

Benefit Transfer and Visitor Use Estimating Toolkit for Wildlife Recreation, Species and Habitat

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Background



- Restoration projects can be costly
- Estimates of visitor use and the economic value of goods/services provided by restored habitats are an important component in justifying restoration budgets
- Collecting primary data to obtain estimates is not always feasible or justified



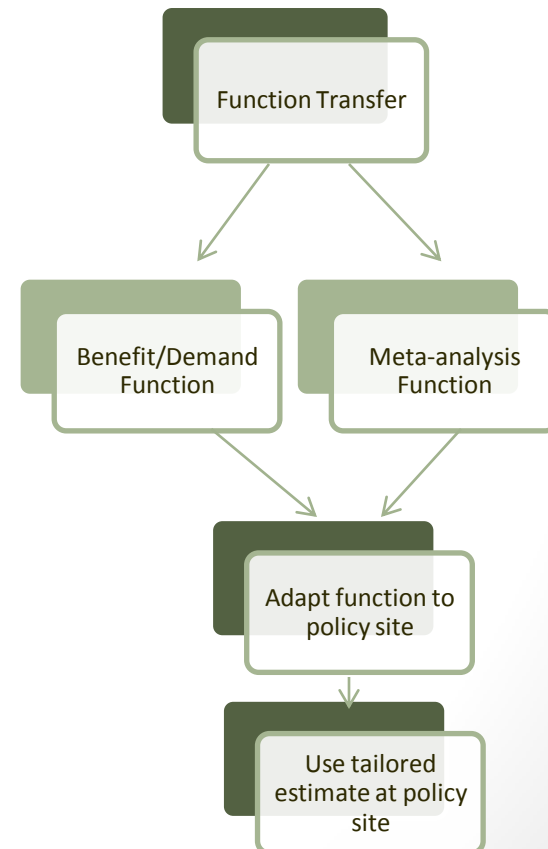
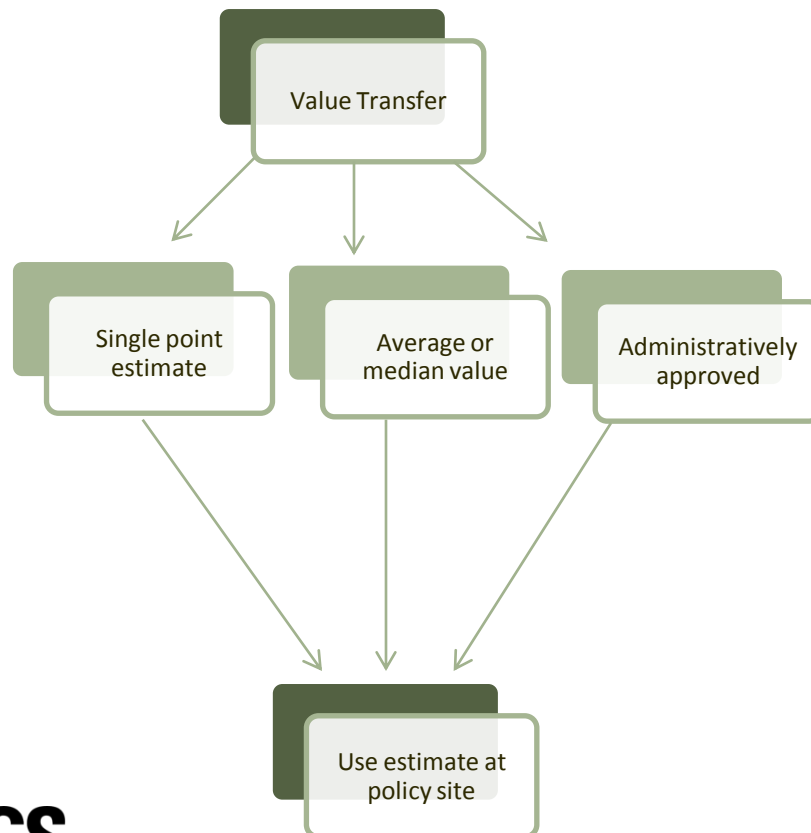
Toolkit

- Provides resource managers/planners with a tool to estimate:
 - Economic value of wildlife-based recreation activities, species, habitats, and open space
 - Visitor use (fishing, hunting, wildlife viewing) on National Wildlife Refuges and state lands
- Includes 3 categories of databases and models
 - 1) Recreation, Habitat and Species Valuation Models
 - 2) Open Space Property Value Premiums Valuation Model
 - 3) Visitor Use Estimating Models



Benefit Transfer

- Application of a value per unit estimate (per visitor day, per household, per acre) from an existing study site to an unstudied site for which such a benefit per unit value is needed



Recreation, Habitat and Species Valuation Models

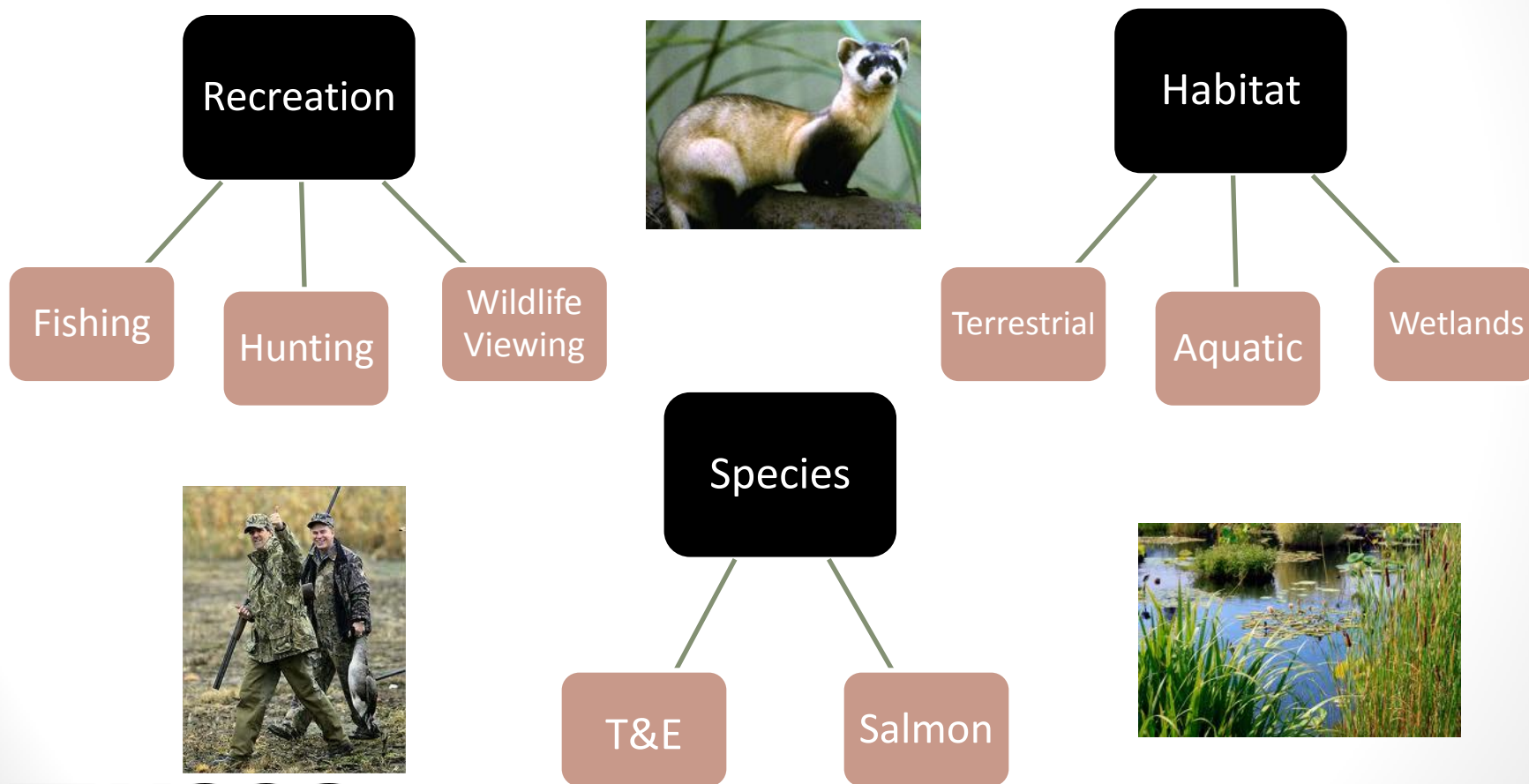
- How is value measured in the toolkit?

$$\text{TEV} = \text{use value} + \text{passive use value}$$



- Value = total net benefit to consumer (consumer surplus)
= benefits above and beyond any expenditures on the activity in question

Recreation, Habitat and Species Valuation Models



Recreation, Habitat and Species Valuation Models

● Databases

- Literature reviews result in hundreds of existing original valuation studies pooled together
- Information on each study is included in each database

● Value Tables

- Provide mean, median, low and high values

	N	NORTHEAST	N	SOUTHEAST	N	INTERMOUNTAIN	N	PACIFIC	N	ALASKA	N	NATION
Wildlife Viewing	88		62		65		16		9		22	
Min		\$2.56		\$2.80		\$14.73		\$25.99		\$4.24		\$9.37
Max		\$171.04		\$217.48		\$193.37		\$135.92		\$129.13		\$113.82
Average		\$46.48		\$42.89		\$47.86		\$58.87		\$51.68		\$31.25
Median		\$37.29		\$36.14		\$39.56		\$44.38		\$48.89		\$24.29

Recreation, Habitat and Species Valuation Models

Valuation Models

- Meta analysis regression models based on dozens to hundreds of value estimates yield valuation functions
- Statistically accounts for differences across studies (methods, contexts, location, etc.) to identify variables that explain the variation in value estimates
- Can be used to estimate current values or to predict changes in values associated with a management action

<u>Value of Fishing per Angler Day</u>		
STEP 1: Enter a 1 next to the primary species to be valued; 0 otherwise		
ENTER >	<input type="text" value="0"/>	Salmon
ENTER >	<input type="text" value="1"/>	Trout
ENTER >	<input type="text" value="0"/>	Pike
ENTER >	<input type="text" value="0"/>	Bass
ENTER >	<input type="text" value="0"/>	Walleye
ENTER >	<input type="text" value="0"/>	Other freshwater species
ENTER >	<input type="text" value="0"/>	Other saltwater species
ENTER >	<input type="text" value="0"/>	Other aggregate groupings (bottomfish, etc.)
STEP 2: Enter a 1 next to the type of water body containing the species; 0 otherwise		
ENTER >	<input type="text" value="1"/>	Lakes, ponds, and reservoirs
ENTER >	<input type="text" value="0"/>	Brackish, saltwater embayments (bays)
ENTER >	<input type="text" value="0"/>	Saltwater, offshore
ENTER >	<input type="text" value="0"/>	Rivers, streams, flowing-water systems
ENTER >	<input type="text" value="0"/>	Great Lakes
OUTPUT	<input type="text" value="\$32.85"/>	\$/ Angler Day (2006 base year)

Open Space Property Value Premiums Valuation Model

- 55 studies valuing the benefits of living near open space
- Value = market value of open space premium (% of property price), i.e., the benefit of proximity to open space captured by property value
- Variables such as the % of an area covered by OS of interest, land cover characteristics, land ownership, whether the land is protected or not, are significant determinants of value

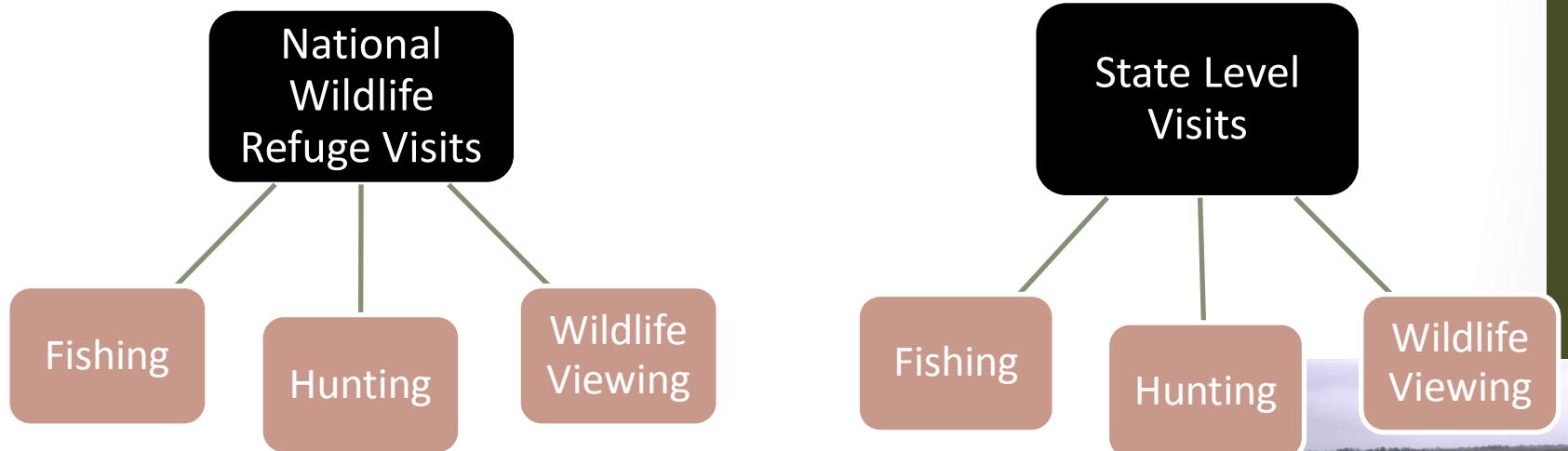


Open Space Property Value Premiums Valuation Model

Property value premium estimator model	
Instructions: Fill in all cells marked "ENTER >". (See accompanying user manual for detailed instructions and documentation.)	
STEP 1: Select shape of area of analysis in which property value premiums are analyzed	
ENTER >	<input type="text" value="C"/> Enter "C" for circular and "R" for rectangular shape of area
STEP 2: Enter the radius (circular area) or length and width (rectangular area) of the area of analysis	
ENTER >	<input type="text" value="2000"/> Radius of area in feet
OUTPUT:	288 Size of study area (acres)
STEP 3: Enter the size of the open space	
ENTER >	<input type="text" value="20"/> Size in acres of the open space whose property value impact is to be estimated
OUTPUT:	6.9 %OSChange. Percentage of the study area occupied by the open space of interest. Example: A 20 percent share of open space in the area of interest is indicated as "20".
STEP 4: Enter the appropriate values for the indicator variables (see the Land Cover Definitions tab for how to code a particular land cover)	
ENTER >	<input type="text" value="1"/> FOR. Enter "1" if the open space is a forest. Otherwise, enter "0".
ENTER >	<input type="text" value="0"/> PARK. Enter "1" if the open space is a park. Otherwise, enter "0".
ENTER >	<input type="text" value="0"/> WET. Enter "1" if the open space is a wetland. Otherwise, enter "0".
ENTER >	<input type="text" value="1"/> PROT. Enter "1" if the open space is protected. Otherwise, enter "0". Protection is defined as the absence of the possibility of development (i.e., easement, public ownership).
ENTER >	<input type="text" value="0"/> PRIV. Enter "1" if the open space is privately owned. Otherwise, enter "0".
POS =	2.3 % increase in average residential property value from open space of interest
STEP 5: Enter the number of residential properties located in the area	
ENTER >	<input type="text" value="50"/> Number of properties located in study area. NOTE: Include only single-family homes.
ENTER >	<input type="text" value="\$250,000"/> Average value of properties (\$)
OUTPUT:	\$284,527 Estimated total property premium in study area attributable to open space of interest

Visitor Use Estimating Models

- Relate NWR and state level recreation activity visitor days to factors such as land type, habitat acreage, population, income...



Visitor Use Estimating Models

- NWR models can be used to estimate activity days associated with a new refuge or change to an existing refuge
- State level models estimate the change in visitor days associated with a change in land type

Example: Alabama		
<i>CURRENT STATE VALUES (use the 'State Variable Input Tab')</i>		
STEP 1: Enter the current acres of each type of land within Alabama (use the 'State Variable Input Values' Tab)		
ENTER >	<input type="text" value="212,000"/>	State Forest Land
ENTER >	<input type="text" value="21,261,000"/>	Private Forest Land
STEP 2: Enter household median income of Alabama (use the 'State Variable Input Values' Tab)		
ENTER >	<input type="text" value="\$41,310"/>	
STEP 3: Enter Alabama's state population (use the 'State Variable Input Values' Tab)		
ENTER >	<input type="text" value="4,447,100"/>	
OUTPUT	<input type="text" value="5,462,478"/>	Wildlife Viewing Days / year in Alabama
<i>STATE VALUES WITH MANAGEMENT/POLICY ACTION</i>		
STEP 1a: Enter the total number of acres of each type of land within the site of interest		
ENTER >	<input type="text" value="300,000"/>	State Forest Land
ENTER >	<input type="text" value="23,000,000"/>	Private Forest Land
OUTPUT	<input type="text" value="5,946,889"/>	Wildlife Viewing Days / year for the site of interest
CHANGE		
OUTPUT	<input type="text" value="484,411"/>	Change in Wildlife Viewing Days / year

Linking Estimates and Combining Model Outputs

- Combining value estimates....

Combining Model Outputs

Activity valuation models (wildlife-associated recreation)

+ Habitat Valuation models (wetlands, terrestrial and aquatic habitats)

+ Species Valuation models (T&E, Salmon)

+ Open Space Property Value Premium model

Value estimates can be combined to generate an estimate of the “total” value of a site/habitat

Requirement: some models have variables for a value estimated in other models; these variables must be set to zero to avoid double counting when combining model results.

Example: Terrestrial Habitat model has open space variable. If adding results of OS Property Premium model and Terrestrial Habitat model to estimate the value of a site, set the OS variable in the Terrestrial Habitat model to “0”.

When to Use Benefit Transfer

- When making land management decisions with many high-valued competing uses, various stakeholders, unique policy site, etc.

➡ primary data needs to be collected

- But if you have similarity of resource characteristics being valued, similarity of user profiles, equality of values considered (use, nonuse), and low resource impacts

➡ Benefit Transfer is a good alternative

Future of the Toolkit

● Potential areas of improvement:

- Including updated studies/data
- Improving upon models
- Expanding to other uses

Colorado State University

<http://dare.colostate.edu/tools/benefittransfer.aspx>

Defenders of Wildlife

http://www.defenders.org/programs_and_policy/science_and_economics/conservation_economics/valuation/benefits_toolkit.php

