Biodiversity Conservation Planning

“…it’s all about methods, data, and tools”

Pat Comer, Chief Terrestrial Ecologist

Land Trust Alliance Rally
October 5, 2007
Biodiversity Conservation Planning

Seems like everyone is doing it!

- State Comprehensive Wildlife Conservation Strategies
- Bird Conservation Region and Joint Venture plans
- GAP Analysis Projects
- Multi-county planning initiatives
- Forest Products Industry
- And many, many others
The process and products need to be...

- Transparent
- Measurable
- Actionable
- ‘Bulletproof’
  - Expert Knowledge
  - Partner Consensus

Government
Industry
Conservation
NGOs
Analysis at Multiple Spatial Scales

- **Regional-scale** (e.g., habitat conservation throughout the Southern Rocky Mountains and Central Shortgrass Prairie ecoregions)

- **Public/Private Land Planning Unit**
  (e.g., management emphasis on contiguous National Forest, county open space, and local trust lands)

- **Local Landscape**
  (e.g., multiple habitat patches within a project area)
10 Common Steps in Planning

- WHAT IS THE PLANNING AREA?
- WHAT ECOSYSTEMS AND SPECIES REQUIRE CONSIDERATION?
- WHERE ARE THEY?
- WHAT ARE EXPECTED HEALTHY CONDITIONS?
- WHAT ARE CURRENT CONDITIONS?
- WHAT ARE THE TRENDS AMONG THOSE CONDITIONS?
- WHAT ARE DESIRED CONDITIONS?
- WHAT STRATEGIES WILL MOVE US TOWARD DESIRED CONDITIONS?
- WHAT ARE EXPECTED OUTCOMES FROM THESE STRATEGIES?
- HOW WILL WE MEASURE OUR PROGRESS?
What Should We Aiming For?

- Shared Methods
- Common Data Libraries
- Standard Tools
Tools for Strategic Biodiversity Planning

a case study from Puerto Rico

Pat Comer, Chief Terrestrial Ecologist

Land Trust Alliance Rally
October 5, 2007
Puerto Rico Biodiversity Conservation Initiative

The Conservation Trust of Puerto Rico
Puerto Rico Biodiversity Conservation Initiative

- Develop integrated conservation strategies across terrestrial, freshwater, and marine ecosystems
- Integrate existing data into common format and system
- Prioritize and fill key data gaps
- Build capacity with technical methods, data, and tools
Planning at Multiple Scales

- **Caribbean-wide habitat priorities**
  (e.g., marine mammals & reptiles, fish assemblages, migratory birds)

- **Island-wide land/water use prioritization**
  (incentives, regulation, and land acquisition)

- **Watershed land use planning**
  (integrating freshwater and coastal marine issues with needs of local land-use planning)

- **Local ‘Site’ management planning, and implementation, and monitoring**
NatureServe VISTA

A Conservation Planning Methodology and Decision Support System
What is NatureServe Vista?

- An extension to ESRI’s ArcMap 9 (with spatial analyst)

1. Integrates conservation information, management practices, and land use plans
2. Will help you to create plans specific to your area, resources, and values
3. Allows you to dynamically monitor progress toward goals, identify emerging conflicts and opportunities, and create mitigation plans
Coarse Filter/Fine Filter Approach

- **Ecological Systems**
  Natural community mosaics defined at scales useful for management and monitoring

- **Focal Communities**
  vulnerable species groupings, spawning areas, migratory stopover points, movement corridors, etc.

- **Focal Species/Subspecies**
  imperiled, declining, endemic, vulnerable, “umbrella”
Vista Landscape Condition Model
Vista Element Conservation Value Layer

Map and specify conservation requirements for elements including a model of current condition.
Stating Goals or Desired Conditions

“Avoid High Value Places”

“No Net Loss”

“Abate Threat X Y & Z”

Representation Goals
as measurable expressions
of societal values.
Defining Baseline Scenario

- Use Vista to combine:
  - Land use & conservation use
  - Management practices
  - Infrastructure
  - Policy mechanisms
Vista Policy Type Scenario

Policy mechanisms characterized using GAP stewardship, most is currently unknown & assumed at risk
Land uses of varying intensity extend over ~ 60% of the land area of Puerto Rico.
Baseline Scenario Evaluation

Policy Conflict map. Tan areas support element goal achievement, red areas have compatible land use but unreliable policies. Overlapping elements whose goals have not been met. The greater amount of conflict in this map indicates the uncertain future depending on how future land use is allocated.

Red = conflict in use and/or underlying policy
# Evaluation Reports

## Overall Scenario Performance

<table>
<thead>
<tr>
<th>All Elements (302 Total)</th>
<th>Goals Met For</th>
<th>% of Goals Met</th>
<th>Goals Unmet For</th>
<th>% of Goals Unmet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected and Compatible</td>
<td>96 elements</td>
<td>31.79%</td>
<td>206</td>
<td>68.21%</td>
</tr>
<tr>
<td>Compatible</td>
<td>183 elements</td>
<td>60.6%</td>
<td>119</td>
<td>39.4%</td>
</tr>
</tbody>
</table>

## Goal Performance by Element Type

### Summary

<table>
<thead>
<tr>
<th>Name</th>
<th>Protected and Compatible Goal Met For</th>
<th>Goal Unmet For</th>
<th>Compatible Goal Met For</th>
<th>Goal Unmet For</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terrestrial Ecological System (33 elements)</td>
<td>12 elements (36.36%)</td>
<td>21 elements (63.64%)</td>
<td>25 elements (75.76%)</td>
<td>8 elements (24.24%)</td>
</tr>
<tr>
<td>Freshwater Community (23 elements)</td>
<td>2 elements (8.7%)</td>
<td>21 elements (91.3%)</td>
<td>22 elements (95.65%)</td>
<td>1 elements (4.35%)</td>
</tr>
<tr>
<td>Mammal (4 elements)</td>
<td>2 elements (50%)</td>
<td>2 elements (50%)</td>
<td>2 elements (50%)</td>
<td>2 elements (50%)</td>
</tr>
<tr>
<td>Bird (22 elements)</td>
<td>8 elements (36.36%)</td>
<td>14 elements (63.64%)</td>
<td>11 elements (50%)</td>
<td>11 elements (50%)</td>
</tr>
<tr>
<td>Reptile (13 elements)</td>
<td>3 elements (23.08%)</td>
<td>10 elements (76.92%)</td>
<td>4 elements (30.77%)</td>
<td>9 elements (69.23%)</td>
</tr>
<tr>
<td>Amphibian (12 elements)</td>
<td>7 elements (58.33%)</td>
<td>5 elements (41.67%)</td>
<td>8 elements (66.67%)</td>
<td>4 elements (33.33%)</td>
</tr>
<tr>
<td>Vascular Plant (195 elements)</td>
<td>62 elements (31.79%)</td>
<td>133 elements (68.21%)</td>
<td>111 elements (56.92%)</td>
<td>84 elements (43.08%)</td>
</tr>
</tbody>
</table>

[Back to top]
## Terrestrial Ecological System (33 elements)

<table>
<thead>
<tr>
<th>Name</th>
<th>Distribution Area (hectares)</th>
<th>Occs</th>
<th>Protected and Compatible Area Goal Met (hectares)</th>
<th>Occs</th>
<th>Percent of goal</th>
<th>Compatible Goal Met Area (hectares)</th>
<th>Occs</th>
<th>Percent of goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caribbean wet montane forest - Sierra Palm alliance</td>
<td>11,905.95</td>
<td>1</td>
<td>2,481 hectares</td>
<td>1</td>
<td>4,151.52</td>
<td>1</td>
<td>1</td>
<td>167.33%</td>
</tr>
<tr>
<td>Caribbean wet montane forest - Palo</td>
<td>3,713.49</td>
<td>1</td>
<td>762 hectares</td>
<td>1</td>
<td>3,577.32</td>
<td>1</td>
<td>1</td>
<td>469.46%</td>
</tr>
<tr>
<td>Colorado alliance</td>
<td>97,270.47</td>
<td>1</td>
<td>10,862 hectares</td>
<td>1</td>
<td>1,092.87</td>
<td>1</td>
<td>1</td>
<td>10.06%</td>
</tr>
<tr>
<td>Caribbean seasonal evergreen submontane-lowland forest (young secondary)</td>
<td>1,877.22</td>
<td>1</td>
<td>9,482 hectares</td>
<td>1</td>
<td>73.44</td>
<td>1</td>
<td>1</td>
<td>0.77%</td>
</tr>
<tr>
<td>Caribbean montane submontane karst forest (young secondary)</td>
<td>15,690.96</td>
<td>1</td>
<td>0 hectares</td>
<td>1</td>
<td>235.26</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Caribbean montane wet serpentine woodland (young secondary)</td>
<td>1,001.25</td>
<td>1</td>
<td>0 hectares</td>
<td>1</td>
<td>573.3</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Caribbean lowland moist serpentine woodland (young secondary)</td>
<td>1,951.38</td>
<td>1</td>
<td>0 hectares</td>
<td>1</td>
<td>943.56</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Caribbean lowland dry semideciduous forest (young secondary)</td>
<td>18,810.44</td>
<td>1</td>
<td>7,283 hectares</td>
<td>1</td>
<td>2,025.63</td>
<td>1</td>
<td>1</td>
<td>27.81%</td>
</tr>
<tr>
<td>Caribbean lowland dry riparian woodland and forest</td>
<td>1,231.2</td>
<td>1</td>
<td>1,229 hectares</td>
<td>1</td>
<td>93.6</td>
<td>1</td>
<td>1</td>
<td>7.62%</td>
</tr>
<tr>
<td>Caribbean lowland dry limestone semideciduous forest (young secondary)</td>
<td>3,919.32</td>
<td>1</td>
<td>0 hectares</td>
<td>1</td>
<td>142.38</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Caribbean lowland dry limestone semideciduous forest</td>
<td>10,679.4</td>
<td>1</td>
<td>8,500 hectares</td>
<td>1</td>
<td>3,058.74</td>
<td>1</td>
<td>1</td>
<td>35.99%</td>
</tr>
<tr>
<td>Caribbean floodplain forest (young secondary)</td>
<td>11,768.58</td>
<td>1</td>
<td>0 hectares</td>
<td>1</td>
<td>436.5</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Caribbean coastal dry evergreen forest</td>
<td>1,002.78</td>
<td>1</td>
<td>196 hectares</td>
<td>1</td>
<td>160.92</td>
<td>1</td>
<td>1</td>
<td>82.1%</td>
</tr>
<tr>
<td>Caribbean lowland moist serpentine woodland</td>
<td>1,850.76</td>
<td>1</td>
<td>1,044 hectares</td>
<td>1</td>
<td>523.26</td>
<td>1</td>
<td>1</td>
<td>50.12%</td>
</tr>
<tr>
<td>Caribbean coastal rocky shore</td>
<td>389.52</td>
<td>1</td>
<td>89 hectares</td>
<td>1</td>
<td>73.71</td>
<td>1</td>
<td>1</td>
<td>82.82%</td>
</tr>
<tr>
<td>Caribbean coastal sandy shore</td>
<td>1,229.49</td>
<td>1</td>
<td>1,237 hectares</td>
<td>1</td>
<td>165.15</td>
<td>1</td>
<td>1</td>
<td>13.35%</td>
</tr>
<tr>
<td>Caribbean salt flats and ponds</td>
<td>1,495.98</td>
<td>1</td>
<td>432 hectares</td>
<td>1</td>
<td>323.1</td>
<td>1</td>
<td>1</td>
<td>74.79%</td>
</tr>
<tr>
<td>Caribbean maritime shore - estuary mouth mangrove</td>
<td>8,721.27</td>
<td>1</td>
<td>6,512 hectares</td>
<td>1</td>
<td>2,150.37</td>
<td>1</td>
<td>1</td>
<td>33.02%</td>
</tr>
<tr>
<td>Caribbean emergent herbaceous estuary</td>
<td>5,741.55</td>
<td>1</td>
<td>3,083 hectares</td>
<td>1</td>
<td>1,206.63</td>
<td>1</td>
<td>1</td>
<td>39.14%</td>
</tr>
<tr>
<td>Caribbean floodplain forest</td>
<td>3,925.17</td>
<td>1</td>
<td>3,151 hectares</td>
<td>1</td>
<td>290.34</td>
<td>1</td>
<td>1</td>
<td>9.21%</td>
</tr>
<tr>
<td>Caribbean riparian forest and woodland</td>
<td>453.24</td>
<td>1</td>
<td>0 hectares</td>
<td>1</td>
<td>8.01</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Caribbean freshwater marsh</td>
<td>19,317.69</td>
<td>1</td>
<td>2,843 hectares</td>
<td>1</td>
<td>910.35</td>
<td>1</td>
<td>1</td>
<td>32.02%</td>
</tr>
<tr>
<td>Caribbean coastal thorn scrub</td>
<td>17,670.87</td>
<td>1</td>
<td>3,600 hectares</td>
<td>1</td>
<td>5,043.69</td>
<td>1</td>
<td>1</td>
<td>140.1%</td>
</tr>
<tr>
<td>Caribbean edapho-xerophilous mogote complex</td>
<td>10,360.35</td>
<td>1</td>
<td>15,268 hectares</td>
<td>1</td>
<td>352.98</td>
<td>1</td>
<td>1</td>
<td>2.31%</td>
</tr>
</tbody>
</table>
Single Element Evaluation

Vista Output for Caribbean Emergent Herbaceous Estuary Type in SE Puerto Rico

Caribbean emergent herbaceous estuary-Baseline Evaluation

Value
- Incompatible with Land Use
- Compatible, not Protected
- Compatible and Protected

NatureServe
Example: Good compatibility of current land use but lack of goal contribution from unreliable conservation policy indicating threat/risk for future.
Vista Scenario Evaluation Process

Element Distribution

Land Uses and Policies

GIS Intersect & Table Lookup

Evaluation Maps

Element Response to Land Use

Vista Scenario Evaluation Process

Element min size & Conservation Goals

Evaluation Report

Goal Performance by Element

Elements (54 elements)

<table>
<thead>
<tr>
<th>Name</th>
<th>Conserved</th>
<th>Fish &amp; Aquatic Life</th>
<th>Percent goal</th>
<th>Percent of goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Deer</td>
<td>124.7</td>
<td>205</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Watershed Parameters</td>
<td>1092.1</td>
<td>90</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>Watershed Parameters</td>
<td>1092.1</td>
<td>90</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>Watershed Parameters</td>
<td>1092.1</td>
<td>90</td>
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<td>1092.1</td>
<td>90</td>
<td>80%</td>
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</tr>
<tr>
<td>Watershed Parameters</td>
<td>1092.1</td>
<td>90</td>
<td>80%</td>
<td>80%</td>
</tr>
</tbody>
</table>
Spatial Analysis for Efficient Scenario Generation using Marxan
Goal for terrestrial ecosystems: 10% of historical extent, managed areas “locked in”

Total: 26% of spatial analysis units
30% of terrestrial/freshwater area
20% of coastal marine area
How Vista Works

Data & Expert Knowledge Inputs

Element Distributions

Current Land use, infrastructure, pollution, etc

Alternative Land Use/Activity Scenario

Element Conservation Goals

Intermediate Processes & Products

Join and rasterize

Element Conservation Layer

Landscape Condition Surface

Scenario Evaluation

Element Response To Land Use/Activity

Scenario Optimization

Scenario Modification

Aggregated Conservation Value

Conflict Intensity Indices

Evaluation Report

Output

Site Land Use/Mgmt Specification

Evaluation Report
Wrap up

- Acknowledgements: IITF Puerto Rico GAP Project & *Patrimonio* (DRNA) for data; Conservation Trust for funding

- More information:
  - Natureserve.org/vista: read about, download Vista
  - Ebmtools.org: search for dozens of tools for ecosystem-based management
  - patrick_crist@natureserve.org for application information
  - Pat_comer@natureserve.org
¡Gracias!
Thank You!
The Conservation Registry
Integrating on-the-ground conservation

Gina LaRocco
Defenders of Wildlife
Registry Overview:

• What is the registry?

• Who is involved?

• Why is it necessary?

• How will it work?

• How can you help?
What is the Registry?

- Online, centralized database

- Records, tracks and maps conservation actions across the landscape

- User-friendly format for data entry and retrieval
Conservation Action:

• Enhance Conservation Status

• Habitat Restoration and Management

• Monitoring, Education and Research
Who is involved?

• Users
  – Landowners
  – Land trusts
  – Forest industry
  – Federal, state and local agencies
  – Policy makers
  – Conservation organizations
  – Hunting, fishing and recreation groups
  – Interested public
• Partners
  – Benjamin Hammett, Phd
  – Bonneville Power Administration
  – Bureau of Land Management (Oregon)
  – Clean Water Services
  – Defenders of Wildlife
  – Doris Duke Charitable Foundation
  – Idaho Department of Fish & Game
  – Metro Regional Government
  – John Miller, Wildwood / Mahonia, Inc.
  – Nature Serve
  – Northwest Habitat Institute
  – Oregon Department of Fish & Wildlife
  – Oregon Department of Forestry
  – Oregon Department of Geology and Mineral Industries
  – Oregon Department of Parks and
• Partners (cont.)
  – Oregon Forest Resources Institute
  – Oregon Institute for Natural Resources
  – Oregon Watershed Enhancement Board
  – Samuel S. Johnson Foundation
  – The Nature Conservancy (Oregon)
  – U.S.D.A. Forest Service
  – U.S.D.A. Forest Service Pacific NW Research Station
  – U.S. Fish and Wildlife Service
  – U.S. Geological Survey
  – University of Idaho
  – Washington Biodiversity Council
  – Washington Department of Fish & Wildlife
  – Washington Interagency Committee for Outdoor Recreation/ Salmon Recovery Funding Board
  – Washington Interagency Committee—Natural Resource Information Portal
  – Wessinger Foundation
Why is it necessary?

- State Wildlife Action Plans
  - Need for a tool to track and monitor conservation actions
  - Stakeholder group working with Oregon Department of Fish and Wildlife
Why is it necessary? (cont.)

• Lack of centralized location for tracking conservation actions

• Impossible to determine
  – Where actions are taking place
  – If actions match priorities

• Missed opportunities for collaboration among actions, stakeholders, and partners
How will it work?

• Initial pilot in Idaho, Washington and Oregon

• National expansion following initial launch

• State and organization-specific portals for content, data and user administration
Design:

• Balance between simplicity and precision

• User-friendly interface for less technical users, but also a powerful analytic tool for professionals
Design: (cont.)

- Emphasis on ease of use
  - Turbo-tax style data entry
  - Google Maps platform
- Integration/linkage with other databases
- Uses NatureServe habitat and species information
Project Entry

Project Entry Methods
• Manual (typed input)
• Automated (data sharing via XML)
Registry Portals

Portal Features
• Unique web address
• Filtered database content
• Branded look and feel
• Additional customization

Example Web Address:
http://landtrust.conservationregistry.org
Sharing and Tracking

Open System
- Registry tools or extracted data
- Single or grouped projects
- Simple and complex reports
- Data, images, shape files
- Access to custom map layers
How can you help?

• Funding

• Volunteer as beta testers

• Share your data on conservation actions

• Outreach
Registry Development Team:

• Defenders of Wildlife
  Sara Vickerman
  Gina LaRocco
  Kassandra Kelly

• Oregon Dept. of Fish and Wildlife
  Matt Lawhead

• The Nature Conservancy
  Michael Schindel

• Institute for Natural Resources
  Jimmy Kagan
  Avi Hihinashvilli
  Moran Rosenthal-Henn

• The Other Firm
  Ty Montgomery
  Ryan Shaw
  Sam Miller
Contact Information:

Sara Vickerman
Gina LaRocco
Defenders of Wildlife
1880 Willamette Falls Drive, #200
West Linn, Oregon 97068
503-697-3222
E-mail:
SVickerman@defenders.org
GLarocco@defenders.org
Overview web site:

www.conservationregistry.org
Demo Site

- Representative data and functionality
- Available throughout development
- [http://demo.conservationregistry.org](http://demo.conservationregistry.org)
- Username: demo@conservationregistry.org
- Password: demo
Browse by Keywords

Instructions

The following keywords are represented within the Registry and/or your specific search criteria. The number of projects tagged with each keyword appears in parentheses. Clicking on a keyword will present a new list of keywords that are present within the selected keyword, narrowing results each time you select additional keywords. The resulting path is presented in Keyword Tools to the left.

Search for keyword: biodiversity, biodiversity partners, biodiverse

Suggestions: biodiversity, biodiversity partners, biodiverse

30 Most Popular: Alphabetical order | Sort by occurrence (high to low) | Show all (5,987)

- biodiversity (5,987), biodiversity partners (5,987), biodiverse (368)

Results: 10 projects

Crystal Creek Conservation Easement
Location: Portland, OR
Primary contact: [Contact Info]
Status: Complete

- [Add to Registry] | [Download data (.pdf)]

Examine Project Title Two
Location: Portland, OR
Primary contact: [Contact Info]
Status: Complete

- [Add to Registry] | [Download data (.pdf)]

Result page: 1 2 | View all
Add a Project to the Registry

Wallowa Lake

Please fill out the following form:

Instructions:

- Indicate a required field.

- Actions for Wallowa Lake
  - Actions that can be performed on the land.

- Habitat restoration and management
  - Native and invasive vegetation and management
  - Improve riparian
  - Enhance in-stream fish habitat
  - Improve existing stream fish habitat
  - Install or create natural stream buffers
  - Manage watershed inputs
  - Plant native riparian vegetation
  - Manage riparian habitat
  - Permanently restore riparian wetland
  - Enhance or re-establish wetland hydrology
  - Moderate sediment
  - Foster riparian restoration and management
  - Species conservation and management
  - Restore riparian vegetation and management
  - Clean up and containment management
  - Influence research on production systems
  - Enhance riparian in urban areas
  - Enhance biodiversity in urban areas
  - Monitoring, research, and education

Please provide additional details regarding your selected actions:

| Action | Area size | Action lead | Status
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation assessment</td>
<td>50</td>
<td>action lead</td>
<td>action lead</td>
</tr>
<tr>
<td>Rehab Stream Reaches</td>
<td>1</td>
<td>action lead</td>
<td>action lead</td>
</tr>
<tr>
<td>Improve In-stream Fish Habitat</td>
<td>4</td>
<td>action lead</td>
<td>action lead</td>
</tr>
<tr>
<td>Maintain or Create Natural Stream Buffers</td>
<td>2</td>
<td>action lead</td>
<td>action lead</td>
</tr>
<tr>
<td>Increase the Function of an Existing Wetland</td>
<td>21</td>
<td>action lead</td>
<td>action lead</td>
</tr>
<tr>
<td>Restore or Re-establish Wetland Hydrology</td>
<td>1</td>
<td>action lead</td>
<td>action lead</td>
</tr>
<tr>
<td>Stabilize streambanks</td>
<td>1</td>
<td>action lead</td>
<td>action lead</td>
</tr>
</tbody>
</table>

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Add a Project to the Registry

Wallowa Lake
Project Code: 55

Instructions
Did your project require or receive funding?

If it did, please indicate the source of funds, amounts and any other pertinent details. If you had multiple sources of funding, click Add in the blue bar.

If funding was not part of your project, please click Continue.

* indicates a required field.

Direct Funding
Direct Funding Type
- Grant

Source
- State

State
- Oregon

Agency
- Oregon Watershed Enhancement Board

Amount Received
45,000

Year Received
2007

Funding Status
Partially Funded

Save Direct Funding Item  Cancel

CONTINUE  PREVIOUS
Add a Project to the Registry

Wallowa Lake
Project Code: 15

Instructions
Please indicate all of the targeted habitats related to your project. In some instances, the selection box will reveal additional choices to further specify the habitat type. Please select all that apply.

Targeted Habitats for Wallowa Lake

- Forests and Woodlands
  - Oak Woodlands
  - Aspen Stands
  - Mixed Hardwood - Conifer Forest or Woodland (Big Leaf Maple)
  - Coastal Spruce, Port Orford Cedar or Redwood Forest
  - Western Oregon Douglas - fir Hemlock Forest
  - Silver Fir - Mountain Hemlock Montane Forest
  - Subalpine Forests and Woodlands (Spruce - fir)
  - Mixed Conifer (Grand fir/White fir/Douglas fir/ Pine) Forests
  - Sierra Mixed Conifer (Jeffrey pine, White fir, Shasta fir)
  - Lodgepole Pine Forest and Woodland
  - Ponderosa Pine Forest and Woodland
  - Juniper Woodland and Savanna
- Aquatic
- Shrubs and Grasslands
- Wetlands and Riparian Habitats
  - Montane Riparian Forests and Shrublands
  - Coastal and Valley (Western Oregon) Lowland Riparian Forests and Shrublands
  - Interior (Eastern Oregon) Lowland and foothill Riparian Woodlands and Shrublands
  - Marshes, Bogs and Emergent Wetlands
  - Forested or Shrub Wetlands and Swamps
- Special Types
- Human Habitats
## Add a Project to the Registry

### Wallowa Lake

**Project Code:** SS

**Instructions**

Please indicate all of the targeted species related to your project. Simply begin typing either the common or Latin name of the species and you’ll be presented with suggested species to select. If the species you are looking for is not suggested, continue typing and select ADD to add this species to your project.

If you targeted more than one species, simply click on Add a species to list additional species types.

### Targeted Species for Wallowa Lake

If applicable, what species (animal or plant) are being targeted? (select all that apply)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Latin Name</th>
<th>Action</th>
<th>Delete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Lynx</td>
<td>Lynx canadensis</td>
<td>Restored/Protected</td>
<td>Edit</td>
</tr>
<tr>
<td>Pygmy Rabbit</td>
<td>Brachylagus</td>
<td>Restored/Protected</td>
<td>Edit</td>
</tr>
<tr>
<td>Fender's Blue Butterfly</td>
<td>Caligo eurilochus fender</td>
<td>Restored/Protected</td>
<td>Edit</td>
</tr>
<tr>
<td>Bald Eagle</td>
<td>Haliaeetus leucocephalus</td>
<td>Restored/Protected</td>
<td>Edit</td>
</tr>
<tr>
<td>Shortnose Sucker</td>
<td>Chasmistes brevirostris</td>
<td>Restored/Protected</td>
<td>Edit</td>
</tr>
</tbody>
</table>

**Adding a Species**

**Species Name:**

- Bog

**Matching results**

Bog anemone (Anemone oregana var. flexa)

Add

**Previous** | **Continue**
(Be Smart About) Technology for Smart Conservation Planning

LTA Rally 2007
Larry Orman, Executive Director

Denver, Colorado
October 5, 2007
Conservation planning tools are part of overall information technology for land trusts.

Success with tools is $f(\text{capacity + good strategy})$ -- choose tools that match your capacity.

Follow the 5 golden rules!

Last, some cool tools.
Non-profit information and GIS technology support organization

10 staff, work with 100 groups per year on a client-consultant basis

Extensive land trust experience, + created [www.landtrustgis.org](http://www.landtrustgis.org)

[www.greeninfo.org](http://www.greeninfo.org)
Framing Your Overall Strategy

- Inventory your capacity
  - Human capital
  - Organizational culture
  - Technology in relation to goals, budget and people

- Define your technology level:
  - Basic
  - Advanced
  - Expert

- Adopt best practices from that level, learn from the next up

www.landtrustgis.org
The 5 Golden Rules

1. People matter, stuff doesn’t
2. Learn to walk before you drive
3. Start with simple conservation planning
4. Stay away from the bleeding edge
5. Design really, really matters
#1: People Matters, Stuff Doesn’t

- **Cost** of computing stuff is small
- GIS software is **free**
- But **people**...
  - Skill/education
  - Time using GIS
  - $20-50,000/yr.
- Always figure out people before stuff

ecpgrant@esri.com
#3: Learn to Walk Before You Drive

- Have these in place before doing a major conservation planning project:
  - GIS data and system for projects
  - Look and feel for mapping
  - “Turf” map of holdings, area of interest
  - Educated board/staff/stakeholders, relative to approach being used and likely results

- Test the waters before diving in
#3: Start With Simple Planning

- **Base maps and core data:**
  - Topography, infrastructure, watersheds
  - Tax parcels
  - Vegetation
  - Protected lands
  - Special data: habitat, plans/zoning, farmland, etc.

- Use overlays, canvass experts, stakeholders for priorities

- Refine and evaluate, finalize
Stay Away from the Bleeding Edge

( Ignore this if you love technology and have lots of time and $ available. . .

Use tried and true technology:
• Paper maps and markers solve many needs
• Post-Its are great conservation planning tools
• Be an educated consumer before trying new technology

Never get the first release of anything, especially if it's GIS

GIS – ArcGIS 9.2 is finally sort of stable..

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Windows

A fatal exception OE has occurred at 0137:BFFA21C9. The current application will be terminated.

* Press any key to terminate the current application.
* Press CTRL+ALT+DEL again to restart your computer. You will lose any unsaved information in all applications.

Press any key to continue . . .
Remember:

Never get newly released software. . .
Conservation planning needs to be visually understandable.
Design is mostly about unfolding a story with a clear message.
#5: Design Really, Really Matters

1. Have a **story** for an audience

2. Use graphic **frames** to allocate space

3. **Direct the eye** in the sequence you intend

4. **Layer** image elements so that important information stays prominent
Cool Stuff

1. NAIP – high resolution air photography (cheap!)
2. Google Earth and applications
3. GeoPDFs
4. Field Atlases
- National Agricultural Imagery Program (USDA Farm Service Agency)  [http://www.fsa.usda.gov](http://www.fsa.usda.gov)
- 1 meter, current, by county – free to very low cost
Get at: earth.google.com

1. **View** the landscape
   - Virtual visit
   - Share remotely
   - Report images

2. **Build applications**

3. **Build really complex applications**
Google Earth

No Wetlands Landfill Expansions is a concerned citizen's watchdog group created to review Redwood Landfill's proposed expansion in Novato, along the Red Rock reach.

This expansion is a critical concern for residents of Marin and Sonoma counties and environmentalists throughout the Bay Area. It will negatively impact the environment and surrounding communities.

Citizen input is essential during the environmental review and permit process. We hope that you will use this site to obtain any information and find out what you can do to stop this senseless expansion.

Expansion of the landfill will turn it into a state regional dump to increase Waste Management, Inc.'s big corporate profits. It will result in a substantial increase of daily truck traffic on Highway 101 and increase the risk of degrading surrounding wetlands as well as air and water pollution throughout Novato and surrounding areas.

Before these maps should be used for visualization and as a reference only, and should not be used for planning purposes.

For best viewing, turn each addition off to the title of contents when you load subsequent additions.

Web Links

These links open outside of Google Earth

Google Earth Additions

Click on links below for more Google Earth

Web Links
GeoPDFs

- Acrobat Reader Plug-in
- Layered GIS maps
- Measure, comment
- Interactive links
- Author needs $300 software, “reader” is free
- www.terrago.com
Field Atlases

- Atlases – field work, reference
- ESRI Map Book
- MapLogic’s Map Book software – www.maplogic.com
Design Really, Really Matters

Red Hill

Land Ownership

- Conservation Lands
- Parcels

Transportation
- Primary Route
- Secondary Route
- Local Roads
- Trails

Water Features
- Wetlands or Bog
- Lake or Pond
- Stream
- Intermittent Stream
- Town Boundaries

Contour interval 40 feet

Data sources:
- USGS 7.5 minute digital elevation model for terrain
- USGS digital line graph for roads and trails and water features

Acquired using the UNH GRANIT system, 2002
If you’re not sure, do it **simply and quickly** – then see if you need to do it better

Develop a “**best practices**” checklist for how you use technology generally - check against your peers (or where you want to go)

Always invest in building up **people** – and keeping them for a long time
For more information

Larry Orman
GreenInfo Network

www.greeninfo.org  gin@greeninfo.org