationwide and Beyond

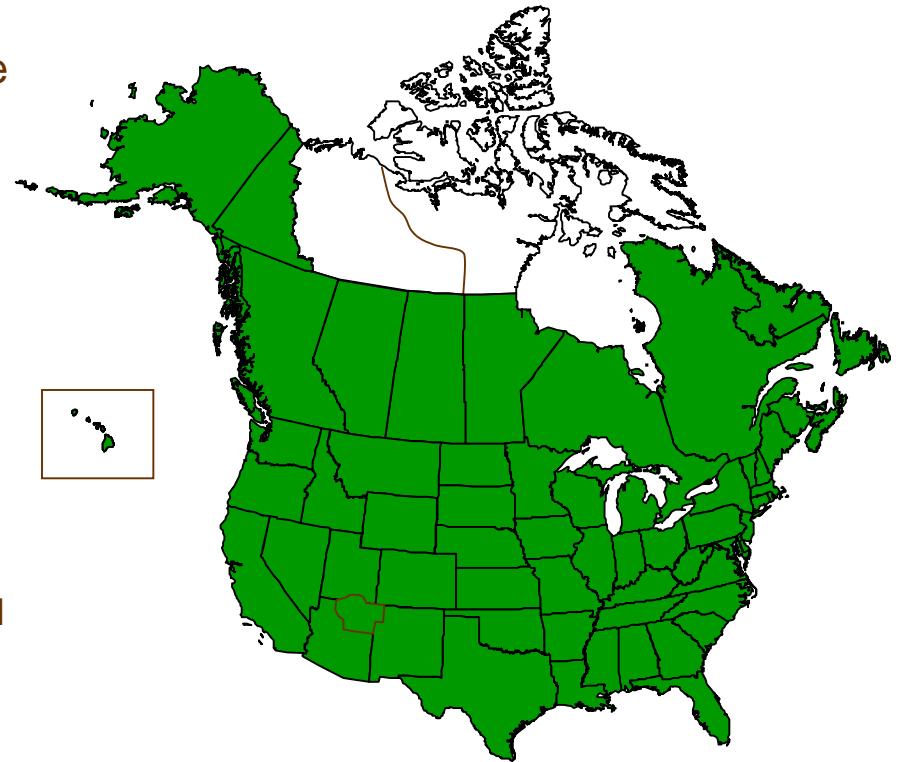
80 inventory and monitoring programs with  
800+ staff across the Western Hemisphere

### Natural Heritage Programs

- § Operate in every U.S. state, all Canadian provinces, and selected Latin America countries
- § Collect, analyze and distribute detailed local biodiversity data
- § Conduct environmental reviews, assessments and planning

### NatureServe Staff

- § Provide technical and scientific support to natural heritage programs
- § Advance the network's scientific standards and data management software
- § Develop and maintain comprehensive rangewide (global) data for species and ecosystems





- About Us
- News & Events
- Arkansas Heritage Program
- Natural Areas
- Image Library
- Learn
- Biota Survey

Natural Heritage Inventory

- Data Requests
- Rare Species Search
- Rare Species Info
- Home

View Our Natural Areas Locator Map  
CLICK HERE

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### Natural Heritage Inventory

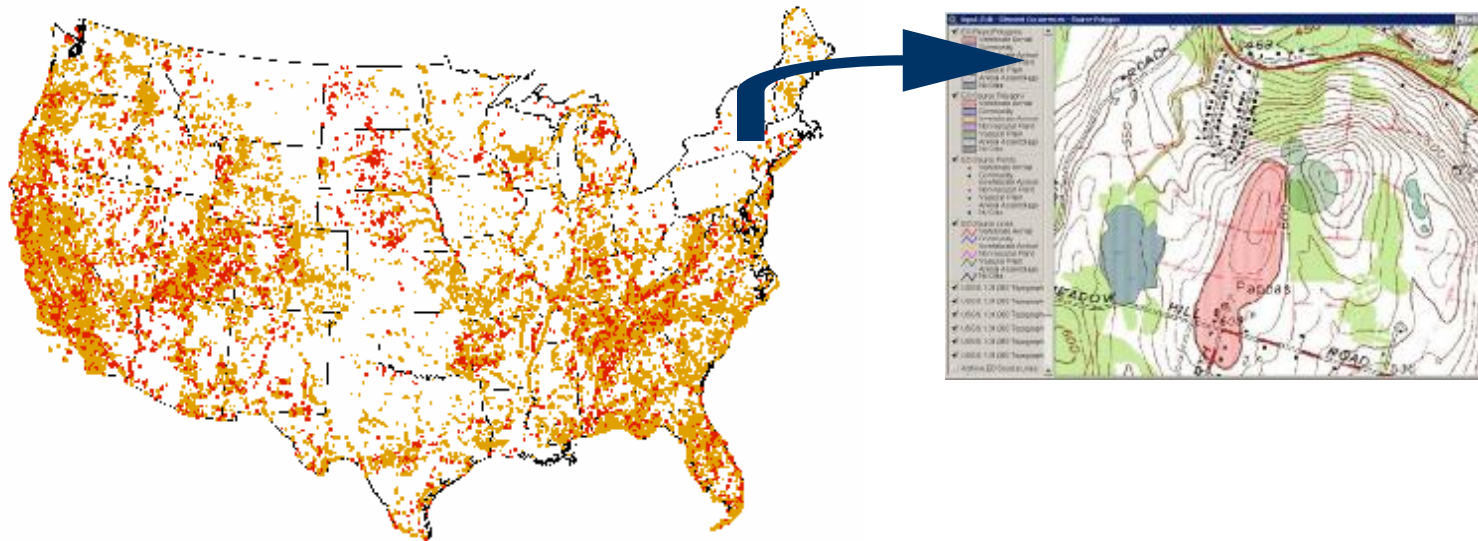
One of the most basic ways to protect rare species and natural communities is simply knowing their location and status. To accomplish this, the ANHC maintains the Natural Heritage Inventory. This dynamic database tracks the precise location and status of rare species, along with the location and condition of high-quality natural communities throughout the state.



The Natural Heritage Inventory was developed by The Nature Conservancy through a partnership with the State of Arkansas and the Winthrop Rockefeller Foundation. The ANHC's **Arkansas Heritage Program** Arkansas Heritage Program maintains the Natural Heritage Inventory and is a member of **NatureServe**, an international network of State Natural Heritage Programs and Conservation Data Centers. NatureServe members utilize the same data management methodology, enabling standardized information regarding biological diversity to be exchanged across state and international boundaries.

# Detailed Mapping of At-Risk Species and Ecological Communities

- § State natural heritage programs map population and stand-level occurrences using nationally consistent standards.
- § NatureServe maintains an aggregated national data set with more than 500,000 occurrences, and millions of individual observations.



# Uses of NatureServe Data





# U.S. Fish and Wildlife Service

## § **Endangered Species Office**

- § NatureServe conservation status assessments used as a primary source for identifying potential candidates for listing
- § Natural heritage locational data routinely used in field implementation of ESA

## § **Landowner Incentive Program**

- § Landowner eligibility under program determined in part by use of NatureServe status ranks

## § **State Wildlife Action Plans**

- § Plans rely on NatureServe data for identifying priority species and habitats and management needs
- § NatureServe data standards enable multi-state cooperation and implementation



**Ivory-billed woodpecker (G1)**

# New USFS Planning Rule

- § Relies on NatureServe status ranks to identify “species of concern” and “species of interest.”
- § Species of concern include: NatureServe conservation status ranks of G1 through G3
- § Species of interest include NatureServe state status ranks (maintained by natural heritage programs) of S1 and S2



Sage Grouse

# Department of Transportation

## Pipeline Safety Risk Mitigation

- § Formal rule for unusually sensitive areas (USAs) under the Pipeline Safety Act relies on NatureServe conservation status ranks (G1 and G2 species)
- § Nationwide mapping of ecological USAs relies on consistent NatureServe locational data for federally listed and G1G2 species



# Reliability of NatureServe Data

NatureServe's databases represent "one of the most comprehensive information sources on rare and imperiled species."

- *US Fish and Wildlife Service. Federal Register publication on the "Identification of Candidates for Listing"*

"The Fish and Wildlife Service uses the best available scientific information to assess species for consideration for listing. One chief source of information is the network of state Natural Heritage Program databases, which tracks species already imperiled and those that are declining or at risk."

- *Department of Interior FY2006 Budget Justification*

"The Forest Service and numerous other federal agencies rely daily on the scientific data, information management tools, and conservation services provided by NatureServe and its affiliated state natural heritage programs."

- *Dale Bosworth, Chief, U.S. Forest Service*

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*Focus on: Conservation Methods and Tools*



NatureServe  
**VISTA**

Background



# NatureServe Vista

## **Decision Support: Integrating Conservation and Land-Use Planning**



- § Comprehensive
- § Multi-disciplinary
- § Science-based
- § Spatial
- § Value-driven
- § Results-oriented

# Development History

## **Extensive Development Effort: Research & Collaboration Informed Design**



- § 5+ years in development
- § Approximately \$3.4M in development costs
- § Numerous collaborators

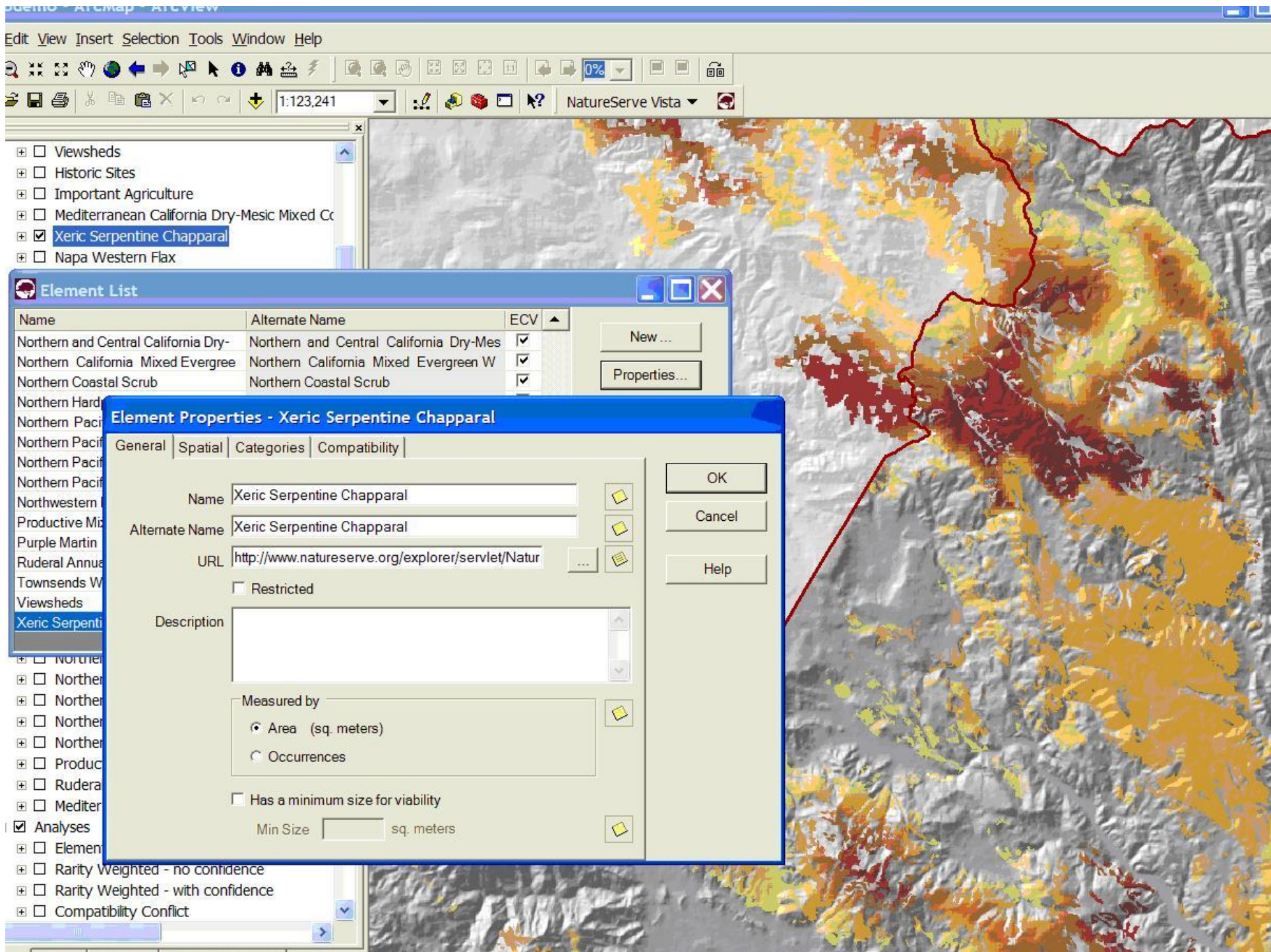


# Commercial-Grade Software

## Industry Standard Platform: ESRI ArcView 9.1 with Spatial Analyst

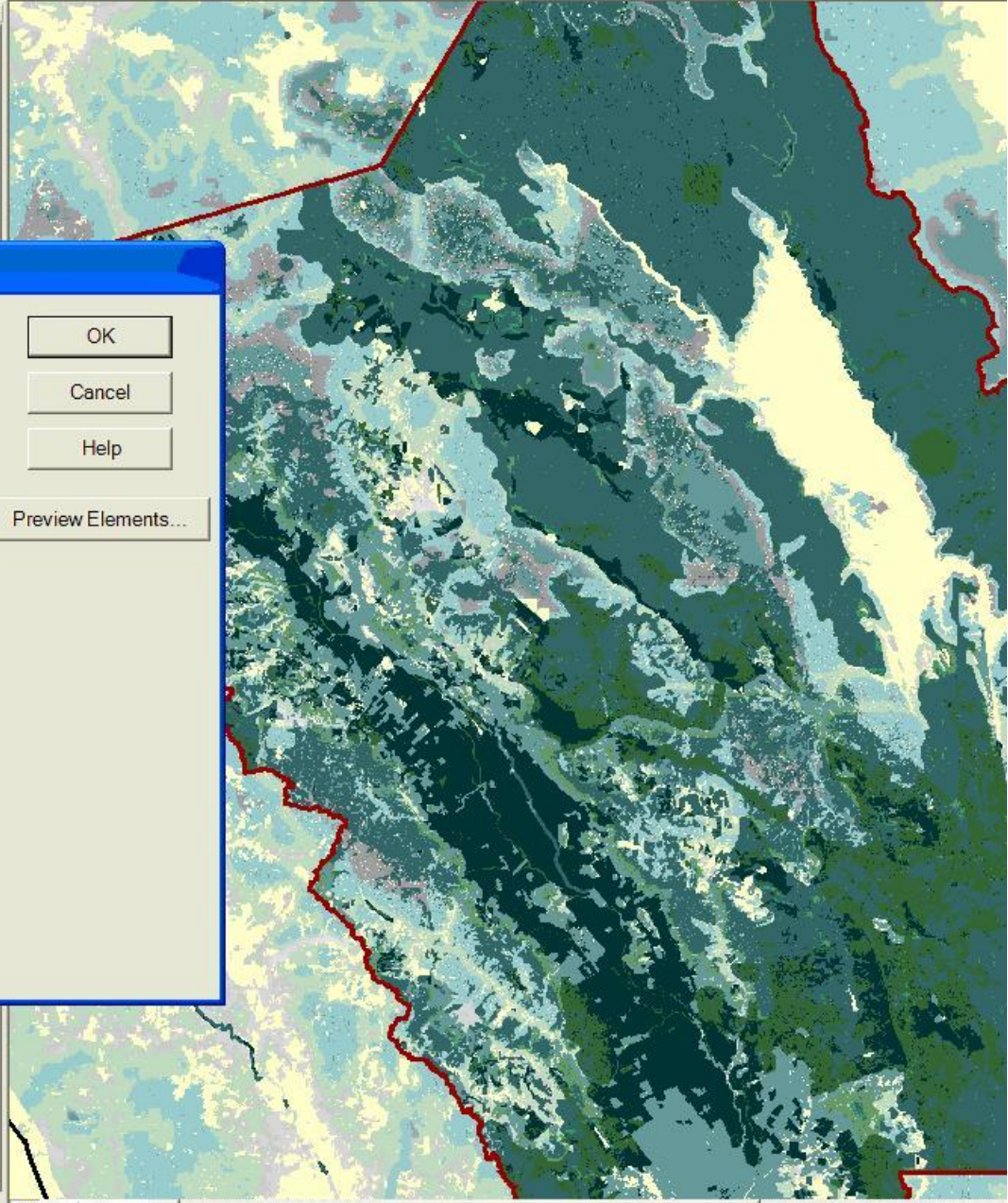


- § Approximately \$1.6M endowment
- § Numerous support products:
  - § Integrated help manual
  - § Live technical support
  - § Training
  - § Custom support services
- § Commitment to ongoing enhancements





- Top\_context
- Elements
- Analyses
  - Element Richness
  - Rarity Weighted - no confidence
  - Rarity Weighted - with confidence



**Conservation Value Summary - Rarity Weighted - with confidence**

Name:

Description:

Input Options

- Filter:
- Weighting:
- Incorporate element viability/integrity
- Incorporate distribution confidence
- Function:  Sum  Average

Output Options

- Cell size:  Minimum based on input layers  500 sq. meters
- Perform site-level analysis (for Site Explorer)
- Site Layer:
- Map Context:

Buttons: OK, Cancel, Help, Preview Elements...

- Scenarios
  - LandUse\_Napa County baseline

Element Details: Xeric Serpentine Chapparral

Back Forward Stop Refresh Print Export Show XML Customize

### Summary

**Name** Xeric Serpentine Chapparral  
**Alternate Name** Xeric Serpentine Chapparral  
**More information at** <http://www.natureserve.org/explorer/servlet/NatureServe...> [1]  
**Measurement by:** Area

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### Categories

<b>Element Type</b>	<a href="#">Terrestrial Ecological System (C-TES)</a>	
<b>US ESA</b>	<a href="#">None (NO)</a>	None - no Federal status

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### Distribution Statistics

<b>Total Occurrences</b>	593
<b>Total area</b>	199,143,693.62 sq. meters

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### Spatial Attributes

<b>Distribution Source:</b>	9_xericserpentinechapparral_Int
<b>Viability/Integrity Source:</b>	Raster: terr_li
<b>Confidence Source:</b>	Single value: 0.8
<b>Cell Size (for raster conversions):</b>	500 sq. meters

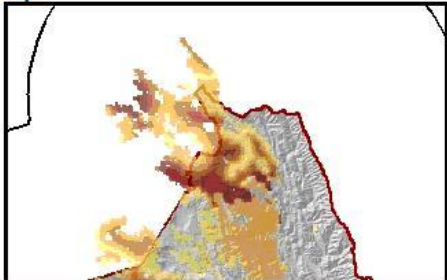
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### Compatible Land Uses:

- Maintain Primarily for Natural Values/Unknown specific natural use
- Maintain Primarily for Natural Values/Biodiversity conservation
- Maintain Primarily for Natural Values/Natural area recreation and open space

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### Conservation Value Map



**Site Explorer**

Scenario Evaluation  
[Planity evaluation](#)  
 Site Layer: parcels  
 FID:

Selection Attributes  
 FID: 10109  
 ASMT: 030130001000  
 LandUse1: 30

Options ...  
 Report  
 Less <<

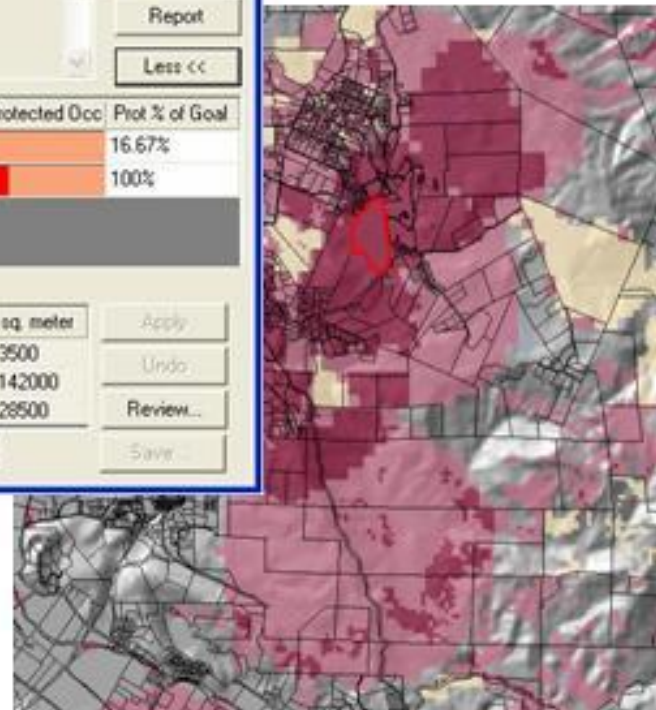
Element Name	Total	Compatible Occ	Compat % of Goal	Protected Occ	Prot % of Goal
<a href="#">Northwestern Pond Turtle</a>	14 occs. in 9,876,000		116.67%		16.67%
<a href="#">Bald Eagle</a>	4 occs. in 11,565,500		200%		100%

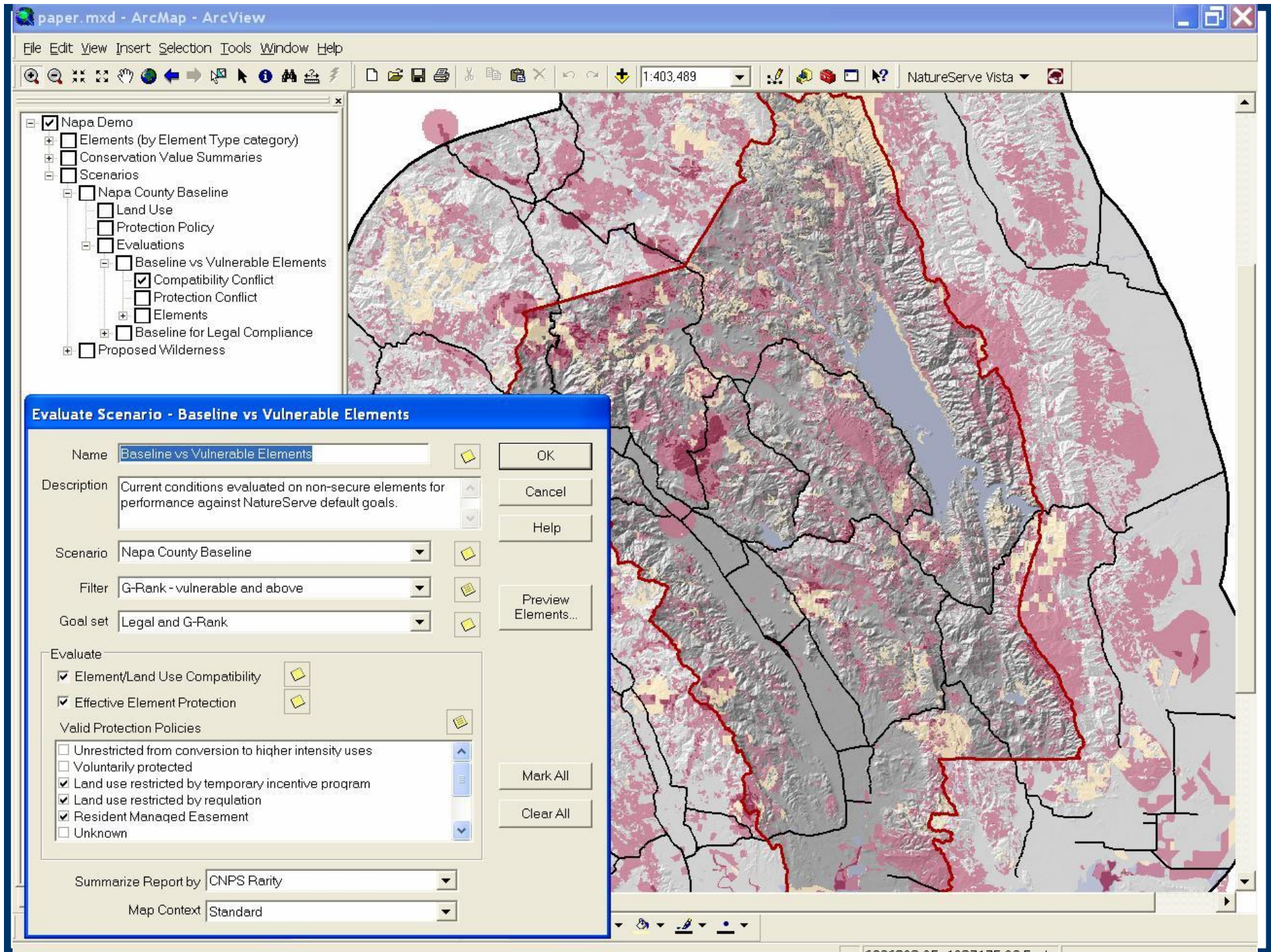
Scenario Composition

Layer	Land Use	Policy Type	sq. meter
slope_50_or_more	Unknown	Land use restricted by re	3500
ExistingProtected	Biodiversity conservatio	Land use restricted by re	142000
Developed_Land	General urbanization: h	Unrestricted from conver	28500

Override:

Apply  
 Undo  
 Review...  
 Save





### Evaluate Scenario - Baseline vs Vulnerable Elements

Name:

Description:

Scenario:

Filter:

Goal set:

#### Evaluate

Element/Land Use Compatibility

Effective Element Protection

#### Valid Protection Policies

- Unrestricted from conversion to higher intensity uses
- Voluntarily protected
- Land use restricted by temporary incentive program
- Land use restricted by regulation
- Resident Managed Easement
- Unknown

Summarize Report by:

Map Context:

OK

Cancel

Help

Preview Elements...

Mark All

Clear All

Scenario Evaluation Report : Species at Risk - baseline

Back Forward Stop Refresh Print Export Show XML Customize

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### Overall Scenario Performance

#### All Elements (5 Total)

	Goals Met For	% of Goals Met	Goals Unmet For	% of Goals Unmet
Protected and Compatible	0 elements	0%	5	100%
Compatible	0 elements	0%	5	100%

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### Goal Performance by US ESA





#### Summary

Name	Protected and Compatible Goal Met For	Goal Unmet For	Compatible Goal Met For	Goal Unmet For
<a href="#">Endangered</a> (2 elements)	0 elements (0%)	2 elements (100%)	0 elements (0%)	2 elements (100%)
<a href="#">None</a> (3 elements)	0 elements (0%)	3 elements (100%)	0 elements (0%)	3 elements (100%)







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#### Details

##### [Endangered](#) (2 elements)


Name	Distribution			Protected and Compatible			Compatible		
	Area (sq. meters)	Occs	Goal	Goal Met Area (sq. meters)	Occs	Percent of goal	Goal Met Area (sq. meters)	Occs	Percent of goal
<a href="#">California Freshwater Shrimp</a>	2,894,489.54	6	100 percent of occurrences	 179,000	2	33.33%	 179,000	2	33.33%
<a href="#">Napa Blue Grass</a>	548,499.88	4	100 percent of occurrences	 0	0	0%	 0	0	0%


##### [None](#) (3 elements)


Name	Distribution			Protected and Compatible			Compatible		
	Area (sq. meters)	Occs	Goal	Goal Met Area (sq. meters)	Occs	Percent of goal	Goal Met Area (sq. meters)	Occs	Percent of goal
<a href="#">Napa False Indigo</a>	67,069,210.2	25	100 percent of occurrences	 10,810,000	9	36%	 14,018,000	16	64%
<a href="#">Napa Western Flax</a>	11,323,795.43	30	100 percent of occurrences	 1,976,500	8	26.67%	 1,976,500	8	26.67%
<a href="#">Townsend's Western Big-eared Bat</a>	6,791,940.63	10	80 percent of occurrences	 759,500	6	75%	 760,500	6	75%

#### Abbreviations & Icons

Occ = Occurrences

 = Goal has been met (100% or more)

 = Goal has almost been met (90% - 99.9%)

 = Goal has not been met (less than 90% has been met)

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Questions?

