



The Value of Open Space:

**A Review of the Literature Applied to the
Thousand Islands Region and the
Work of the Thousand Islands Land Trust**



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Introduction

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Adjacency to all types of open space has been shown to have positive effects on both the local community and the economy. Public access to protected land tends to have the greatest value, followed by private protected land (Metz, 2017). Open space is any protected or conserved land set aside from development. Preservation of open space can positively affect the environment and local economies. This preliminary analysis on the effect of open space preservation in the Thousand Islands Region will cover the following categories of benefits:

- Ecosystem Services and Environmental Benefits
- Local Property Values
- Tourism
- Local Economic Development

Since 1985, the Thousand Island Land Trust (TILT) has been tasked with safeguarding the Thousand Island landscape through conservation easements, property acquisitions, and public-access areas. TILT currently protects 9,000 acres of land, covering wetland, woodland, and grassland habitats. Through easements and fee-owned land, they have set valuable land aside from development. (“About TILT,” 2015).

TERRA BACH, THOUSAND ISLANDS LAND TRUST



ADA Accessible Trail at Otter Creek Preserve

Ecosystem Services

Ecosystem services are benefits provided by any kind of ecosystem to humans. These services are divided into four categories: supporting services, provisioning services, regulating services, and cultural services. The Thousand Islands Region supports various ecosystems, including wetlands, grasslands, and forests, that provide the local community with rich ecosystem services ranging from natural amenities to water filtration and flood protection (Millennium Ecosystem Assessment (Program), 2005)

Ecosystem services are valuable benefits to the local community. Although some ecosystem services are capitalized in land prices, many go unnoticed or undervalued. Most ecosystem services are associated with lakes, rivers, wetlands, forests, and conserved land in rural areas. Recreational and aesthetic characteristics from these areas are usually captured in land prices, but many regulatory services go uncaptured due to lack of awareness or perceived lack of value (Ma & Swinton, 2011).

Wetlands

Wetlands provide valuable and rich ecosystem services to local communities. The most valued ecosystem services from wetlands are biodiversity, wildlife habitat, water quality, flood management and climate regulation. These wetland attributes are often valued in different ways. The type of wetland changes its value. Most studies tend to agree that freshwater marshes or palustrine wetlands produce lower values than most other wetland types (Bin, 2005; Brander, Florax, & Vermaat, 2006; Ghermandi, van den Bergh, Brander, de Groot, & Nunes, 2008, 2010). GDP per capita, population density, and human uses or pressures are all important variables when explaining variation in wetland values.

Wetlands are classified into five categories: palustrine, lacustrine, riverine, marine, and estuarine. Palustrine wetlands, which are inland wetlands that lack flowing water with low salt concentrations, are abundant in the Thousand Islands Region. The two main types of palustrine wetlands in the Thousand Island Region are emergent and forested/shrub wetlands. These wetlands provide important ecosystem services to the local environment and community. Palustrine wetlands, including freshwater emergent and forested/shrub wetlands, produce high values for amenities, water quality improvement, aesthetics, and harvesting of natural materials (Ghermandi et al., 2008).

Residents are willing to pay for the conservation and retention of wetlands. This is evident in a study conducted in Southern Ontario. According to the study, 1/3 of participants were willing to pay small amounts to retain existing wetlands and an additional 1/3 were willing to pay moderate amounts for wetland retention and small amounts for additional conservation. The last 1/3 were willing to pay considerable amounts for retention, but lesser amounts for additional conservation. (Lantz, Boxall, Kennedy, & Wilson, 2013). In Quebec, dollar amounts were calculated for willingness to pay for conservation of wetlands per household. The average willingness to pay was between \$447 and \$465 per household. This study focused on four main attributes: biodiversity, water quality, flood prevention, and climate regulation (He, Dupras, & Poder, 2017). By focusing on the four

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Forestland ecosystems also provide significant ecosystem services. Services provided include climate change mitigation, soil conservation, wildlife/game habitat, and water protection benefits

main attributes, the study was able to distinguish aesthetic values and ecosystem service values.

Wetlands are important ecosystems that benefit both the environment and the Thousand Island community. It is evident that residents are often willing to pay to preserve this land. TILT's preservation and protection of wetlands provides important services to the environment, protecting biodiversity, and to the community, improving water quality and producing high amenity values. These services are often hard to quantify in a monetary value but they are integral to creating a sustainable environment in the Thousand Islands.

Grasslands

Protection of grasslands helps to improve water quality as well as provide habitat for a diverse range of avian species. Vegetated buffers, including grasslands, protect surface and groundwater from human land use impacts and protect habitat for complex ecosystems. Grass is highly efficient at sediment trapping, flood conveyance, and filtration of sediment born nutrients. Grasslands improve water quality by filtering groundwater and surface water, removing sediment born nutrients like pesticides (Hawes & Smith, 2005). Water quality is a critical benefit in the Thousand Island Region, as runoff flows into the St. Lawrence River. The presence of grasslands filters the runoff, protecting the aquatic habitat and species in the St. Lawrence River from pesticides and microbes.

Grasslands are important habitats for a wide range of avian species. The St. Lawrence Valley is home to some of the largest and most important grasslands in the northeastern region of the United States, where many waterfowl and grassland birds nest (New York Department of Environmental Conservation, n.d.). The Thousand Island Region is home to several New York State Species of Greatest Conservation Need, including the Bobolink, Henslow's Sparrow, and the Upland Sandpiper. These species are experiencing population decline and require management intervention to stay above critical levels (New York Department of Environmental Conservation, n.d.). By preserving grasslands and agricultural grasslands in the St. Lawrence Valley, TILT is supporting avian biodiversity and species deemed of greatest conservation need.

Forestlands

Forestland ecosystems also provide significant ecosystem services. Services provided include climate change mitigation, soil conservation, wildlife/game habitat, and water protection benefits (Ninan & Inoue, 2013). These services have significant economic values both locally as well as globally. Most significantly, Ninan and Inoue cite some 40 peer-reviewed articles valuing forestland ecosystem services. Unfortunately, none of these studies specifically looks at the value of ecosystem services for the Northeastern forest. Nonetheless, we can infer from studies which value these services in other contexts, and from studies of similar forests in other areas that these values are significant ((Ninan & Inoue, 2013).



Bird enthusiasts enjoying TILT's Zenda Farms Preserve

Tourism

Open space preservation can lead to increased tourism in rural areas. Visitors to rural places value the aesthetics and cultural aspects of the local region. As shown in two studies, if open space was converted to urban uses or developed, visitation would decrease. Winter tourists, in Colorado, value both ranch open space and private ranch open space, and stated that they would decrease visitation if all ranch open space were to be developed or converted (Orens & Seidl, 2009). In a contingent valuation study, it was found that if ranch lands are converted to urban uses, the decrease in value of trips is estimated at 75% or \$108 per trip day (Ellingson, Seidl, & Loomis, 2011).

TILT has long preserved the natural landscape of the Thousand Islands Region. Their preservation of land has affected the local tourism industry. Tourists are willing to pay to experience a natural landscape and to escape the grip of development (Orens & Seidl, 2009). Many tourists leave highly populated and urban areas to escape the noise, congestion, and negative properties of urban life. The preserved Thousand Islands landscape becomes an oasis to tourists, who flock to open-air spaces. By preserving open space, TILT has likely encouraged tourists to spend their trips in the rural Thousand Islands Region, where open space is more plentiful than in many other regions.

Forested areas are often highly valued by tourists. The economic value per trip estimates are higher for wilderness than day-use and night-use developed settings and general forest areas in the Southern US (Sardana, Bergstrom, & Bowker, 2016). The higher value for forested or wilderness areas may indicate that there are fewer substitutes for forested

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areas or that they are considered rare. TILT protects inland forests and forested trails that are valued by visitors. By preserving more forested trails and recreational areas, they are increasing visitor expenditures and therefore aid the local economy.

Farm-based recreation, or agritourism, is growing in the United States. Agritourism is any agriculturally based operation or activity that brings visitors to a farm or ranch. According to one study, “the calculated consumer surplus for agritourism (farm-based recreation) trips is estimated at \$174.82, of which \$33.50 is due to rural landscape” (Carpio, Wohlgenant, & Boonsaeng, 2008). TILT is in a unique position with their preservation of Zenda Farms. Zenda Farms, if marketed as agritourism, can help to increase tourism expenditures in the area.

Many tourists visit grassland areas because of their species diversity. Eco-tourists look for preserved grasslands with open-air landscape, species diversity, and those with a high number of bird species. In Europe, grasslands with grazing animals with trees and mountains in the background is valued the highest for aesthetic pleasure. The activities provided by open space, such as birding, on-farm lodging, and other outdoor activities, help to generate revenue for the local economy. Eco-tourists often participate in outdoor recreation, further boosting the local economy through visitor expenditures on recreation and activities (Parente & Bovolenta, 2012). TILT’s preservation of grassland habitat for local bird species can increase the number of eco-tourists visiting the area. Eco-tourists value of open air and species diversity makes them prime visitors to the Thousand Islands region. The Thousand Islands Region’s species diversity, from its location on the Frontenac Arch, makes open space preserved in the area valuable. By leveraging the local landscape’s diversity and aesthetic beauty, open space preservation positively impacts the local economy through tourist expenditures.

Visitors have preference for open space when travelling to rural areas and tourist destinations. Aesthetics and cultural landmarks are considered valuable by tourists and visitors and the presence of open space, specifically wilderness areas, may increase the value of visitor trips. Also, the growth of the agritourism sector indicates consumer preference for agricultural open space, making Zenda Farms a valuable preserved space.

Recreation

Outdoor recreation

Outdoor recreation refers to leisure pursuits engaged in the outdoors, often in natural or semi-natural settings in rural areas. Outdoor recreation is extremely popular in the United States. In a study conducted by Cordell et al, 97 percent of Americans aged 16 or older participated in outdoor recreation at least once a year. Specific activities, such as hiking, biking, and personal watercraft use, have been growing since the 1960s. These outdoor recreational activities use both personal and public open space areas, which indicates the recreational value of preserved open space. The Thousand Islands Region has many opportunities for outdoor recreational activities, including walking, sightseeing, wildlife viewing, birdwatching, and hiking. According to the study, walking had the highest participation percentage (83%), followed by sightseeing (52%), wildlife viewing (44.7%), birdwatching (32.5%), and hiking (33.1%) (Cordell et al., 2005). TILT has preserved land that supports recreation, including a wide array of walking trails that are prime spots for birdwatching.

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Trails

Trails provide many benefits to both visitors and the community. Trail features and characteristics play an important role in their valuation by trail users. Length of recreational trails matters to users such as dog walkers or runners, while tranquility



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TILT's Grindstone Island BikeTrek

Proximity to a multi-use trail also increase property value.

and landscape diversity mattered to a wide variety of trail users. Users' preference for landscape diversity and tranquility suggest a preference for preserved open space, such as wilderness areas (De Valck et al., 2017).

In a study conducted in Belgium, the uses for local trails were as followed: hiking (49.7%), cycling (21%), walking the dog (11.1%) and jogging (6.5%) (De Valck et al., 2017). This may indicate that local community members use the trails as much as visitors. Local residents in Taiwan value forested trails more than visitors due to their higher reliance on them (Chen & Law, 2012). Residents are more likely to use the trails because of their proximity to them. Residents also receive other benefits from their proximity to open trails. Trails help to improve residents' behavior, social life, and quality of life. In Indiana, residents living near trails were more likely to use the trails for exercise and interact with neighbors, both of which are perceived as positive (Corning, Mowatt, & Chancellor, 2012). Proximity to a multi-use trail also increase property value. In Hamilton County, OH for every foot farther away from a specified trail the property value drops \$3.98 in value (Parent & vom Hofe, 2013). Many residents are willing to pay premiums in order to preserve walking, hiking, and biking trails. A study conducted in Bexar County, Texas showed that trails are associated with 2% price premiums in home sales. Homes near trails located in greenbelts are associated with 5% premium. These premiums represent the value placed on public access trails in the region (Asabere & Huffman, 2009).

The Thousand Islands Land Trust (TILT) has created a system of open space trails for visitors and residents to use. These trails provide both value to visitors, who use them for recreational activities such as hiking, and to residents, who use them for walking the dog or for fitness.

Local trails can also affect the local economy. Many trails encourage tourism. In the case of Vermont tourism industry, visits to tourism areas increased in areas with a higher trail density (Sonter, Watson, Wood, & Ricketts, 2016). Trail users also contribute to the local economy through purchasing goods. In the Central Ohio Greenway Trail, approximately one-fifth of trail users reported spending between \$15.00 and \$20.00 for food, drink, and other incidental items. Across all trail users the average expenditure by individuals was about \$3.00 per visit. The study also found that users visiting trails for recreation were 53% more likely to purchase something than other users, as well as longer trips were associated with higher spending (Ermagun & Lindsey, 2016). This study focused on urban areas in Ohio but it can be applied to more rural regions.

The Thousand Islands Land Trust (TILT) has created a system of open space trails for visitors and residents to use. These trails provide both value to visitors, who use them for recreational activities such as hiking, and to residents, who use them for walking the dog or for fitness. Visitors often spend money on food and supplies when visiting trails for hiking, which stimulates the local economy. Trails such as the Lois Jean and John MacFarlane trail also make great spots for visitors to participate in wildlife watching, specifically birdwatching. Wildlife watching attracts many visitors, who look for areas with high species diversity, such as the Thousand Islands Region.



Wildlife observation tower at Otter Creek Preserve

Wildlife watching/observation

Participation in wildlife watching activities has increased in the last decade. The increase in participation has also led to an increase in expenditures associated with wildlife watching, specifically spending on equipment and trip related expenses. These expenditures help to boost the local economy. According to the U.S. Fish and Wildlife Service, 87 million people participated in wildlife watching activities in 2010 and spent \$76.7 billion on trip expenses and equipment (Henderson, Grado, Munn, & Jones, 2010). Wildlife watching also generates employment. In 2006, wildlife recreation generated 0.7% of regional employment in the Southeast region of the United States (Poudel, Munn, & Henderson, 2017).

Bird watching continues to be a popular wildlife watching activity in the United States. Most birdwatchers are attracted by areas with high wildlife biodiversity. The Thousand Island Region is unique, as it lies in the middle of the Frontenac Arch. The Frontenac Arch, a geological feature of ancient granite that spans from Algonquin Park in Ontario to the Adirondacks in upstate New York, supports a diverse population of wildlife. This makes the Thousand Island Region a potential avitourism “hotspot.” According to one study not specifically focused on the Thousand Islands Region, the total willingness to pay for a birdwatching trip at peak mating season is \$272 and the additional willingness to pay for each additional bird species is approximately \$3.38. This value was found using data from the Cornell University eBird project, which utilizes birder diary data (Kolstoe & Cameron, 2017).

Fisheries

Developing from the subsistence fisheries of the Native Americans, recreational fishing has had a long history in the United States. Fishing for pleasure, as opposed to fishing for survival, has become a common pastime. The history of recreational fishing makes the pastime both economically and culturally important.

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Based on 2011 national census data, an estimated 33 million fishers participated in over 443,000 fishing trips. Due to economic multiplier effects, angler expenditures produced an estimated \$115 billion economic impact. Increased expenditures also led to an increase in jobs. It was estimated that expenditures from anglers produced almost 800,000 jobs. In the northern United States, recreational fishing is significantly important to the local economy. In these regions, 14–43 % of the population fishes, producing over 10,000 jobs and \$1.1–4.3 billion in total economic impact (Hughes, 2015).

The St. Lawrence River is home to a variety of warm water fish that are prized by anglers. Two popular fish in the Thousand Islands Region of the St. Lawrence River are the Northern Pike and the Muskellunge. During the spring and summer, anglers can find Northern Pike along the bays of Grindstone Island. In the winter, popular Northern Pike fishing spots are Clayton, Wellesley Island, and Alexandria Bay. Muskellunge fishing season is during late summer and fall. Not for the inexperienced angler, Muskellunge fishing is demanding and often requires a guide. They can usually be found from Cape Vincent to Ogdensburg (“Fishing the St. Lawrence River—NYS Dept. of Environmental Conservation,” n.d.). The St. Lawrence River, specifically in the Thousand Islands Region, is a prime spot for fishing. Anglers, through their expenditures, help to generate revenue in the local economy. Through the protection of Northern Pike and Muskellunge habitat, TILT is preserving fish species and encouraging angler expenditures, further benefiting the community.



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TILT KidsTrek: “Ichthyologist for a Day”

Property Values | Housing Prices

Open space has a large impact on local housing prices. Residential housing located near parks, trails, streams, lakes, and other types of open space often have higher values. Several studies have stated that “permanent” open space increases near-by residential housing prices because open space is valued more for an absence of development than open space amenities (Geoghegan, 2002; Irwin, 2002). Homeowners are willing to pay a premium to prevent development in their neighborhood. Development often brings congestion and noise, which is disliked by many residential property owners.

Natural amenities often cause housing prices to rise as well. One study estimated that the total effect of various natural amenities, calculated for the sample average income household and average home value, ranges from \$2,382 (National Forests) to \$1,560 (Wilderness areas) (Izon, Hand, McCollum, Thacher, & Berrens, 2016). Natural amenities, including local climate and water area, attract residents. The rural idyll relies on natural amenities to increase in-migration and increase housing prices. Natural amenities also have a significant effect on second house prices, but it varies heavily by region (Nilsson, 2015).

Aesthetic values play a large role in residential housing prices. Open space provides scenic views to homeowners and are highly valued in the housing market. Results from one study indicate that increasing the size of forest area visible from a house by 1 acre increased the house price by \$30. The findings imply that residents place a significant value on and likely pay a price premium to preserve the view of a forest (Poudyal, Hodges, Fenderson, & Tarkington, 2010). Proximity to specific open space features often cause variation in housing prices. Certain forest properties, such as mature or tall stands, are valued higher than clear-cuts or other types of forests (Kim & Johnson, 2002). Waterscapes and grassy land covers also increase home values. These types of open space often have views that encompass larger areas, which is more valuable to homeowners for aesthetic pleasure (Heintzleman, 2010). A recent study also found that “attractive” open space impacts positively impacts property values out to a distance of 7 km (Daams, Sijtsma, & Vlist, 2016). TILT protects grassy land covers and waterscapes that are valuable to the local housing market. By preserving the aesthetic qualities of the Thousand Island landscape, TILT’s efforts stimulate the housing market.

Certain types of wetlands also affect property values. Open water wetlands are often positively associated with property values. As proximity to open water wetlands increases from 5,500 feet to 2,500 feet, property value increases by \$18,007. However, other types of wetlands are negatively associated with property values or insignificant. Emergent vegetation wetlands show a clear negative correlation with property values. Every foot farther away from emergent vegetation wetlands, between 5,000 and 9,000 feet, increases property value by \$5.01. Proximity to forested/shrub wetlands is insignificant. The aesthetic value and recreational value of open water wetlands may explain its higher value than other types of wetlands (Bin, 2005; Ghermandi et al., 2010; Reynolds & Regalado,

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Zenda Farms Community Picnic: Celebration of open space and agricultural heritage

Agricultural land or farmland preservation can positively affect nearby housing prices.

2002). Most wetlands in the Thousand Island Region are emergent or forested/shrub wetlands, which either negatively affect property value or are insignificant. Although these wetlands may decrease property values, they provide important ecosystem services and recreational opportunities.

Agricultural land or farmland preservation can positively affect nearby housing prices. In a study conducted in Pennsylvania, it was found that agricultural conservation easements affected housing prices differently by county. The affect was found to be negative in Chester County, a more metropolitan county, and positive in York County. The negative affect in Chester County may be due to the magnitude of disamenity from conserved open space. Agricultural conservation easements would reduce agricultural production, which may outweigh the benefits of open space in a more metropolitan area like Chester County. York County, a less urban county, may value open space more because of its rurality (Yoo & Ready, 2016). Farmland amenities play a large role in consumer willingness to pay for proximity to agricultural lands. Public preferences indicate that agricultural land preservation is valued because it protects the agrarian nature of the community as well as heritage values, rural values, and access to fresh food supplies. People also derive value from amenity-related uses such as pick-your-own fruits and vegetables, farm tours, and hiking or bird-watching (Bergstrom & Ready, 2009).

TILT's preservation of agricultural land offers value to the housing market and the local community. Consumers' willingness to pay for agricultural land preservation, as indicated by positive effects on housing prices, shows the benefits of preserving farmland.

TILT's preservation of agricultural land offers value to the housing market and the local community. Consumers' willingness to pay for agricultural land preservation, as indicated by positive effects on housing prices, shows the benefits of preserving farmland. In the Thousand Islands, the preservation of farmland preserves the local heritage and rural values of the area, and provides the local community and visitors with amenities such as bird-watching and farm tours at Zenda Farms. The agricultural land in the area is valuable to many different parts of the community, including economically and culturally.

Proximity to open spaces offers both aesthetic properties and natural amenities, both of which are valued highly by consumers. Some studies argue that the reason open space increases home values is because consumers value the prevention of development more than the actual amenities associated with the land. More research is needed to determine with characteristics consumers value the most.

In-migration

Recently, articles have discussed rural in-migration and the effects open space may have on migration rates. Migration and regional economic studies suggest that migrants are attracted by amenities nearly as often as by low taxes (Waltert & Schlapfer, 2010). One econometric study stated, “natural amenities can increase economic growth in rural areas. Rural areas with natural amenities can also leverage their amenities to increase activities such as tourism” (Deller, Tsai, Marcouiller, & English, 2001). However, one problem with many of these studies is distinguishing between natural amenities and other amenities that are more prevalent in urban areas.

The physical qualities of the landscape, often referred to as the rural idyll, often attract people who are looking to escape urban congestion. Highly educated consumers with high incomes and aged between 35 and 64 are more likely to state that they were attracted to a specific region because of its rural idyll. This leads to an in-migration of high income, older population (Bijker, Haartsen, & Strijker, 2012).

Although there are studies demonstrating the effect of open space on in-migration, many other factors affect in-migration and are likely more significant drivers of migration patterns. These factors include local taxes, population density and access to technology, amongst others. (Rupasingha, Liu, & Partridge, 2015).

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CHRIS MURRAY PHOTOGRAPHY



Crooked Creek Preserve: Largest class I wetland in the Thousand Islands

Conclusion

Through a review of academic literature applied to the Thousand Island Region, studies and research have shown that preservation of open space can have benefits to the local community, economy, and environment.

The Thousand Island Land Trust's (TILT) mission is "to conserve the natural beauty, diverse wildlife habitats, water quality, and outdoor recreation opportunities of the Thousand Islands region" ("About TILT," 2015). Through a review of academic literature applied to the Thousand Island Region, studies and research have shown that preservation of open space can have benefits to the local community, economy, and environment. TILT's conservation of important landscapes, such as emergent wetlands and grasslands, produces rich ecosystem services. These services range from environmental services, such as biodiversity protection, to community services, including aesthetic value and water filtration. Open space preservation also makes the Thousand Island Region a popular destination for tourism, agritourism, and recreational activities. TILT's protection of agricultural land allows for agritourists to experience the area's culture and heritage, while also allowing for recreational activities such as farmland tours and picking fruits and vegetables from the community garden. The trail system provides value both to tourists, who use the trails for hiking and birdwatching, and to residents, who use the trails for day-to-day purposes. There is extensive research on how preservation of open space affects the housing market. The aesthetics of open space, as well as the prevention of development, make the land TILT protects extremely valuable. This value spills over into the parcels adjacent to conserved land. Open space preservation affects a wide array of economic and environmental factors in a positive manner. TILT's conservation of 9,000 acres of open space creates value for the Thousand Island Region.

FEATHERS IN FLIGHT PRODUCTIONS



Conserved shorelines of the Picton Island conservation easement

Bibliography

- About TILT. (2015, April 2). Retrieved July 7, 2017, from <https://tilandtrust.org/about-tilt>
- Asabere, P. K., & Huffman, F. E. (2009). The Relative Impacts of Trails and Greenbelts on Home Price. *Journal of Real Estate Finance and Economics*, 38(4), 408–419. <https://doi.org/10.1007/s11146-007-9089-8>
- Bergstrom, J. C., & Ready, R. C. (2009). What Have We Learned from Over 20 Years of Farmland Amenity Valuation Research in North America? *Review of Agricultural Economics*, 31(1), 21–49. <https://doi.org/10.1111/j.1467-9353.2008.01424.x>
- Bijker, R. A., Haartsen, T., & Strijker, D. (2012). Migration to less-popular rural areas in the Netherlands: Exploring the motivations. *Journal of Rural Studies*, 28(4), 490–498. <https://doi.org/10.1016/j.jrurstud.2012.07.003>
- Bin, O. (2005). A semiparametric hedonic model for valuing wetlands. *Applied Economics Letters*, 12(10), 597–601. <https://doi.org/10.1080/13504850500188505>
- Brander, L. M., Florax, R., & Vermaat, J. E. (2006). The empirics of wetland valuation: A comprehensive summary and a meta-analysis of the literature. *Environmental & Resource Economics*, 33(2), 223–250. <https://doi.org/10.1007/s10640-005-3104-4>
- Carpio, C. E., Wohlgenant, M. K., & Boonsaeng, T. (2008). The demand for agritourism in the United States. *Journal of Agricultural and Resource Economics*, 33(2), 254–269.
- Chen, W.-J., & Law, S.-C. (2012). What is the value of eco-tourism? An evaluation of forested trails for community residents and visitors. *Tourism Economics*, 18(4), 871–885. <https://doi.org/10.5367/te.2012.0146>
- Cordell, H. K., Green, G. T., Leeworthy, V. R., Stephens, R., Fly, M. J., & Betz, C. J. (2005). United States of America: outdoor recreation. Retrieved from <https://www.treesearch.fs.fed.us/pubs/download/21302.pdf>
- Corning, S. E., Mowatt, R. A., & Chancellor, H. C. (2012). Multiuse Trails: Benefits and Concerns of Residents and Property Owners. *Journal of Urban Planning and Development-Asce*, 138(4), 277–285. [https://doi.org/10.1061/\(ASCE\)UP.1943-5444.0000124](https://doi.org/10.1061/(ASCE)UP.1943-5444.0000124)
- Daams, M. N., Sijtsma, F. J., & Vlist, A. J. van der. (2016). The Effect of Natural Space on Nearby Property Prices: Accounting for Perceived Attractiveness. *Land Economics*, 92(3), 389–410. <https://doi.org/10.3368/le.92.3.389>
- De Valck, J., Landuyt, D., Broekx, S., Liekens, I., De Nocker, L., & Vranken, L. (2017). Outdoor recreation in various landscapes: Which site characteristics really matter? *Land Use Policy*, 65, 186–197. <https://doi.org/10.1016/j.landusepol.2017.04.009>
- Deller, S. C., Tsai, T. H., Marcouiller, D. W., & English, D. B. K. (2001). The role of amenities and quality of life in rural economic growth. *American Journal of Agricultural Economics*, 83(2), 352–365. <https://doi.org/10.1111/0002-9092.00161>
- Ellingson, L. J., Seidl, A. F., & Loomis, J. B. (2011). Comparing tourists' behaviour and values of land use changes: a focus on ranch land open space in Colorado. *Journal of Environmental Planning and Management*, 54(1), 55–69. <https://doi.org/10.1080/09640568.2010.502756>
- Ermagun, A., & Lindsey, G. (2016). Differences in Spending by Local Trail Users Two-Part Model of Expenditures. *Transportation Research Record*, (2598), 58–66. <https://doi.org/10.3141/2598-07>
- Fishing the St. Lawrence River - NYS Dept. of Environmental Conservation. (n.d.). Retrieved July 7, 2017, from <http://www.dec.ny.gov/outdoor/29956.html>
- Ghermandi, A., van den Bergh, J. C., Brander, L. M., de Groot, H. L., & Nunes, P. A. (2008). The economic value of wetland conservation and creation: A meta-analysis. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1273002
- Ghermandi, A., van den Bergh, J. C. J. M., Brander, L. M., de Groot, H. L. F., & Nunes, P. A. L. D. (2010). Values of natural and human-made wetlands: A meta-analysis. *Water Resources Research*, 46, W12516. <https://doi.org/10.1029/2010WR009071>
- Hawes, E., & Smith, M. (2005). Riparian buffer zones: Functions and recommended widths. Prepared for Eightmile River Wild and Scenic Study Committee. Retrieved from http://eightmileriver.org/resources/digital_library/appendices/09c3_Riparian%20Buffer%20Science_YALE.pdf
- He, J., Dupras, J., & Poder, T. G. (2017). The value of wetlands in Quebec: a comparison between contingent valuation and choice experiment. *Journal of Environmental Economics and Policy*, 6(1), 51–78. <https://doi.org/10.1080/21606544.2016.1199976>
- Heintzelman, M. D. (2010). The Value of Land Use Patterns and Preservation Policies. *B E Journal of Economic Analysis & Policy*, 10(1), 39.
- Henderson, J. E., Grado, S. C., Munn, I. A., & Jones, W. D. (2010). Economic impacts of wildlife-and fisheries-associated recreation on the Mississippi economy: an input-output analysis. Forest and Wildlife Research Center. *Research Bulletin FO429. Mississippi State University*. Retrieved from http://www.fwrc.msstate.edu/pubs/wildlife_impacts.pdf
- Hughes, R. M. (2015). Recreational fisheries in the USA: economics, management strategies, and ecological threats. *Fisheries Science*, 81(1), 1–9. <https://doi.org/10.1007/s12562-014-0815-x>

- Izon, G. M., Hand, M. S., McCollum, D. W., Thacher, J. A., & Berrens, R. P. (2016). Proximity to Natural Amenities: A Seemingly Unrelated Hedonic Regression Model with Spatial Durbin and Spatial Error Processes. *Growth and Change*, 47(4), 461–480. <https://doi.org/10.1111/grow.12147>
- Kolstoe, S., & Cameron, T. A. (2017). The Non-market Value of Birding Sites and the Marginal Value of Additional Species: Biodiversity in a Random Utility Model of Site Choice by eBird Members. *Ecological Economics*, 137, 1–12. <https://doi.org/10.1016/j.ecolecon.2017.02.013>
- Lantz, V., Boxall, P. C., Kennedy, M., & Wilson, J. (2013). The valuation of wetland conservation in an urban/peri urban watershed. *Regional Environmental Change*, 13(5), 939–953. <https://doi.org/10.1007/s10113-012-0393-3>
- Ma, S., & Swinton, S. M. (2011). Valuation of ecosystem services from rural landscapes using agricultural land prices. *Ecological Economics*, 70(9), 1649–1659. <https://doi.org/10.1016/j.ecolecon.2011.04.004>
- Metz, Neil. “Value for Open Space: Protection and Access Level.” *Growth and Change* 48.1 (2017): 127-152.
- Millennium Ecosystem Assessment (Program) (Ed.). (2005). *Ecosystems and human well-being: synthesis*. Washington, DC: Island Press.
- New York Department of Environmental Conservation. (n.d.). N.E. Lake Ontario—St. Lawrence Basin. New York Department of Environmental Conservation.
- Nilsson, P. (2015). The influence of urban and natural amenities on second home prices. *Journal of Housing and the Built Environment*, 30(3), 427–450. <https://doi.org/10.1007/s10901-014-9421-6>
- Ninan, K. N., & Inoue, M. (2013). Valuing forest ecosystem services: What we know and what we don't. *Ecological Economics*, 93, 137–149. <https://doi.org/10.1016/j.ecolecon.2013.05.005>
- Orens, A., & Seidl, A. (2009). Working lands and winter tourists in the Rocky Mountain West: a travel cost, contingent behaviour and input-output analysis. *Tourism Economics*, 15(1), 215–242.
- Parent, O., & vom Hofe, R. (2013). Understanding the impact of trails on residential property values in the presence of spatial dependence. *Annals of Regional Science*, 51(2), 355–375. <https://doi.org/10.1007/s00168-012-0543-z>
- Parente, G., & Bovolenta, S. (2012). *The role of grassland in rural tourism and recreation in Europe*. (P. Golinski, M. Warda, & P. Stypinski, Eds.) (Vol. 17). Poznan: Polish Grassland Soc-Polskie Towarzystwo Lakarskie.
- Poudeh, J., Munn, I. A., & Henderson, J. E. (2017). Economic contributions of wildlife watching recreation expenditures (2006 & 2011) across the U.S. south: An input-output analysis. *Journal of Outdoor Recreation and Tourism-Research Planning and Management*, 17, 93–99. <https://doi.org/10.1016/j.jort.2016.09.008>
- Poudyal, N. C., Hodges, D. G., Fenderson, J., & Tarkington, W. (2010). Realizing the Economic Value of a Forested Landscape in a Viewshed. *Southern Journal of Applied Forestry*, 34(2), 72–78.
- Reynolds, J. E., & Regalado, A. (2002). The Effects of Wetlands and Other Factors on Rural Land Values. *Appraisal Journal*, 70(2), 182–190.
- Rupasingha, A., Liu, Y., & Partridge, M. (2015). Rural Bound: Determinants of Metro to Non-Metro Migration in the United States. *American Journal of Agricultural Economics*, 97(3), 680–700. <https://doi.org/10.1093/ajae/aau113>
- Sardana, K., Bergstrom, J. C., & Bowker, J. M. (2016). Valuing setting-based recreation for selected visitors to national forests in the southern United States. *Journal of Environmental Management*, 183, 972–979. <https://doi.org/10.1016/j.jenvman.2016.09.050>
- Sonter, L. J., Watson, K. B., Wood, S. A., & Ricketts, T. H. (2016). Spatial and Temporal Dynamics and Value of Nature-Based Recreation, Estimated via Social Media. *Plos One*, 11(9), e0162372. <https://doi.org/10.1371/journal.pone.0162372>
- Waltert, F., & Schlapfer, F. (2010). Landscape amenities and local development A review of migration, regional economic and hedonic pricing studies. *Ecological Economics*, 70(2), 141–152. <https://doi.org/10.1016/j.ecolecon.2010.09.031>
- Yoo, J., & Ready, R. (2016). The impact of agricultural conservation easement on nearby house prices: Incorporating spatial autocorrelation and spatial heterogeneity. *Journal of Forest Economics*, 25, 78–93. <https://doi.org/10.1016/j.jfe.2016.09.001>



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