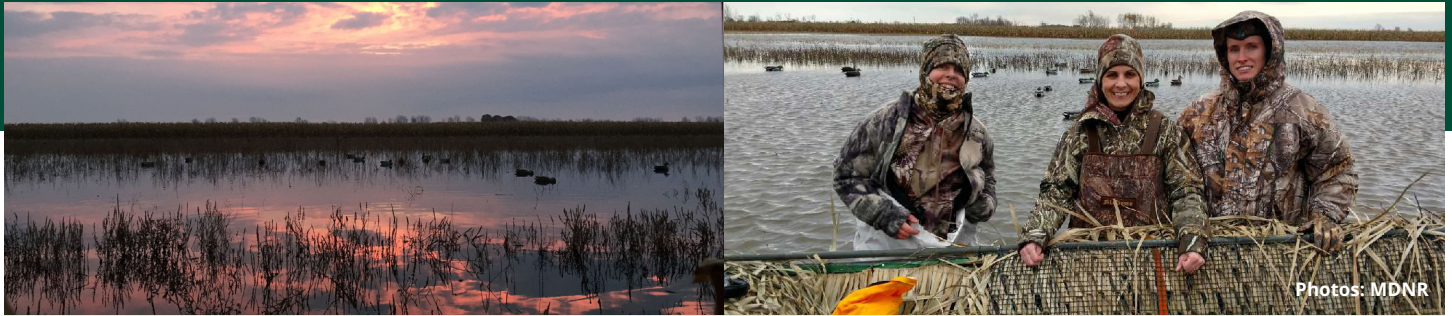


# WHAT ARE WE MANAGING FOR? STAKEHOLDERS' ECOSYSTEM SERVICES PREFERENCES



## Why?

Ecosystem services (ES) are beneficial natural resource outcomes from landscape conditions and ecological processes and can be influenced by natural disturbances or management actions. For Great Lakes coastal wetlands, ES may include biogeochemical and hydrological processes, water quality and quantity management, erosion control, carbon storage, fish and wildlife habitat, human food provisioning, and consumptive and non-consumptive recreation, among others. State and federal agencies are tasked with managing public lands for wildlife habitat and wildlife-related recreation, therefore understanding stakeholder preferences of ES is necessary to enhance wildlife management area (WMA) goals for a broader public, especially as it relates to the often undervalued social and cultural values.

This information can help local community planning achieve improved quality of life for residents and visitors. It can also impact wildlife conservation funding by expanding the stakeholder base who support wildlife conservation that is needed as projections for traditional conservation funding decline. Hence, agencies and community decision-makers need this information to evaluate trade-offs between different options.

## Objectives

- Understand and compare stakeholders' importance placed on Ecosystem services (ES).
- Understand and compare stakeholders' attitudes about the ES provided by coastal WMAs.
- Inform policy and planning processes important for ensuring WMA goals address societal goals.

## Background

The study area included five state-owned WMAs and one federally owned WMA located in southeastern Michigan from Lake Huron's Saginaw Bay region south to western Lake Erie (Figure 1). While the five state-owned lands are managed primarily for wetlands conservation for waterfowl and waterfowl hunting, these lands also provide ample non-hunting-related wildlife recreation opportunities. The

federally owned lands are primarily managed for wildlife habitat for migratory birds. Three of the WMAs are in top birdwatching areas in Michigan. State and federal investment in infrastructure for wetland and habitat management occurs to achieve WMA objectives. Results from a 2018 visitor-use study revealed that angling is the most dominant use after waterfowl hunting in autumn, and 82% of respondents come from within a 50-mile radius, which is represented by a 31-county area in Central and Southeast Michigan.

## Methods

- In 2019, responses from Internet and mail-back surveys sent to randomly selected samples of waterfowl hunters (n = 316; 14.8% response rate), birdwatchers (n = 1,133; 24.0% response rate), anglers (n = 254; 10.2% response rate), and community members (n = 84; 2.8% response

rate) from the 31 counties in Central and Southeastern Michigan proximate to the 6 WMAs of this project were used for this research.

- The Cornell Lab of Ornithology provided the birdwatcher sampling frame from its list of registered eBird users who reported bird sightings in the 31-county area and were Michigan residents.
- The 2018 Michigan resident waterfowl hunting license purchasers from the 31-county area, and registrants of the managed waterfowl hunters at the study sites were the sampling frame for waterfowl hunters.
- For anglers, the sampling frame was purchasers of the 2018 Michigan resident fishing license from the 31-county area.
- Waterfowl hunter and angler lists were compared to each other and duplicates removed.
- For community members, a randomly selected sample of non-seasonal currently occupied residences within a 50-mile radius of one of the study sites was purchased from Dynata, Inc.
- Data from the four groups were merged and they were treated as 4 distinct groups in analyses, which included one-way ANOVA tests with post-hoc pairwise

Figure 1. Lake Huron’s Saginaw Bay region south to western Lake Erie



- comparison using Tukey and Bonferroni correction.
- The Michigan State University Institutional Review Board approved this study (Project 00003031) on August 9, 2019.

## Results

### Sociodemographics

Variable	Birdwatchers	Community members	Waterfowl hunters	Anglers
Average age	57 years	55 years	49 years	48 years
Male	39%	58%	96%	75%
White	98%	83%	98%	95%
Education (≥associate or bachelor’s degree)	83%	73%	59%	50%
Income < \$50,000	23%	17%	15%	24%

### Overall importance of ES

- Scores of importance were relatively high across all ES.
- Cultural and provisioning ES scored the highest, including:
  - Places for future generations to know and experience nature.
  - Places for abundant wildlife, fish, and plants.
  - Places that provide public access to nature.
  - Places free from development where human impact is minimal.
- Lowest scores were for places for spiritual renewal; providing hunting, fishing, or trapping opportunities; and places that provide a source of food for humans.
- However, all of these still had over 52% of respondents reporting that they were either somewhat or very important.
- Waterfowl hunters and anglers ranked places for providing hunting, fishing, or trapping opportunities as their most important ES more than any other ES.
- Differences between stakeholders in the importance they place on all but one ES (places for sense of community and belonging).

## Overall agreement that WMA management provides ES

- Majority agreed that most ES are provided by WMA management.
- Most agreement that WMAs provide:
  - Public access to nature.
  - Abundant wildlife, fish, and plants.
  - Wildlife watching, hiking, camping, and paddling, etc.
  - Enjoyable scenery, sights, and/or sounds.
  - Future generations to know and experience nature.
- Places that provide for human health (clean air and clean water) had the largest difference in scores between importance of ES and agreement that WMA management provides this ES, suggesting that the public may not make a connection between coastal wetland WMAs and human health benefits.

## Discussion

The results from this study reveal much common ground among the different stakeholder groups regarding the value of public lands for future generations, places for nature and access to it with minimal human impact, and for human health, demonstrating that current WMA goals are meeting broader expectations of ES. In other words, respondents value areas for their natural purpose of social

and cultural ES. There was much common ground, except for waterfowl hunters who had much higher value on places to provide access for consumptive activities such as hunting, fishing, or trapping activities than birdwatchers. Because these lands were purchased with Pittman-Robertson funds, state WMAs are the place to provide access for consumptive activities such as hunting, fishing, or trapping, in addition to other ES. If communities want to facilitate access to nature, support for natural resource management and recreation for current and future generations, then prioritizing master planning and zoning for these ES are needed. Communities are well-suited to facilitate access to non-consumptive wildlife-recreation and other opportunities such as hiking, camping, paddling, or enjoying the sights and sounds of nature, both on WMAs and on other public lands. Alignment of stakeholder, purpose, and desired ES is needed for informing outreach, education, and engagement efforts. For example, communication to consumptive stakeholders might emphasize those opportunities at the WMA; communication to non-consumptive users might emphasize those opportunities at the WMA when complementary to consumptive activities (e.g., waterfowl hunting) or other proximate areas.

**Adapted from original research:** Avers, B.A. (2022). Exploring stakeholders' support for and stewardship of Michigan's coastal wildlife management areas. [Doctoral dissertation, Michigan State University]

## Key findings

- Stakeholders recognize benefits received from nature.
- Much common ground on social and cultural ecosystem services (ES), such as places for future generations to know and experience nature; places for abundant wildlife, fish, and plants; and places that provide public access to nature.
- Respondents perceive wildlife management areas (WMAs) were already providing the ES benefits they most desired. WMAs can be used for both consumptive and non-consumptive wildlife activities, and because different stakeholders value these opportunities differently, managers will need to understand this and develop tailored engagement opportunities.
- Additional outreach, education, and engagement opportunities exist to help bridge the gap on some ES dimensions that are less apparent, and less well known (e.g., regulating services such as flood control, storage of greenhouse gasses).

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