Wetland Valuation

A Benefit Transfer Approach

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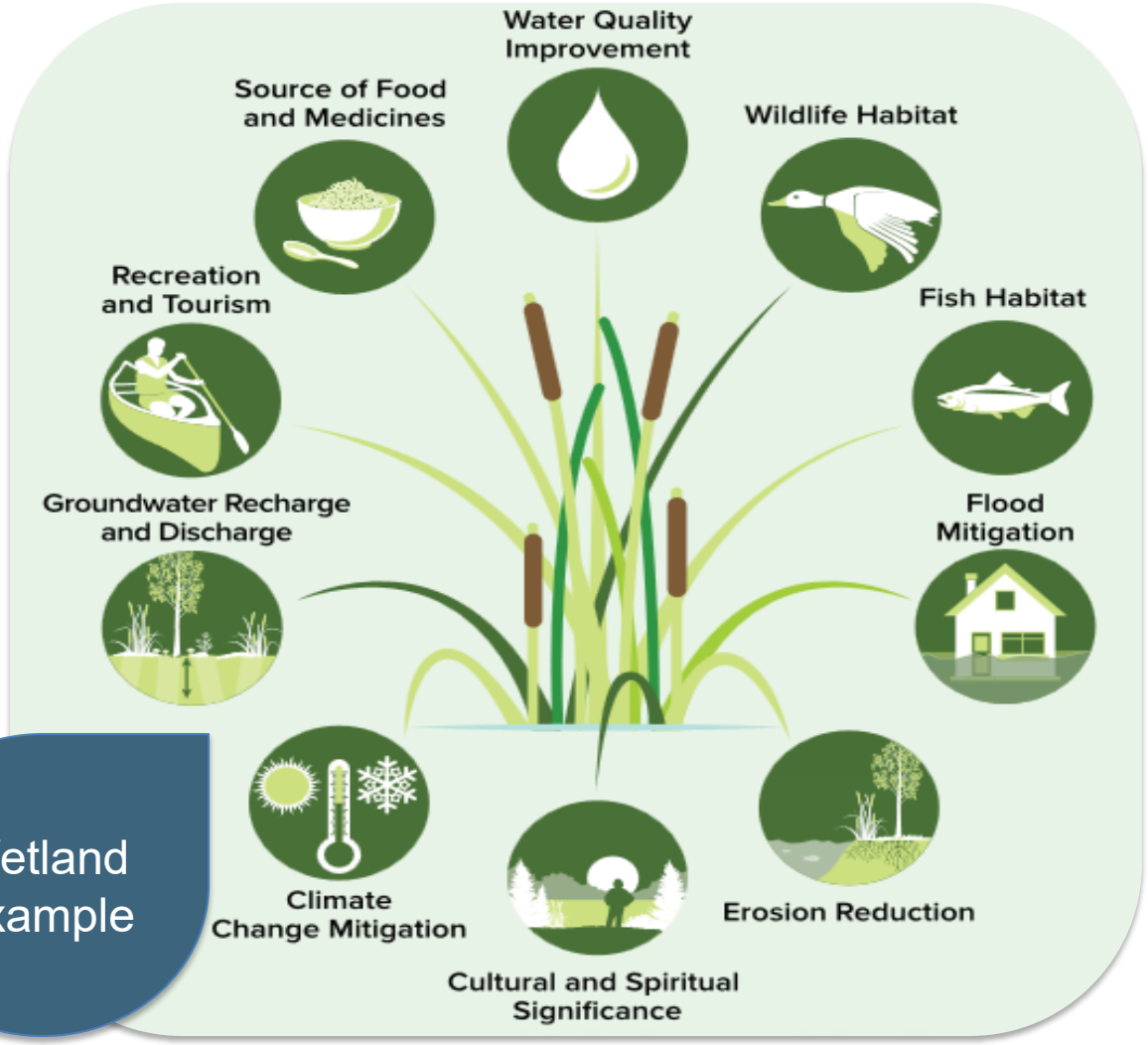
Motivation

- Feral Swine cause significant damage to all types of landcover.
- No obvious market for natural resources.

End Goal: Estimate value of annual benefits ($) per acre, per year, provided by natural resources in US

Ecosystem Services

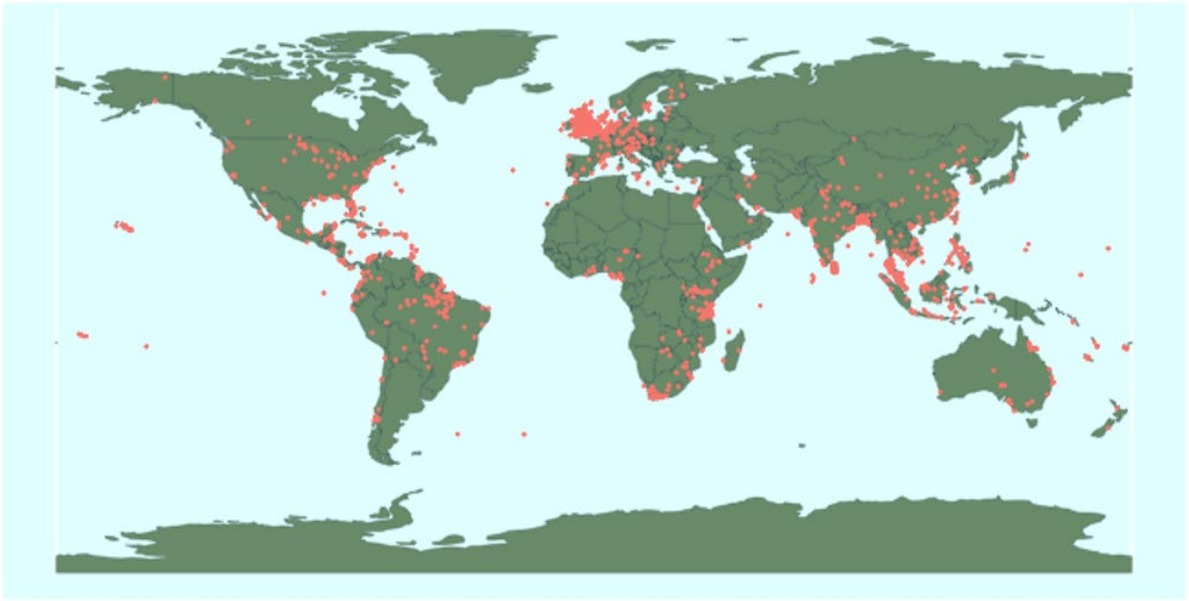


Primary Data Source

Ecosystem Services Valuation Database (ESVD)[1]

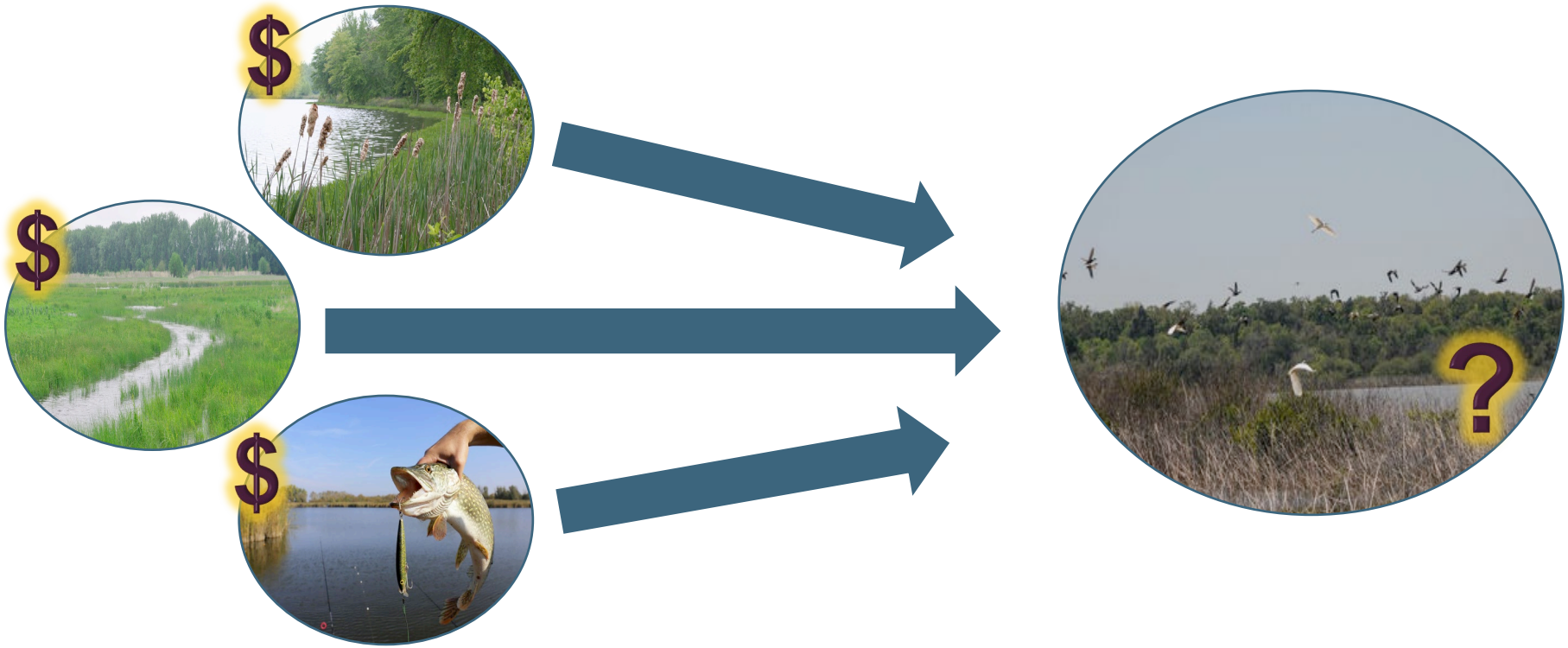
- 950+ studies
- Over 6,700 observations
- 117 countries

Site Locations Represented in ESVD



Benefit Transfer Applications

A method of taking estimated benefits or values from one (or more) study sites and applying it to another location.[2]



ESVD: Variables of Interest

- $/Acre/Year
- Ecosystem Service
- Biomes (Inland Wetland, Shrubland, Temperate Forest, etc.)
- Site Condition
- Longitude/Latitude
- Value Year
- Country Code

Supplement with External Data

- GDP per capita (2018)[3], via Country Code
- Population density[4]/sq. km within 50km radius of sites, via Long/Lat
- Land cover abundance[5] (sq. km) within 50km radius of sites, via Long/Lat
  - *Urban development*
  - *Cropland*

Final Data Set

Contemporary Data

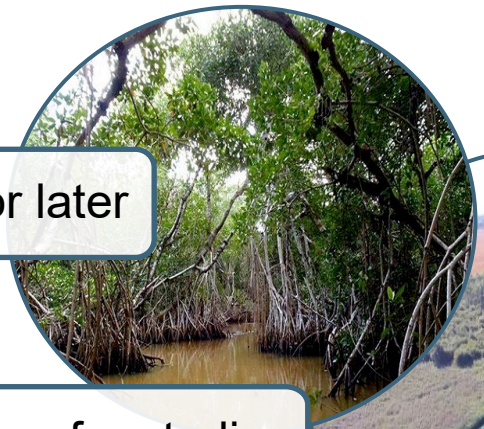
- Observations from 2002 or later

Original Valuations

- Eliminate other Benefit Transfer studies

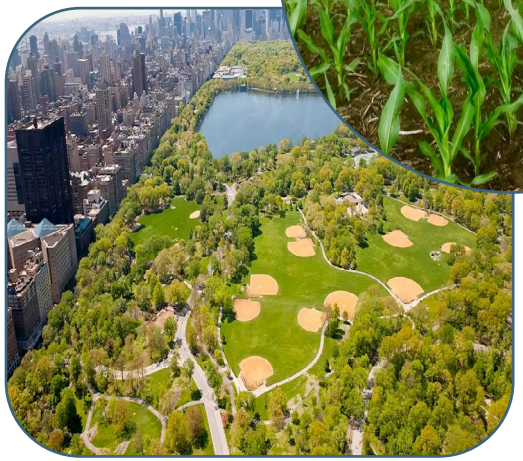
US Biomes

- Only biomes found in US



N = 1,661

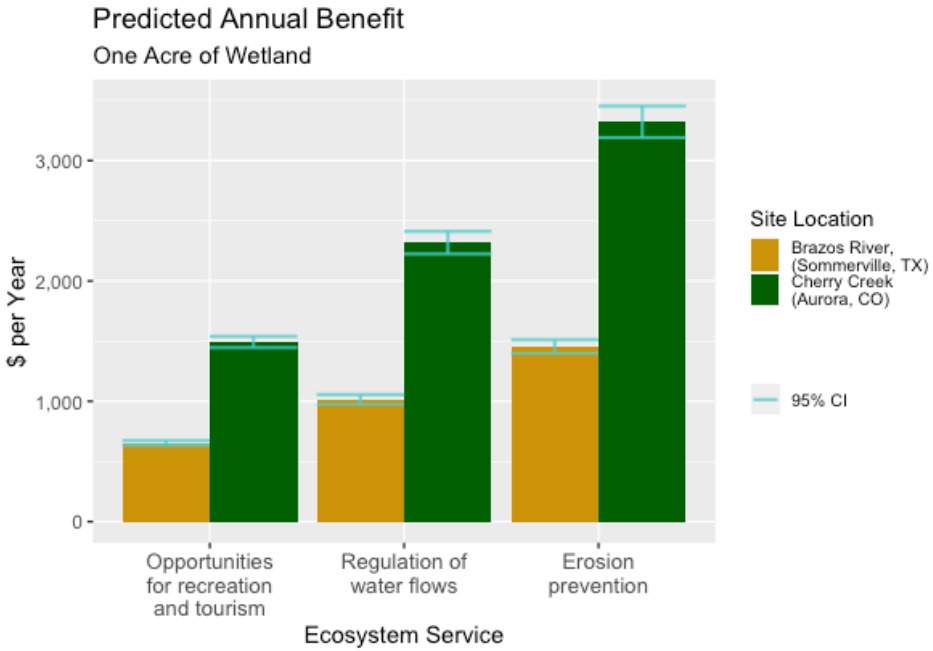
Model Findings



Value of Ecosystem Service provided by site increases...

- When site is in "**better" condition**
- When surrounded by **more crops**
- When surrounded by **more urban cover**
- When **more people** will benefit from service

Brazos River and Cherry Creek



Brazos River
Med. Crop abundance
Low Urban dev.
Rural Pop.

Cherry Creek
Low Crop abundance
Med. Urban Dev.
Sub-Urban Pop.

Applications

Questions?
Suggestions?

References

1. Foundation for Sustainable Development (2021). Ecosystem Services Valuation Database 1.0, 22-Mar-2022, https://esvd.net)
2. Rolfe, J., Johnston, R.J., Rosenberger, R.S., Brouwer, R. (2015). Benefit Transfer of Environmental and Resource Values. The Economics of Non-Market Goods and Resources, vol 14. Springer, Dordrecht. https://doi.org/10.1007/978-94-017-9930-0_1
3. The World Bank Group (2022). https://databank.worldbank.org
4. WorldPop (www.worldpop.org - School of Geography and Environmental Science, University of Southampton, University of Louisville) and Center for International Earth Science Information Network (CIESIN), Columbia University (2018). Global High Resolution Population Denominators Project - Funded by The Bill and Melinda Gates Foundation (OPP1134076). https://dx.doi.org/10.5258/SOTON/WP00647
5. Kobayashi, T., Tateishi, R., Alsaaideh, B., Sharma, R.C., Wakaizumi, T., Miyamoto, D., Bai, X., Long, B.D., Gegentana, G., Maitiniyazi, A. (2017). Production of Global Land Cover Data - GLCNMO2013. Journal of Geography and Geology, Vol. 9, No. 3, 1-15, 2017, http://dx.doi.org/10.5539/jgg.v9n3p1