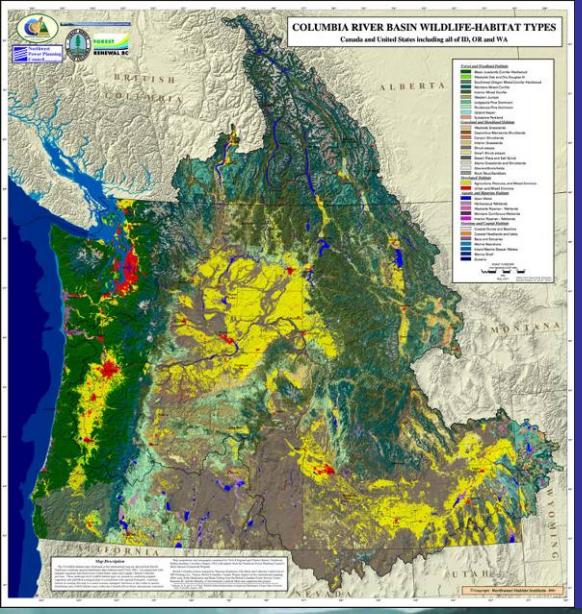
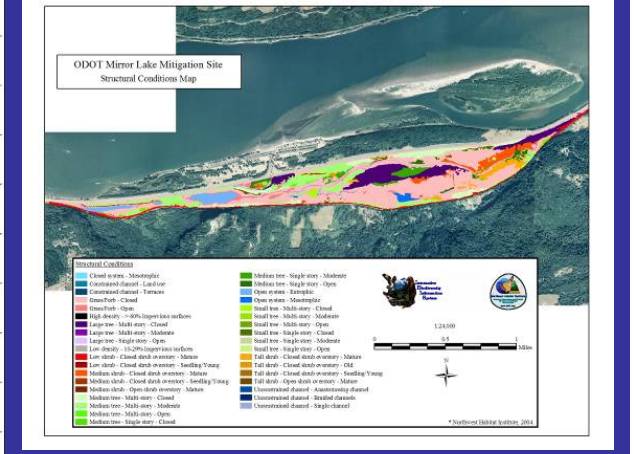
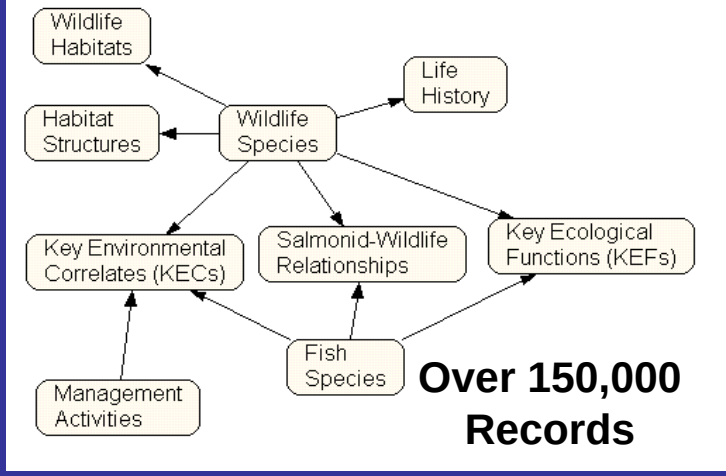
Integrated Habitat and Biodiversity Information System (IBIS) for the Columbia River Basin

Northwest Habitat Institute

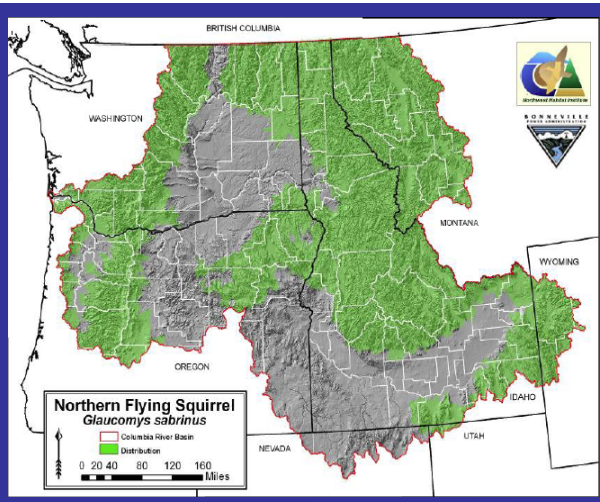


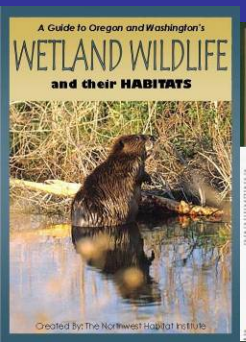


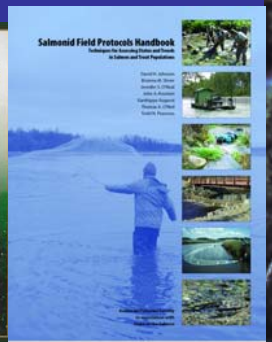


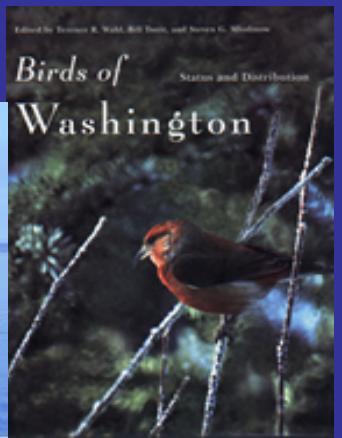
IBIS

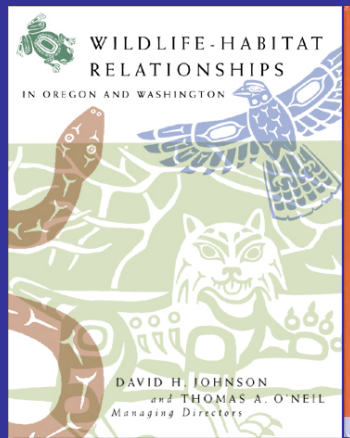
Developed to Facilitate A Common Understanding For Management

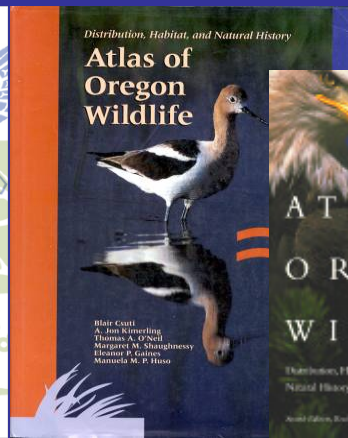


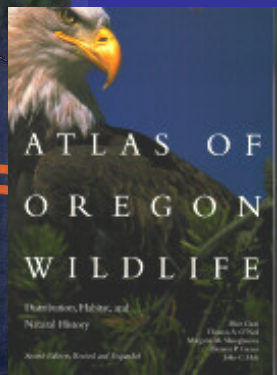












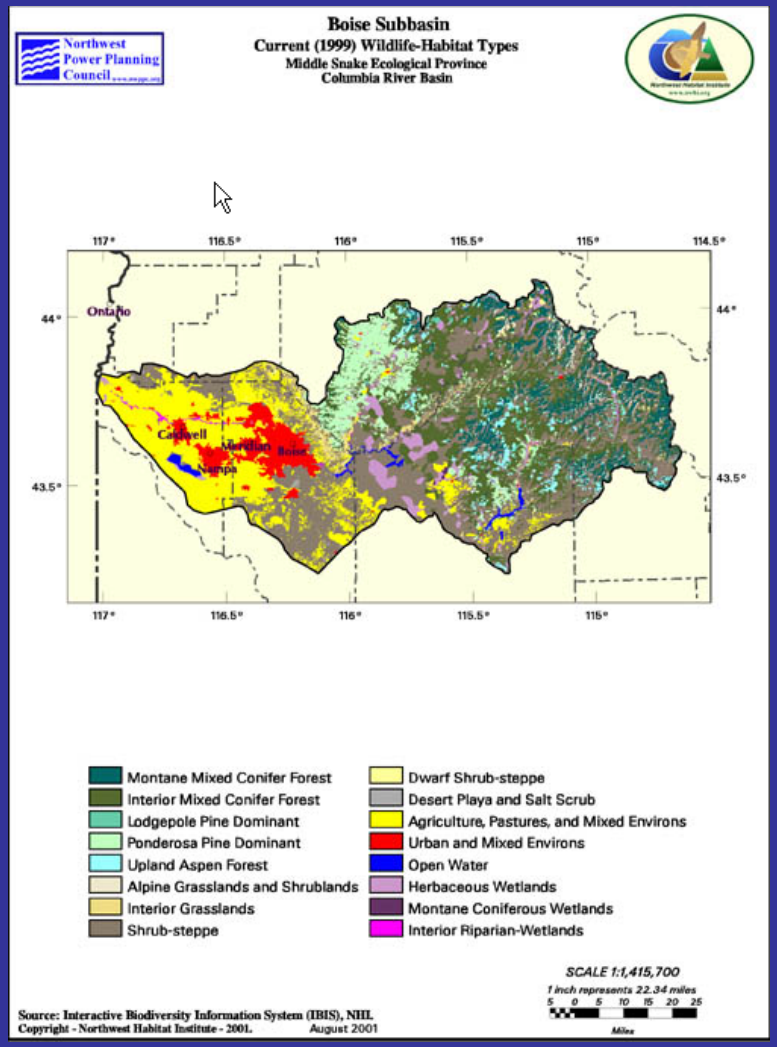
Core Project for Fish and Wildlife Program

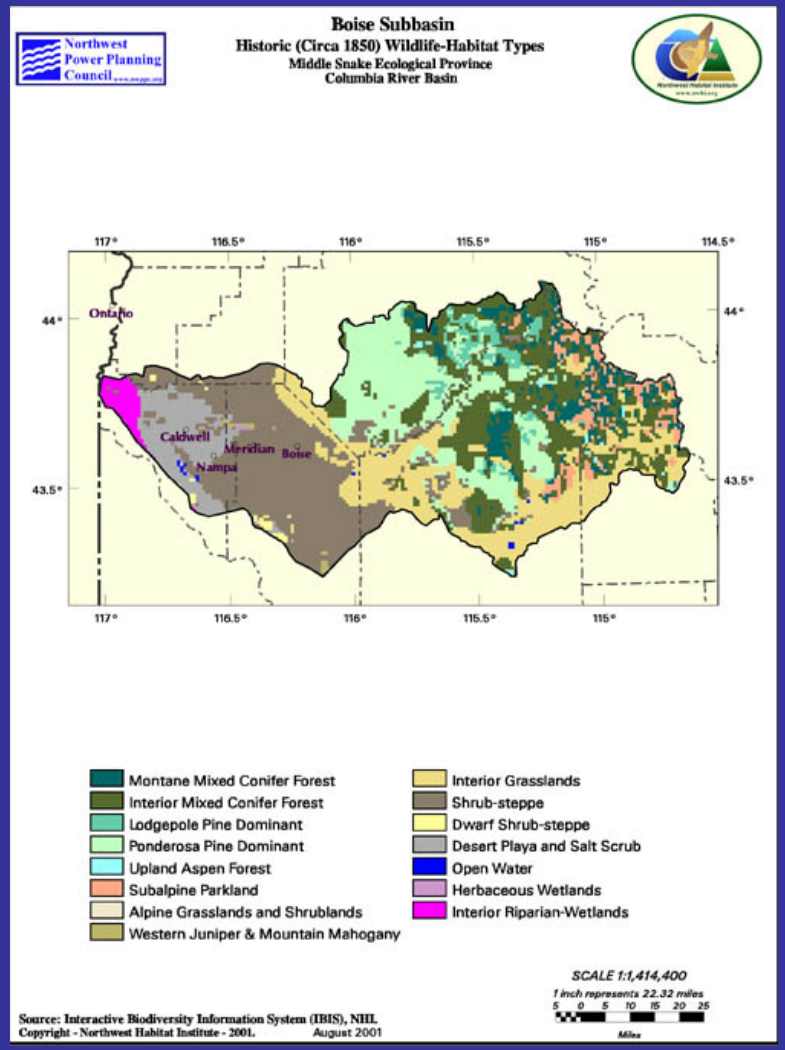
15-36% of recommended funding

Several Key Highlights

- 1 workshop and 6 reviews have been completed to develop the work plan submitted for 2010-2018
- Regional strategy for managing fish, wildlife, and habitat data
- 2 regional executive summits – Sharing Information to Improve Decisions
- Panel on Advanced Research on Geospatial Information Technologies at the National Academy of Sciences; Lead for the Spatial Application Chapter for The Wildlife Society
- $100,000 ESRI Conservation Grant renewable every year

Support for Subbasin Planning



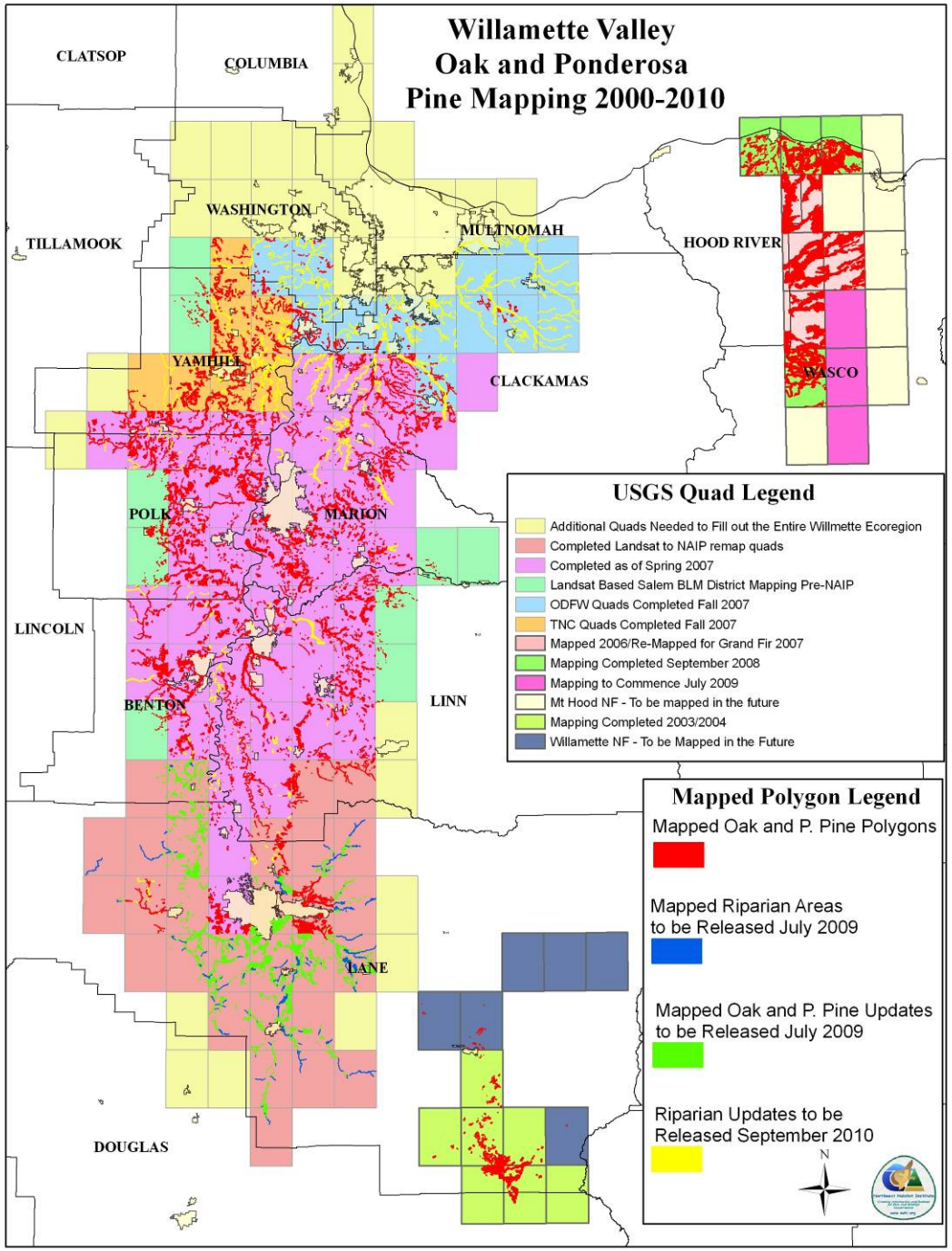


Move towards and ArcGIS Enterprise Technology

Mapping

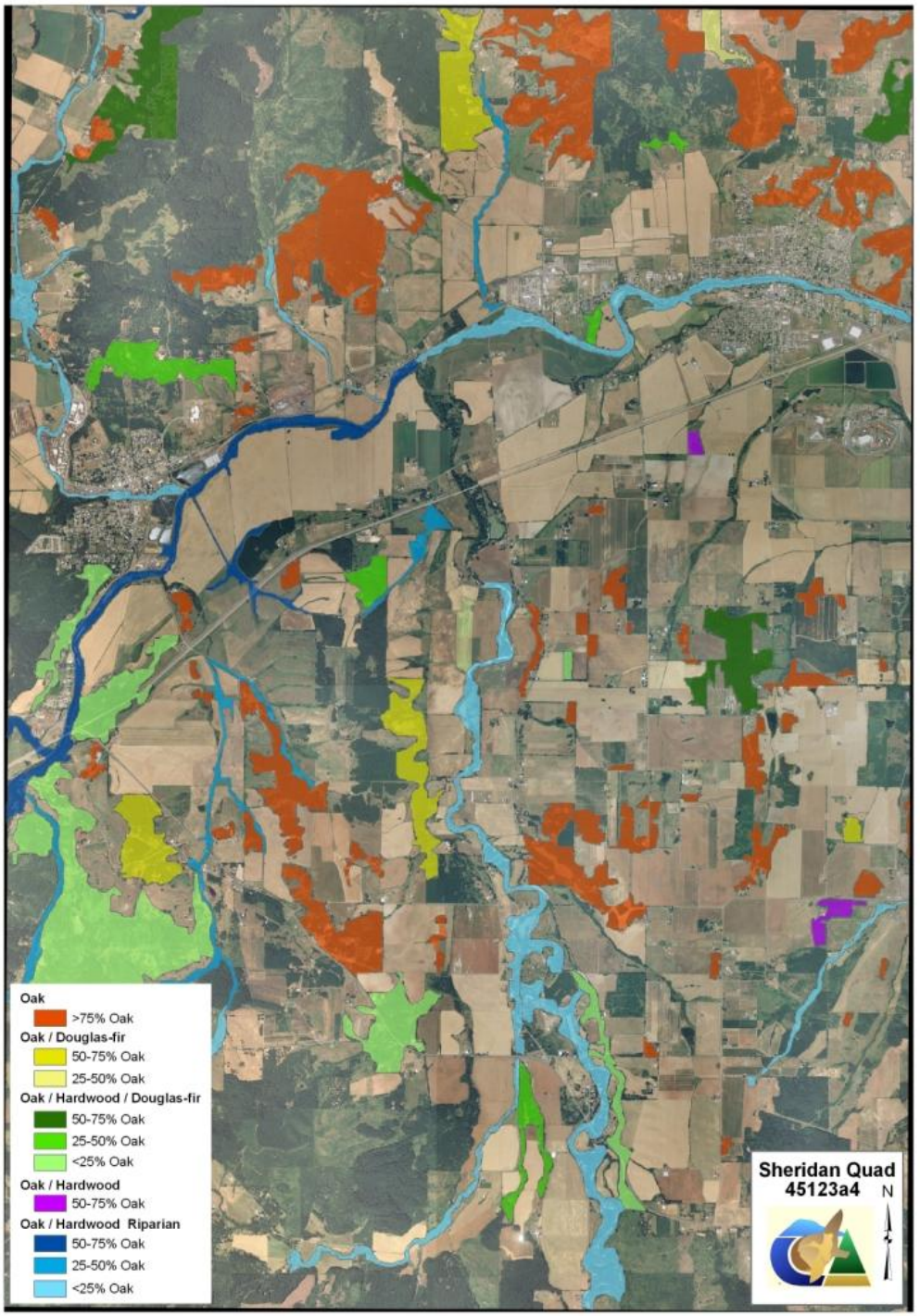
Subbasin

Taken 11 years to complete



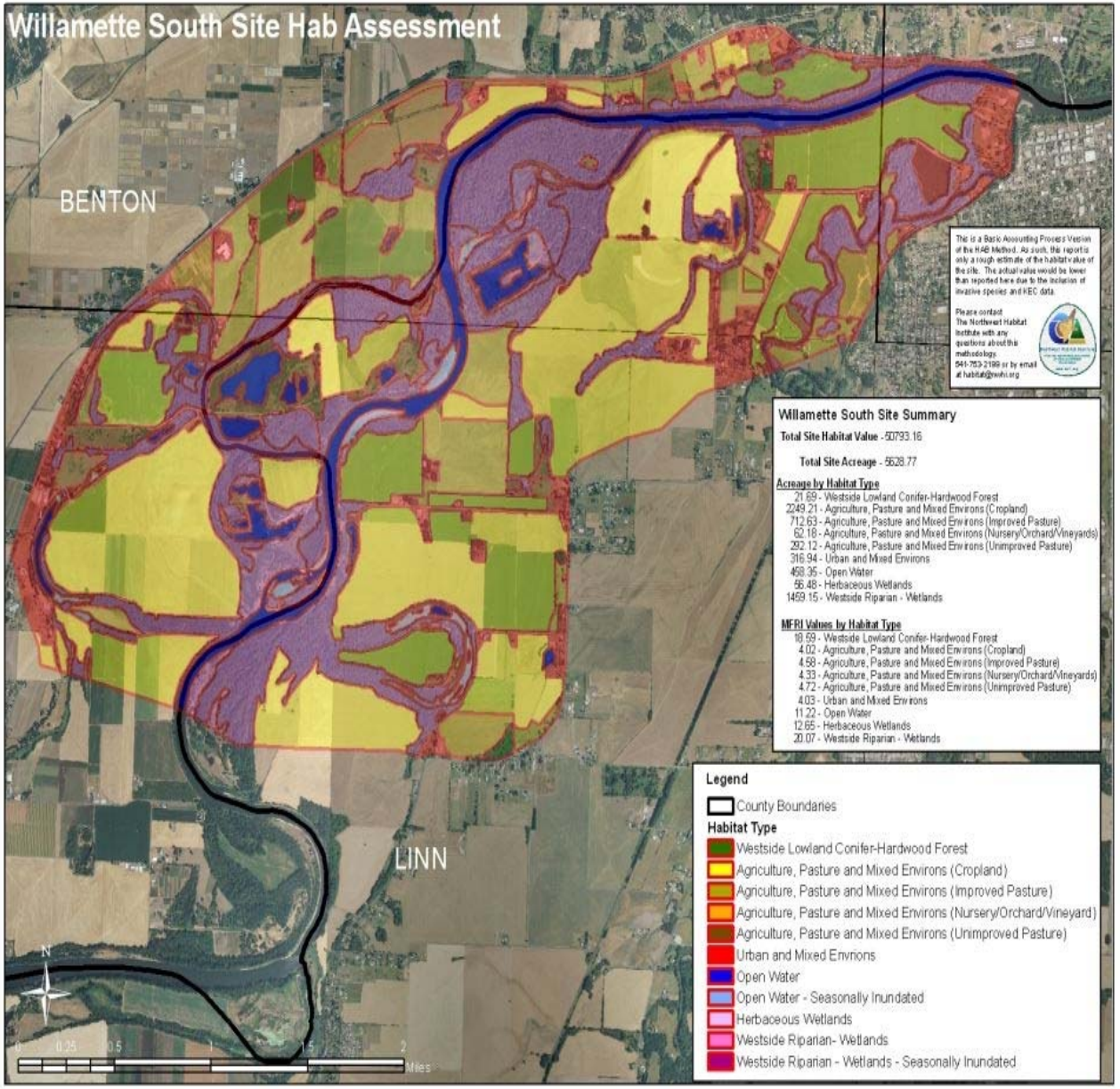
Mapping

Quad

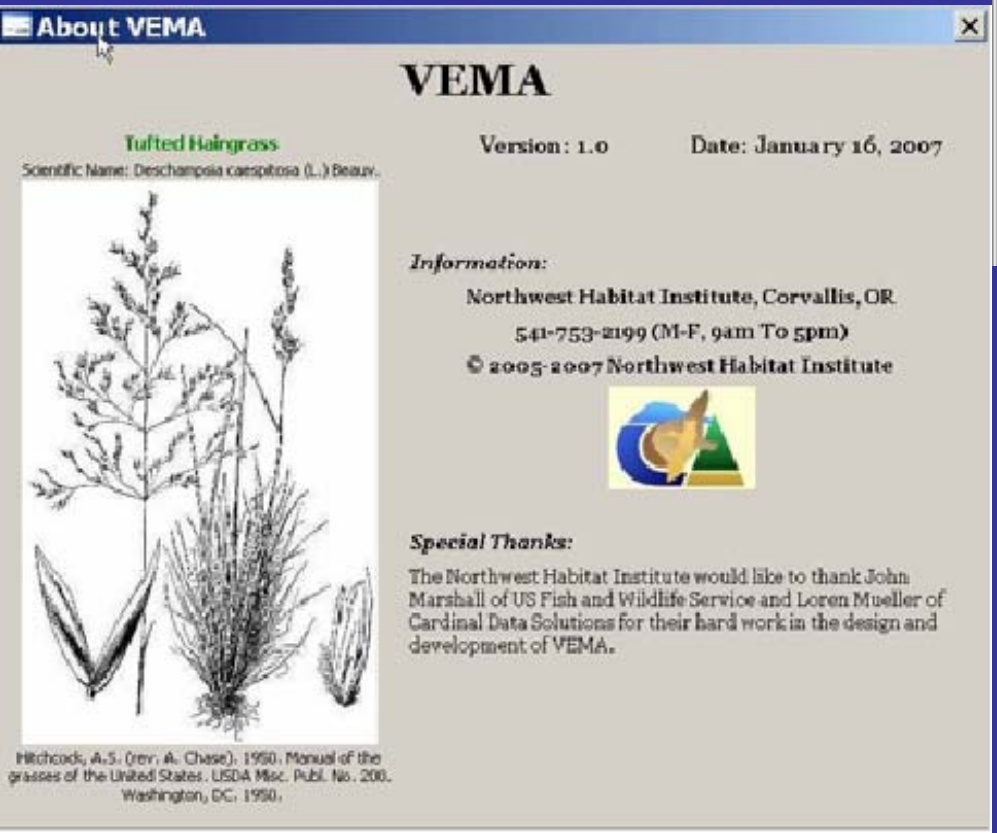


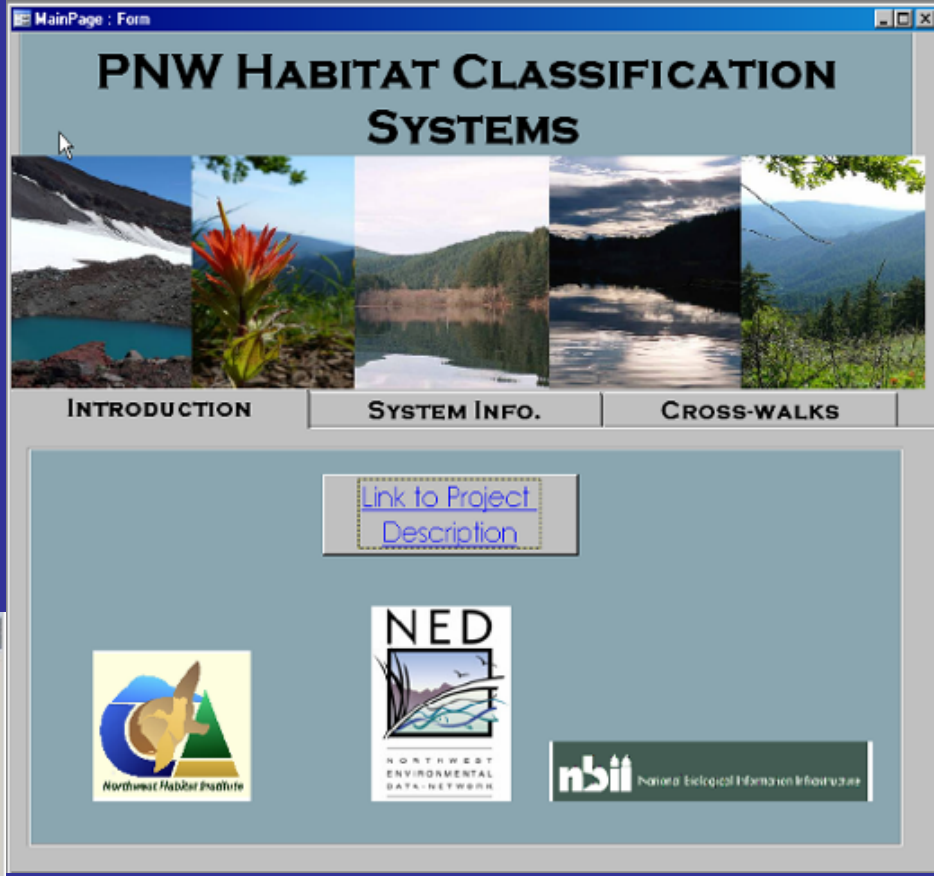
Mapping

Site



Tools





Wildlife observations
Collecting vegetation

~ Purpose is to standardize and easy data collection, storage and retrieval.
~ Tools that incorporate a spatial context

Services

GIS Repository

storing/archiving project data for future

Tool - GIS Repository Location and Visualization Portal Application

DENNIS MAXWELL/PORT OF PORTLAND

Relaxing on MAX: A coyote, hoping to make a getaway from Portland International Airport on Wednesday, hopped a light-rail train but didn't get a ride. Crews said the coyote walked onto a train when a guard boarded for a security check. The critter was captured by the airport's wildlife specialists, then released outside the security fence.

Providing GIS Expertise

Strengthening GIS knowledge and support

Conducting Regional GIS Workshops; Direct Agency Support

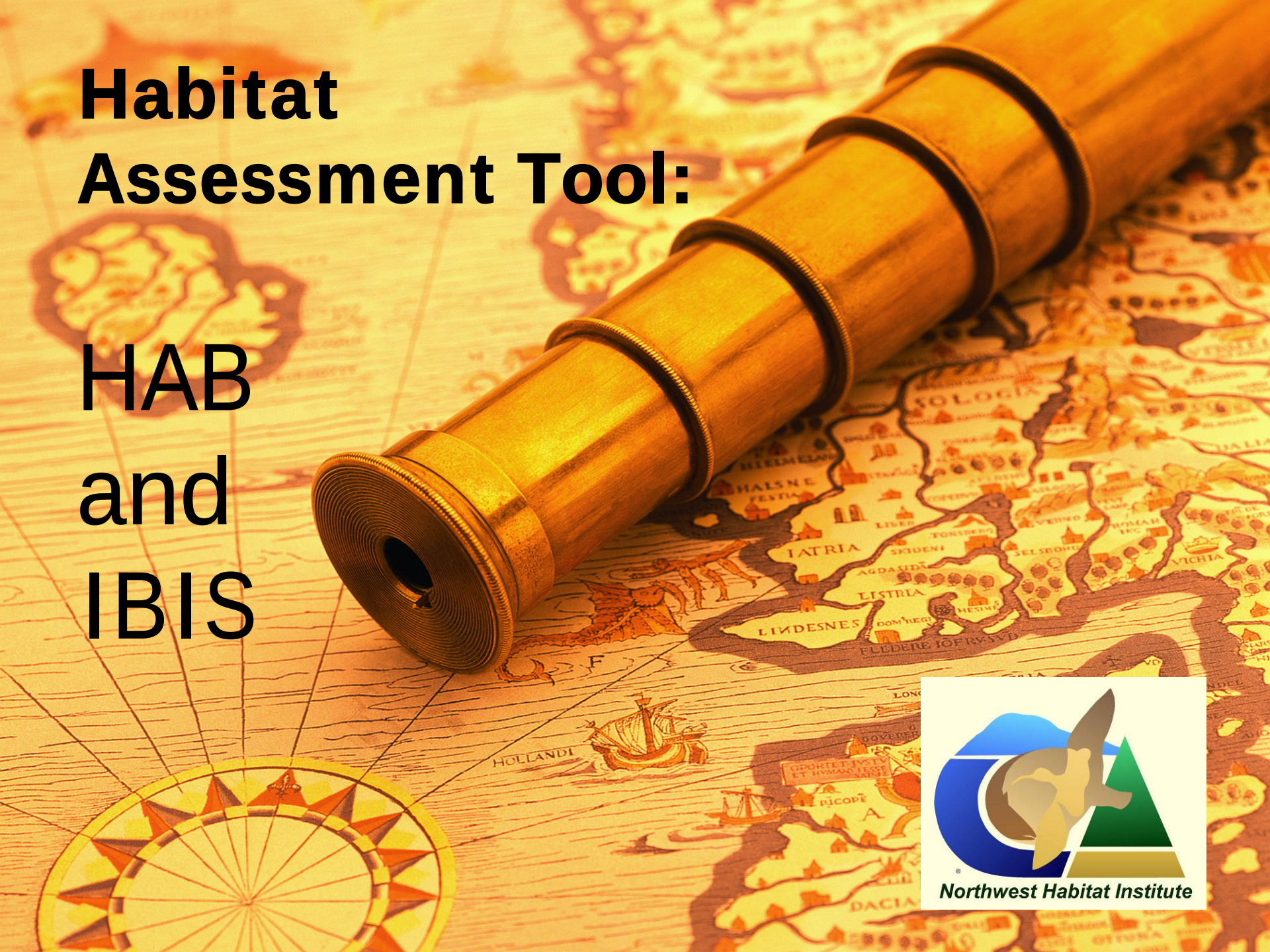
Outreach and Education

~ Portland State University
~ University of Oregon
~ Oregon State University
~ A Guide to Oregon and Washington Wetland Wildlife and their Habitats

Regional Coordination

Habitat Assessment Tool:

HAB
and
IBIS



Background

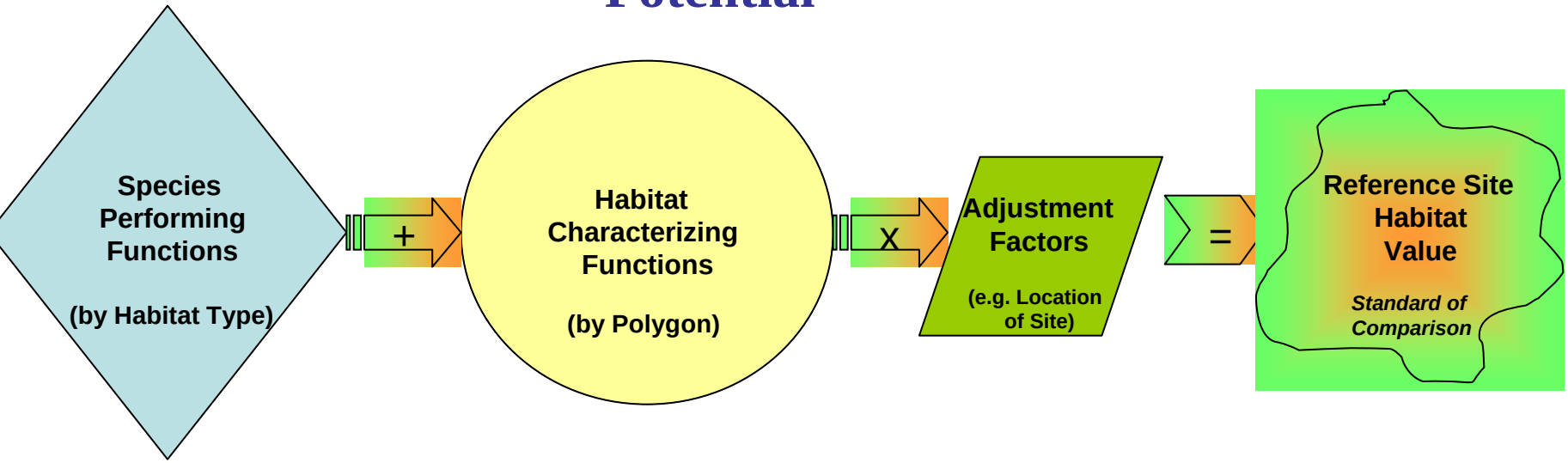
- 2-year collaborative effort (2004-2006) with 11 resource agencies:

-U.S. Army Corps of Engineers
-Bureau of Land Management
-Oregon DEQ
-ODFW
-Oregon Dept. of State Lands
-Federal Highway Administration
-NOAA Fisheries Service
-State Historic Preservation Office
-U.S. EPA
-U.S. Forest Service
-U.S. Fish & Wildlife Service

- Originally developed in collaboration with Oregon Department of Transportation (ODOT mitigation requirements for their Bridge Replacement Program)

The Process…

Potential



Observed

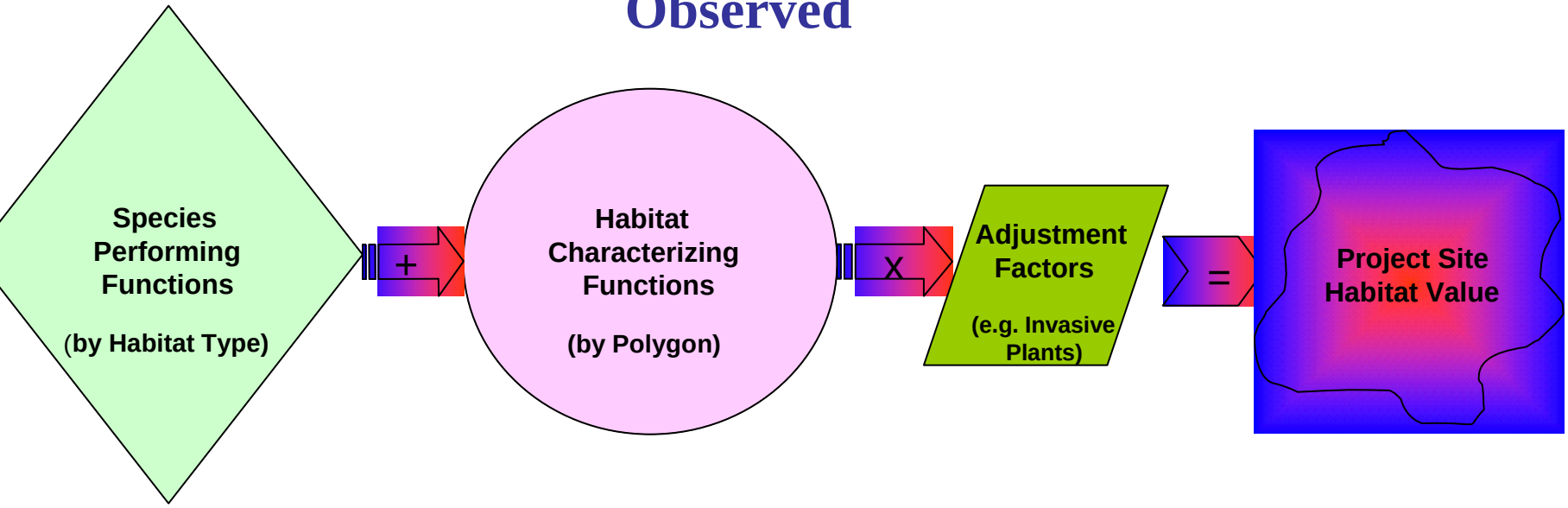


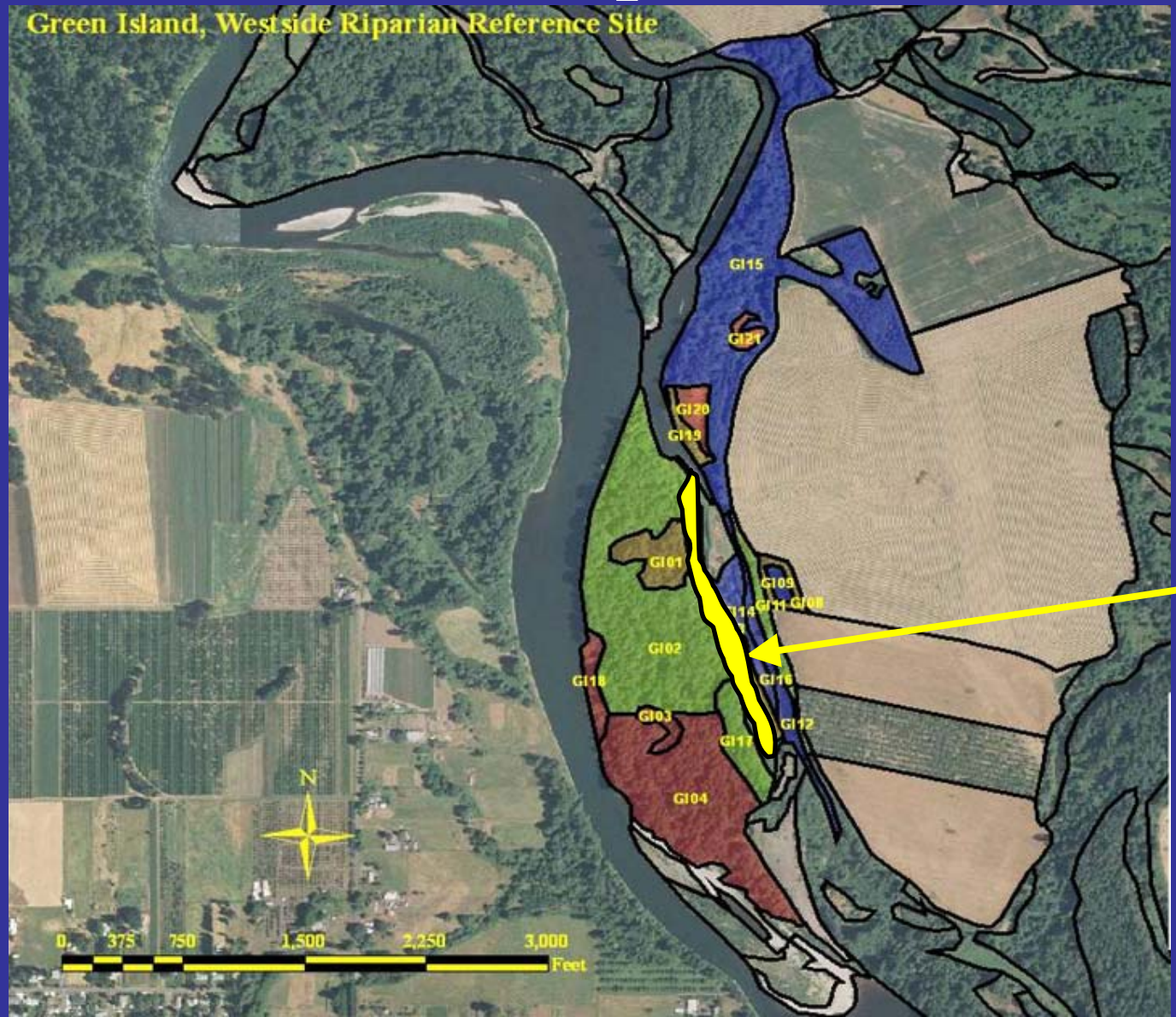
Photo courtesy of Dr. Richard Forbes

HAB Method:

1) **Preliminary Mapping**
2) **Field Inventory**
3) **Species-Habitat-Functions Relationships**
4) **Calculations**
5) **Final maps and reports**

Calculations

Example:



Information tracked for each polygon at a site.

Focus for further calculations

Species-Function Matrix

Lowland Mixed Conifer Habitat Type (Potential)	Function 1 Transportation of Viable Seeds, Spores or Plants	Function 2 Breaks up Down Wood	Function 3 Primary Excavator	Function 4 Eats Terrestrial Invertebrates
American Beaver	1			
Pileated Woodpecker		1	1	1
Black Bear	1	1	1	1
Black-tailed Deer	1	1		
Steelhead Salmon	1			1

Habitat-Function Matrix

Lowland Mixed Conifer Habitat Type (Actual)	Function 1 Creates Snags	Function 2 Breaks up Down Wood	Function 3 Pollination Vector	Function 4 Primary Excavator	Function 5 Filtering Water	Function 6 Eats Terrestrial Insects
Down Wood		1				1
Snags	1			1		1
Tree Cavities	1	1		1		1
Hollow Living Trees		1				1
Flowers			1			
Emergent Vegetation					1	

HAB Process: Calculations

Divide: $\dfrac{\textbf{total number of 1s}}{\textbf{total number of non-zero functions}}$

A

1. ***Total # of 1s = 12***
2. ***Total # non-zero fxns = 4***

B

1. ***Total # of 1s = 13***
2. ***Total # non-zero fxns = 5***

$$\frac{\text{Number of species performing functions}}{\text{Total number of potential functions}} = \frac{12}{4} = 3.0$$

$$\frac{\text{Number of KECs at site}}{\text{Total number of functions characterized}} = \frac{13}{5} = 2.6$$

Habitat Value
5.6

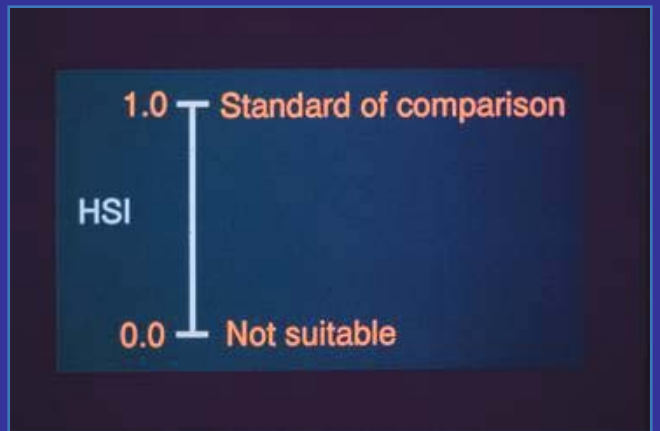
Combined Habitat Assessment Protocols (CHAP)

Habitat Accounting and Appraisal (HAB)

crosswalks

Habitat Evaluation Procedures (HEP)

HABITAT UNITS
~ HUs



Verification Transects

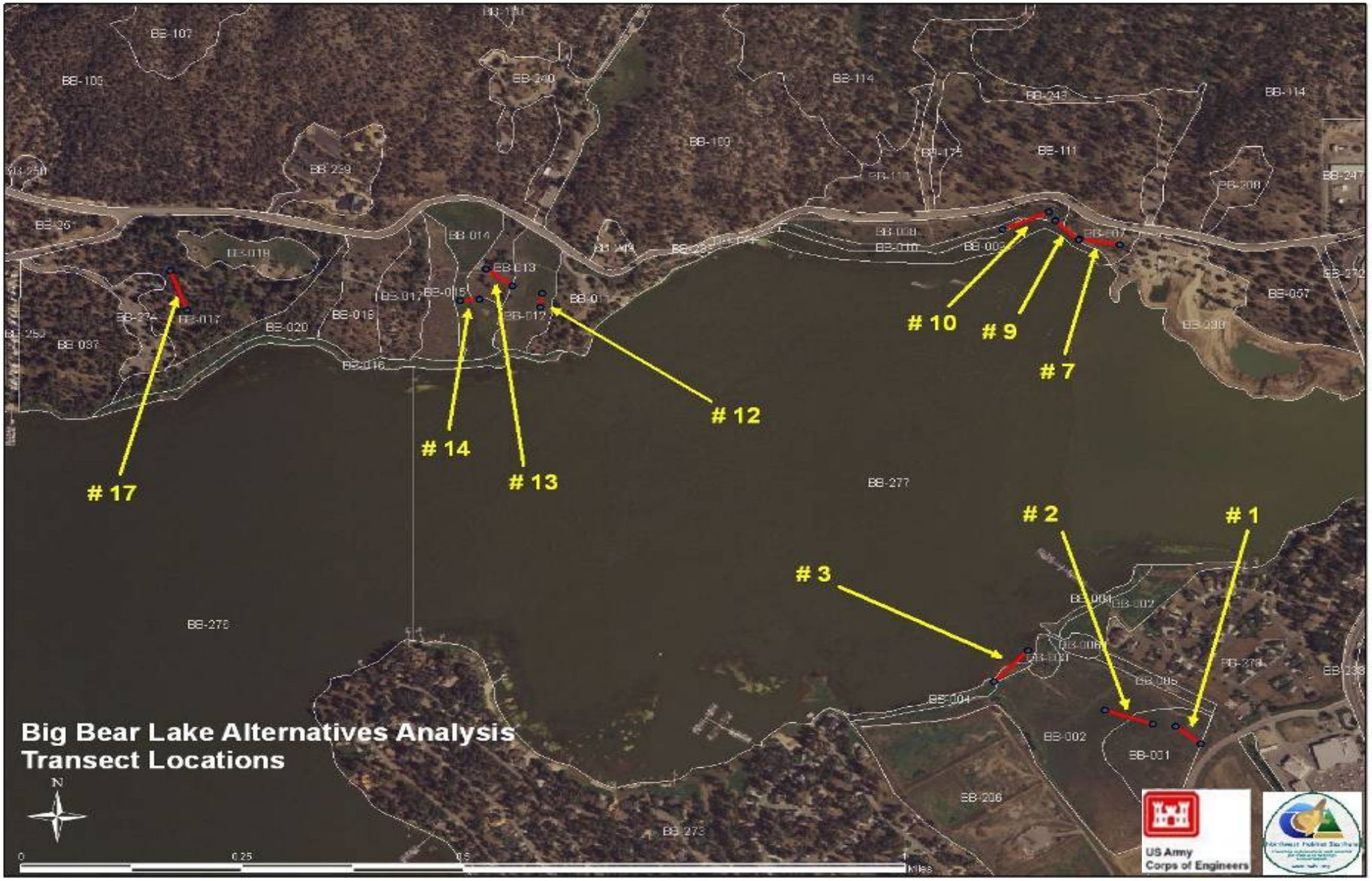
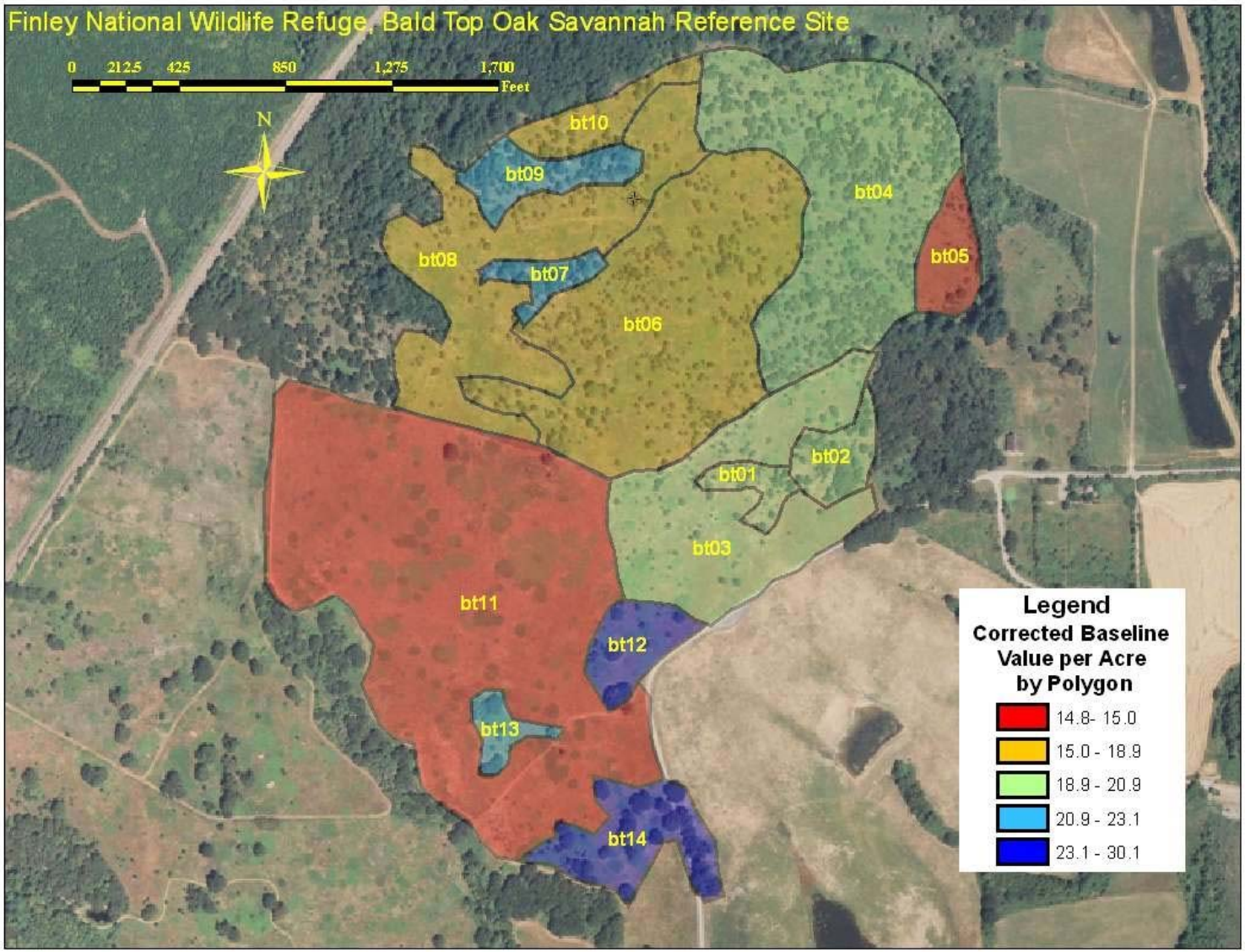
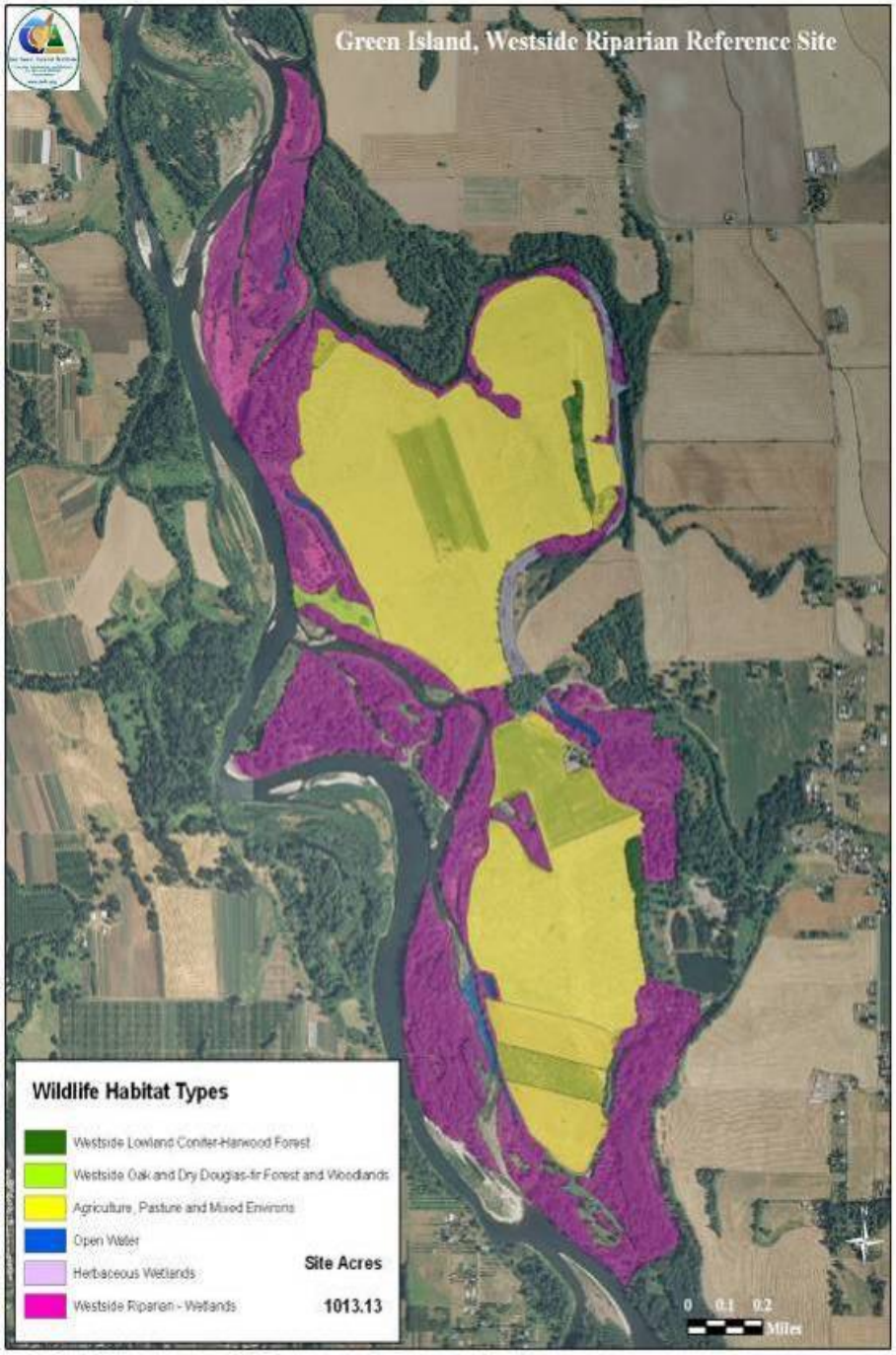


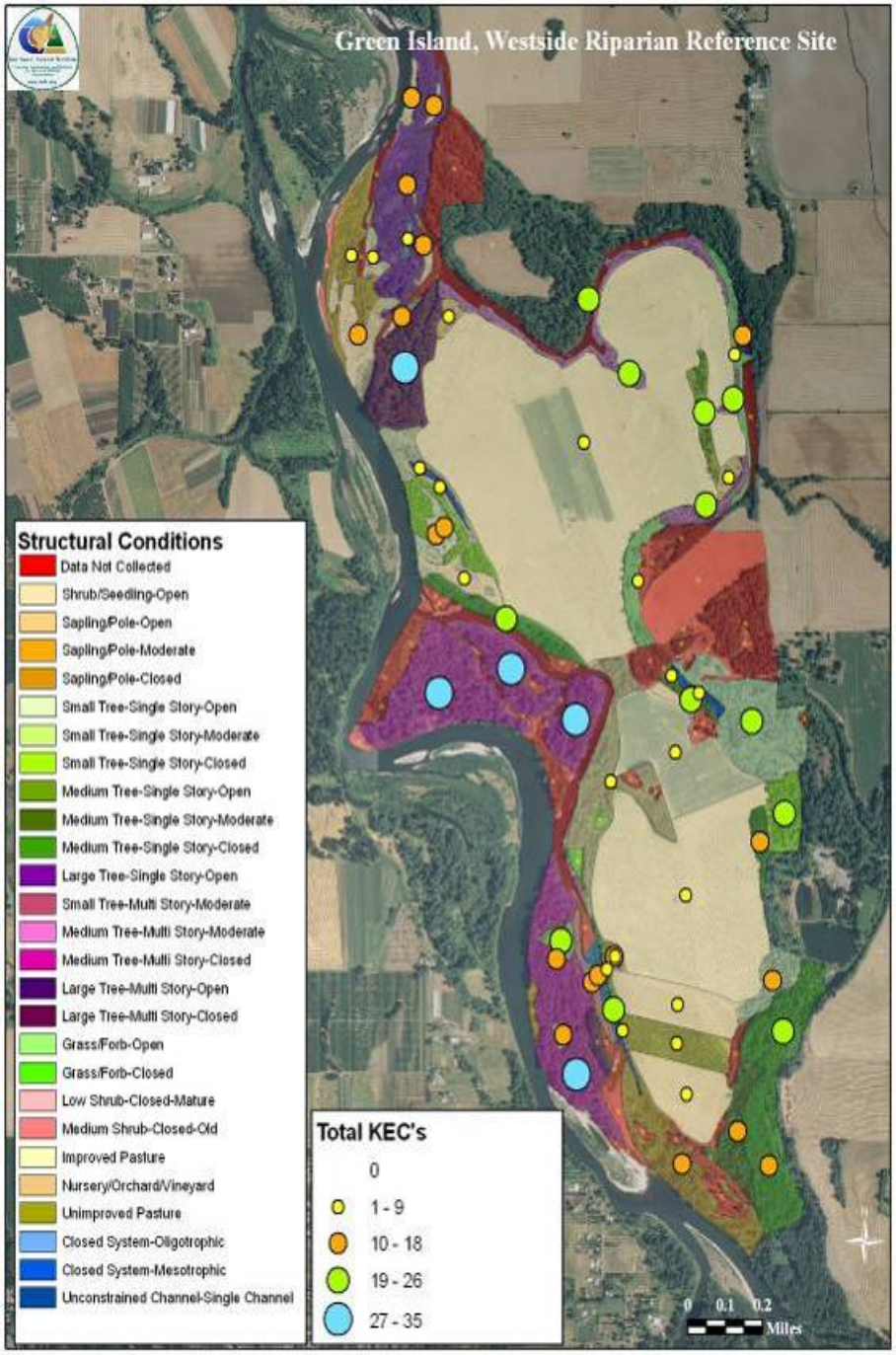
Photo courtesy of BLM

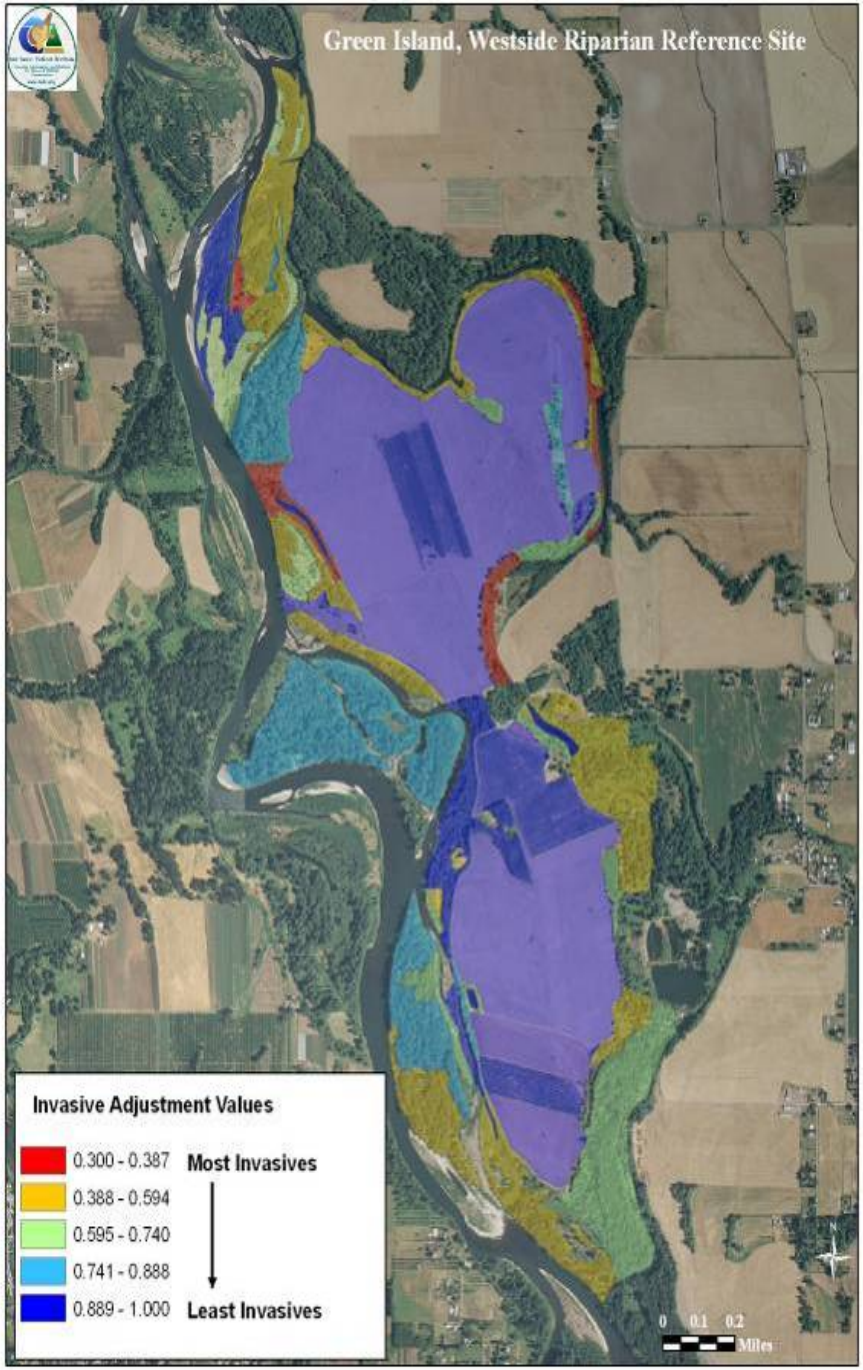
Examples of Map Products

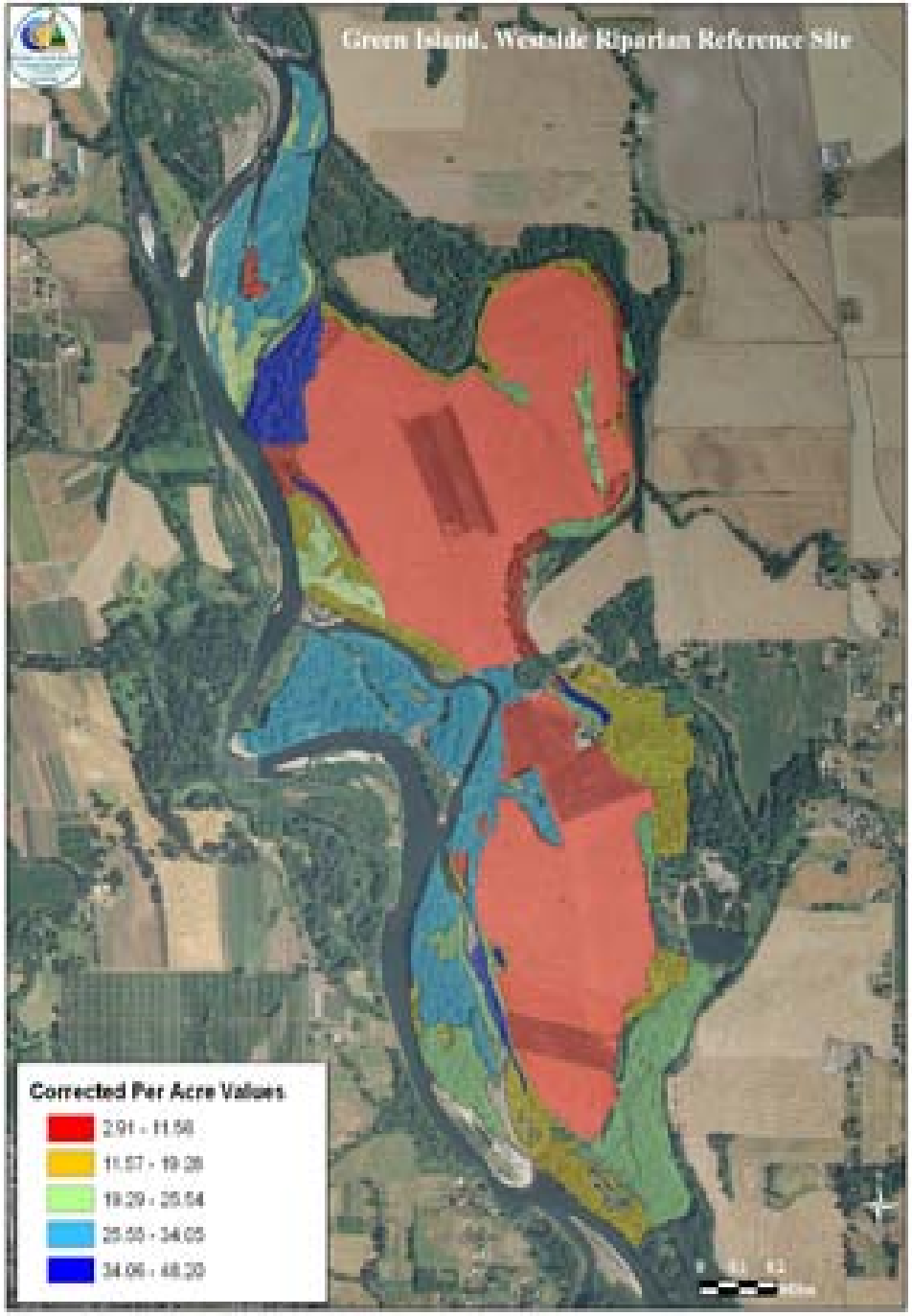
Reference Site – Finley Wildlife Refuge

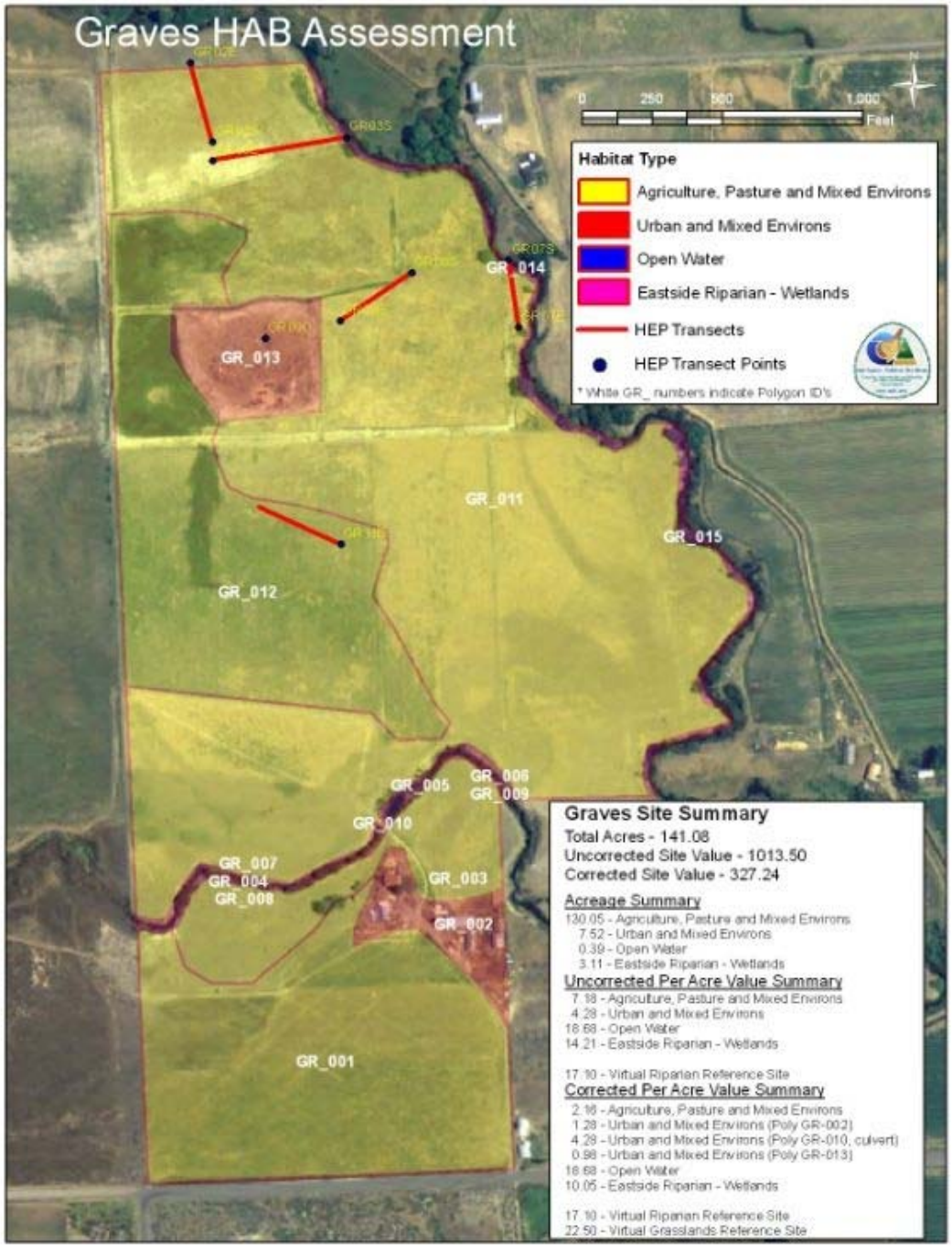



Green Island, Westside Riparian Reference Site
Wildlife Habitat Types
Westside Lowland Conifer-Hardwood Forest
Westside Oak and Dry Douglas-fir Forest and Woodlands
Agriculture, Pasture and Mixed Environs
Open Water
Herbaceous Wetlands
Westside Riparian - Wetlands
Site Acres
1013.13
0 0.1 0.2
Miles


Green Island, Westside Riparian Reference Site
Structural Conditions
Data Not Collected
Shrub/Seedling-Open
Sapling/Pole-Open
Sapling/Pole-Moderate
Sapling/Pole-Closed
Small Tree-Single Story-Open
Small Tree-Single Story-Moderate
Small Tree-Single Story-Closed
Medium Tree-Single Story-Open
Medium Tree-Single Story-Moderate
Medium Tree-Single Story-Closed
Large Tree-Single Story-Open
Small Tree-Multi Story-Moderate
Medium Tree-Multi Story-Moderate
Medium Tree-Multi Story-Closed
Large Tree-Multi Story-Open
Large Tree-Multi Story-Closed
Grass/Forb-Open
Grass/Forb-Closed
Low Shrub-Closed-Mature
Medium Shrub-Closed-Old
Improved Pasture
Nursery/Orchard/Vineyard
Unimproved Pasture
Closed System-Oligotrophic
Closed System-Mesotrophic
Unconstrained Channel-Single Channel
Total KEC's
0
1 - 9
10 - 18
19 - 26
27 - 35
0 0.1 0.2
Miles

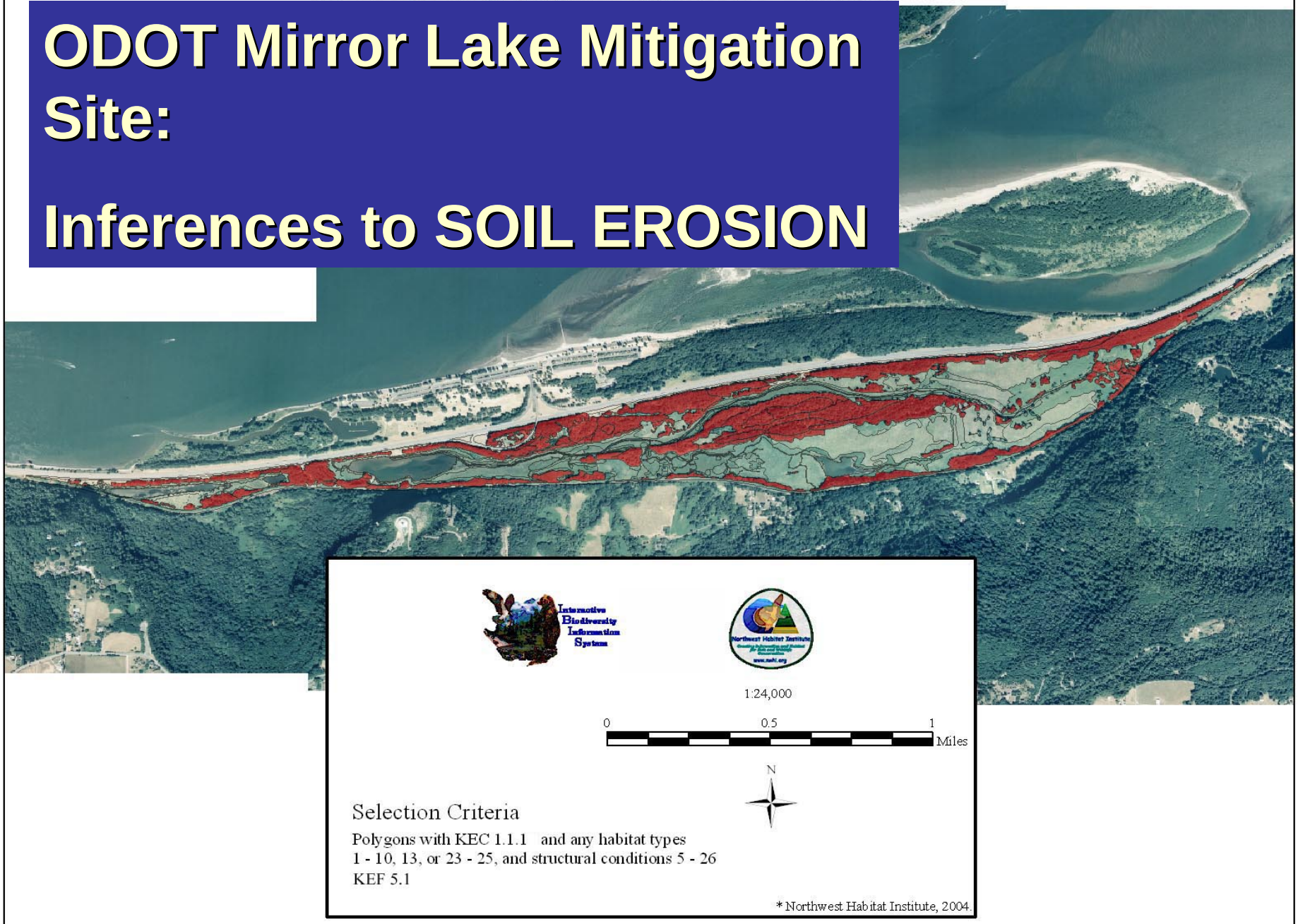

Green Island, Westside Riparian Reference Site
Invasive Adjustment Values
0.300 - 0.387
Most Invasives
0.388 - 0.594
0.595 - 0.740
0.741 - 0.888
0.889 - 1.000
Least Invasives
0 0.1 0.2
Miles


Green Island, Westside Riparian Reference Site
Corrected Per Acre Values
2.91 - 11.56
11.57 - 19.28
19.29 - 26.64
26.65 - 34.05
34.06 - 48.20

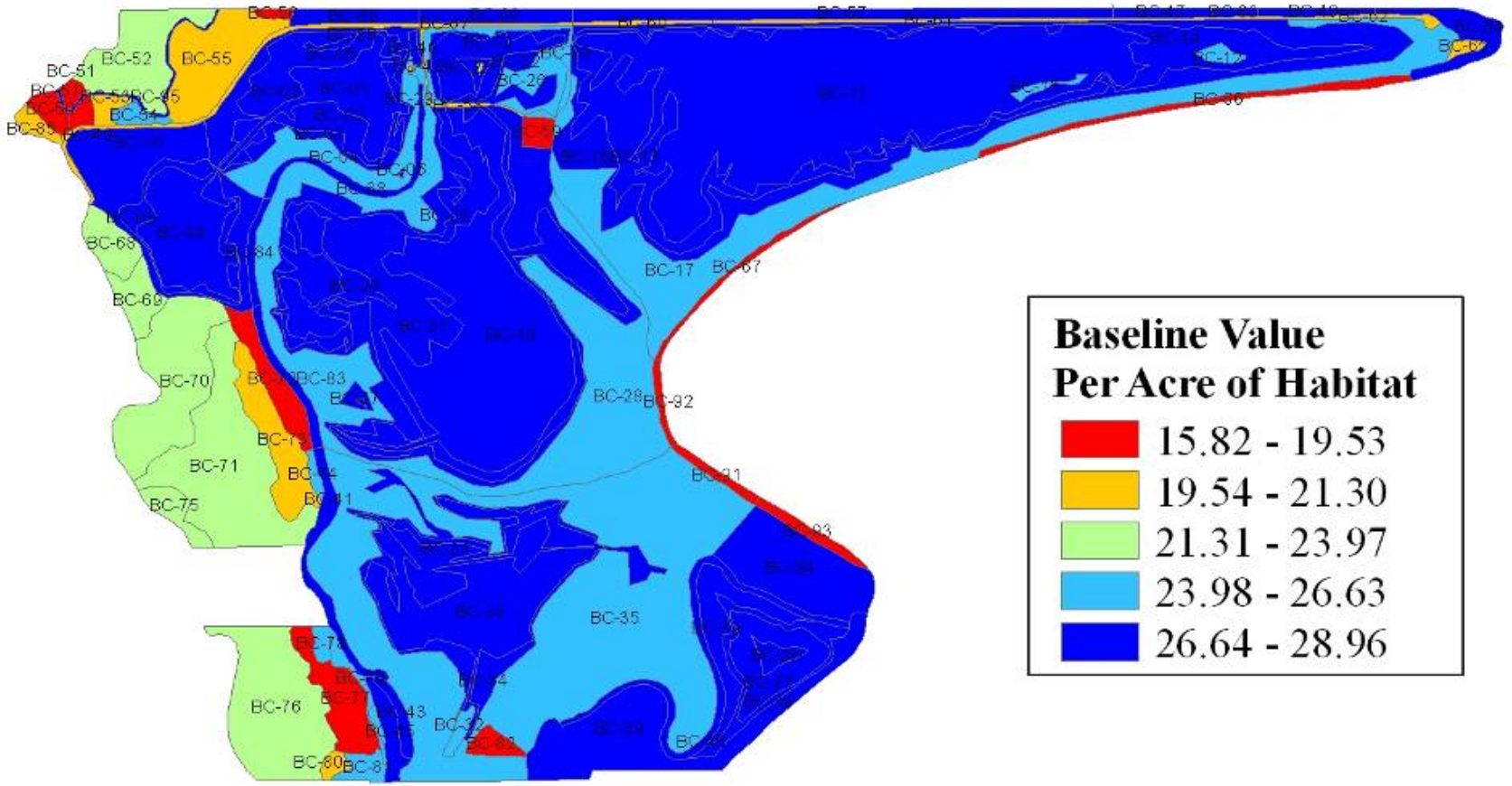

Graves HAB Assessment
0 250 500 1,000
Feet
Habitat Type
Agriculture, Pasture and Mixed Environs
Urban and Mixed Environs
Open Water
Eastside Riparian - Wetlands
HEP Transects
HEP Transect Points
* White GR_ numbers indicate Polygon ID's
GR_013
GR_014
GR_011
GR_015
GR_012
GR_005
GR_006
GR_009
GR_010
GR_007
GR_004
GR_008
GR_003
GR_002
GR_001
Graves Site Summary
Total Acres - 141.08
Uncorrected Site Value - 1013.50
Corrected Site Value - 327.24
Acreage Summary
130.05 - Agriculture, Pasture and Mixed Environs
7.52 - Urban and Mixed Environs
0.39 - Open Water
3.11 - Eastside Riparian - Wetlands
Uncorrected Per Acre Value Summary
7.18 - Agriculture, Pasture and Mixed Environs
4.28 - Urban and Mixed Environs
18.68 - Open Water
14.21 - Eastside Riparian - Wetlands
17.10 - Virtual Riparian Reference Site
Corrected Per Acre Value Summary
2.16 - Agriculture, Pasture and Mixed Environs
1.28 - Urban and Mixed Environs (Poly GR-002)
4.28 - Urban and Mixed Environs (Poly GR-010, culvert)
0.98 - Urban and Mixed Environs (Poly GR-013)
18.68 - Open Water
10.05 - Eastside Riparian - Wetlands
17.10 - Virtual Riparian Reference Site
22.50 - Virtual Grasslands Reference Site

ODOT Mirror Lake Mitigation Site:

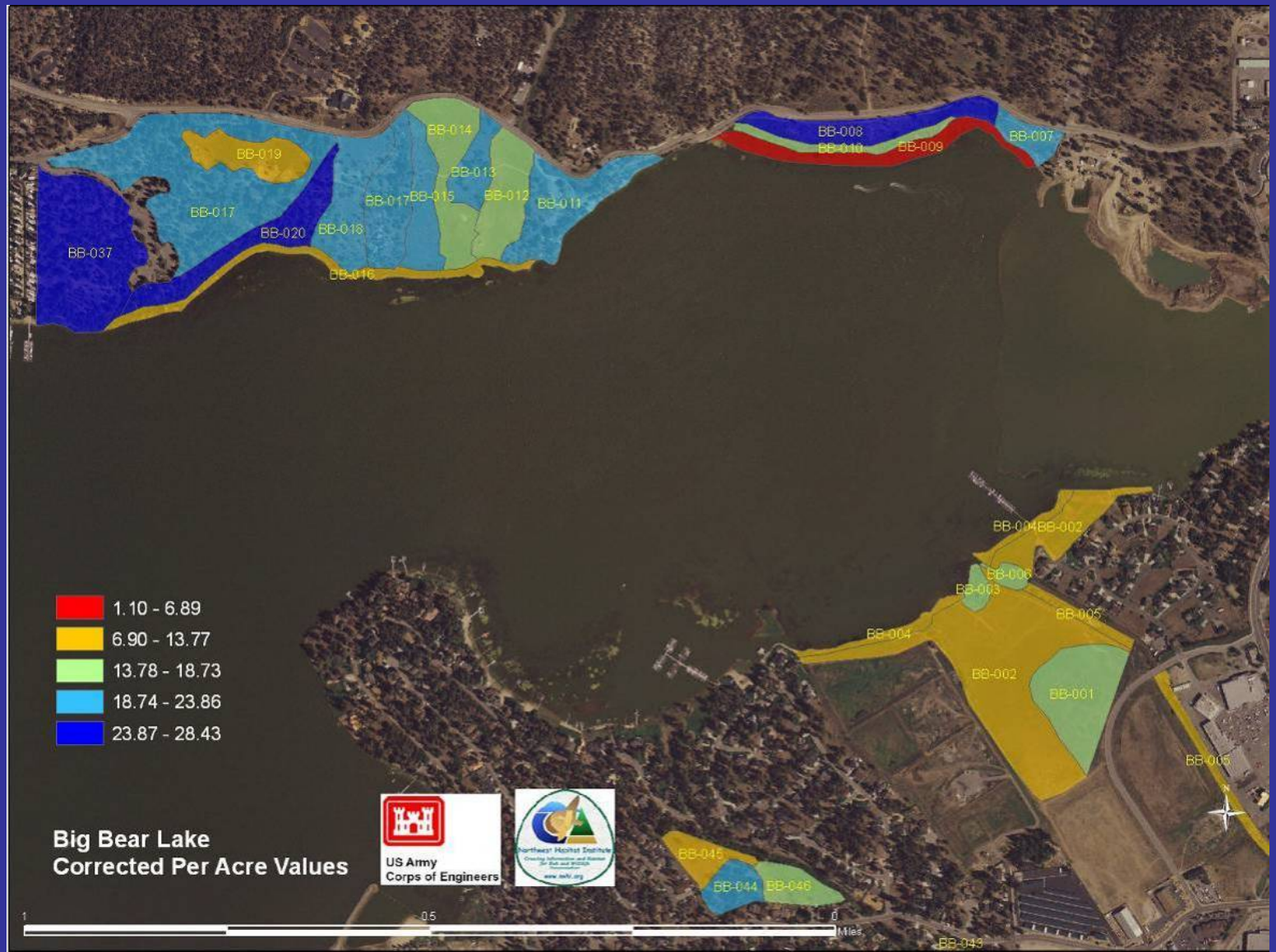
Inferences to SOIL EROSION



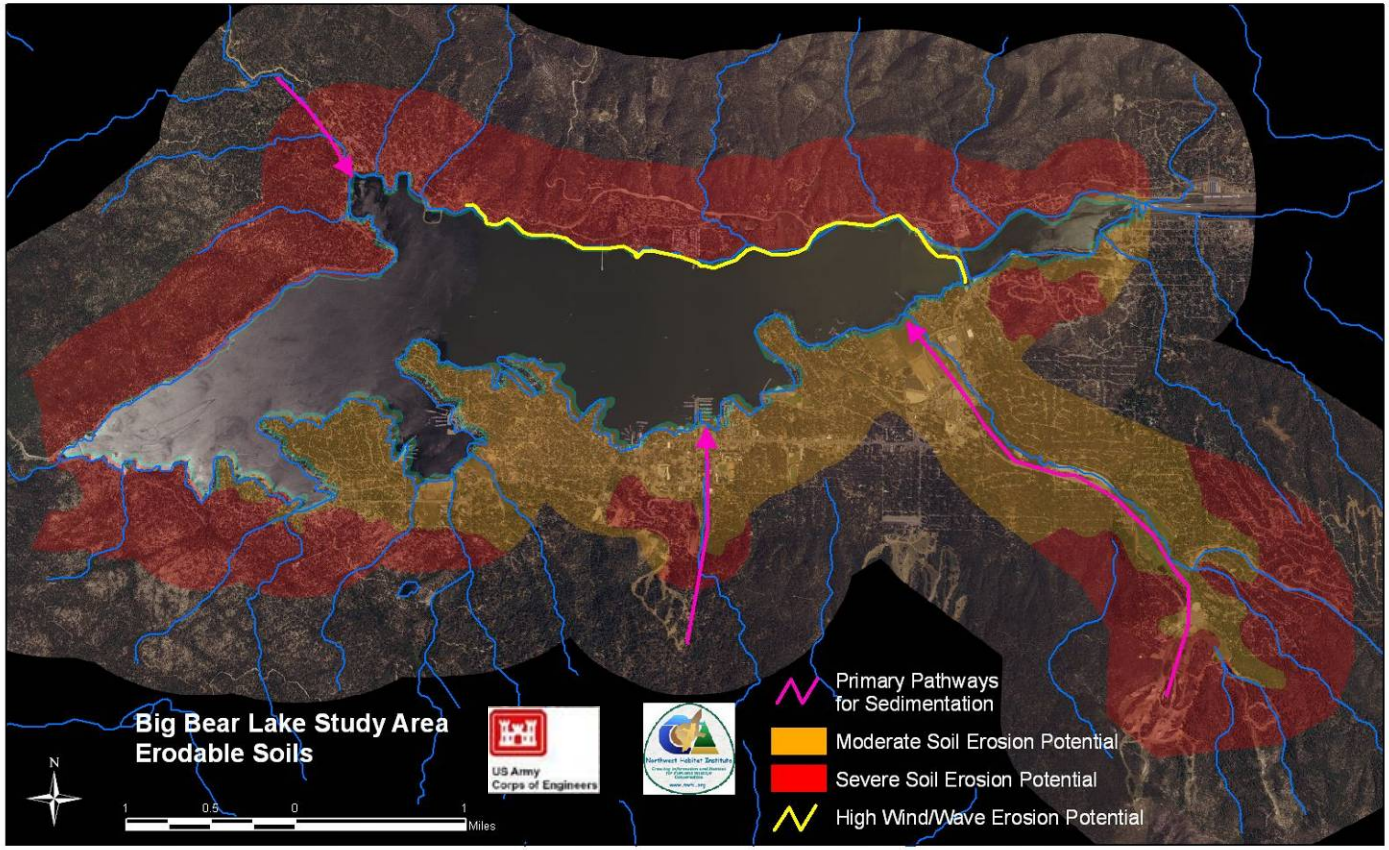
Boundary Creek



Big Bear Lake ~ Wildlife Habitat CHAP Results

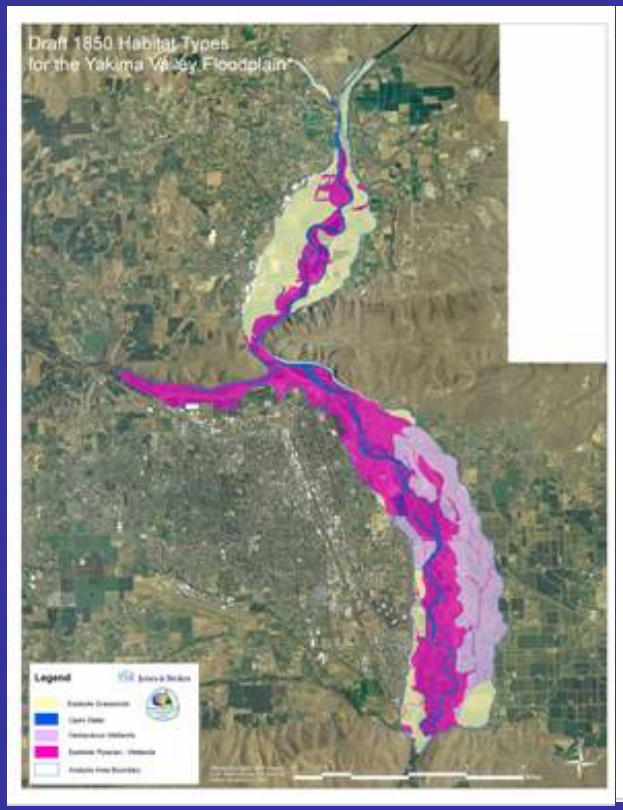


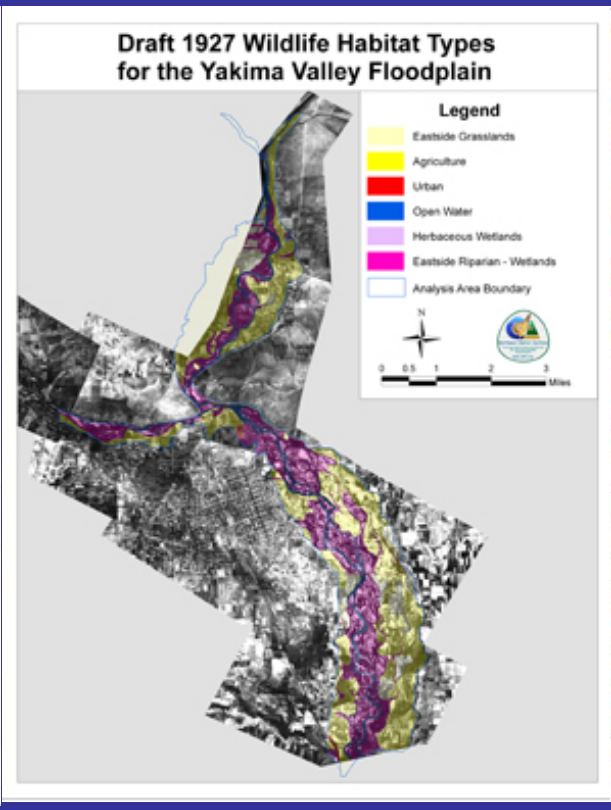
Big Bear Lake Wildlife Habitat CHAP Results

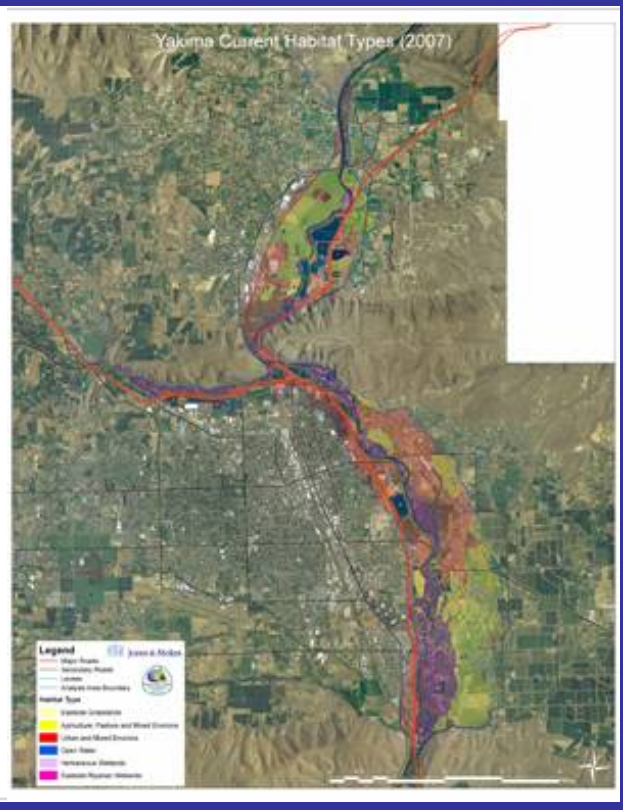


Habitat Types Classification
Change Detection & Cumulative Effects

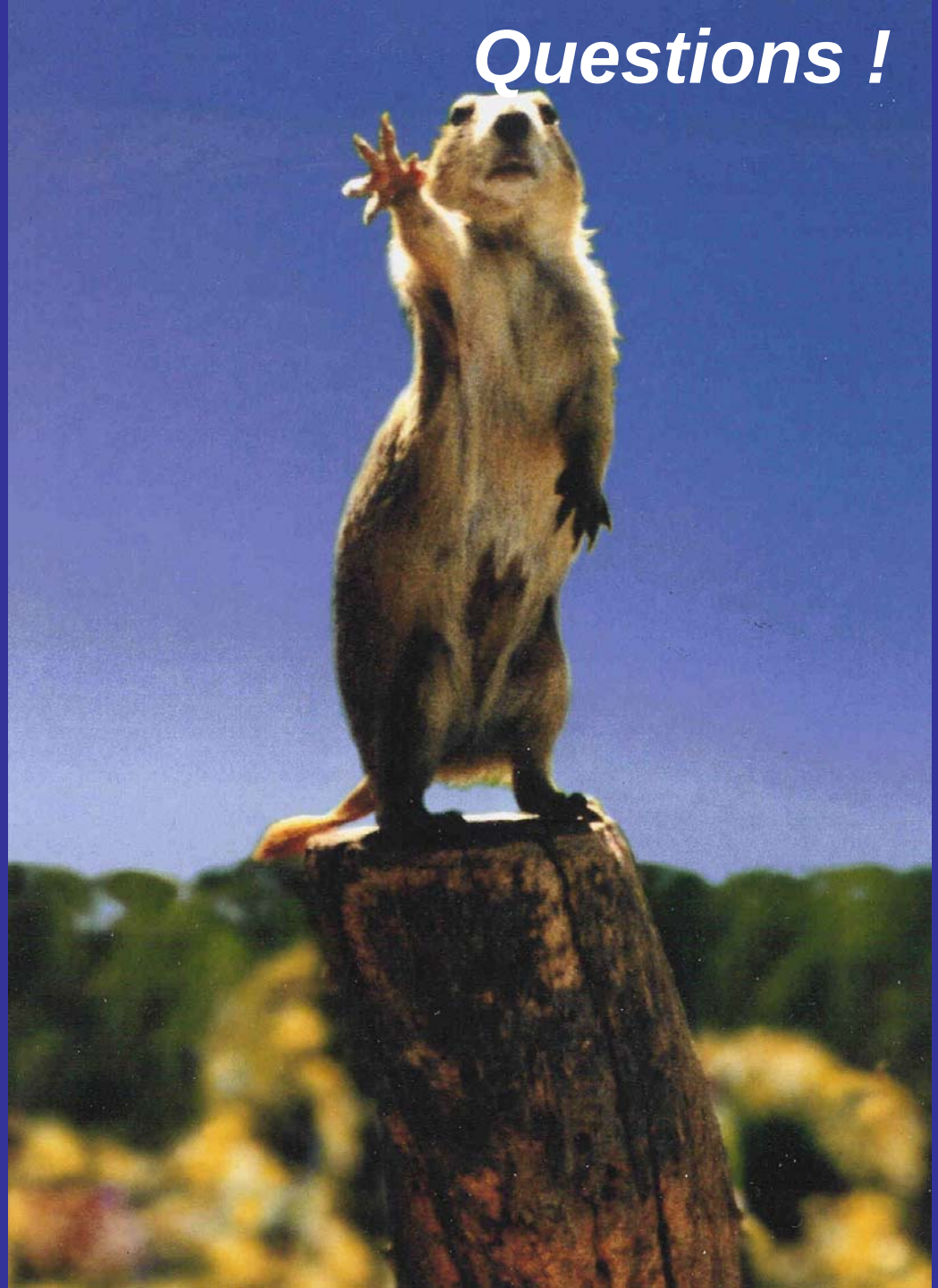
Yakima River







Circa 1850 **Circa 1927** **Circa 2007**


Questions !