Strategic Use of Deer Management Cooperatives in Conservation Planning

Hunter P. Pruitt, Nick J. Meng, Bynum B. Boley, Gino J. D’Angelo, Brian P. Murphy, Mark D. McConnell
warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA
Outline

• What are Deer Management Cooperatives?
• Why are they important?
• Land Cover Analysis
• Survey Results
• ISA Results
• Management Implications
Research Question

• Are DMCs providing higher quality habitat within boundaries compared to surrounding landscapes?

• Do differing DMC member motivations change member satisfaction?
Background

• Group of private landowners or hunting clubs voluntarily working together to manage white-tailed deer.

• Popularity increased in 1990’s to 2000’s.
Interest

- Quality habitat
- Habitat connectivity
- Managed deer density
- Lowered cost
- Broader conservation potential
Study Area
Deer Management Cooperatives

Landcover
- Georgia: 7 Co-ops (70.4k acres)
- Missouri: 7 Co-ops (27.5k acres)
- Michigan: 8 Co-ops (41.2k acres)
- New York: 10 Co-ops (51.6k acres)
- Total: 190k Acres
Methods

- Identify cooperatives
- Digitize land cover
- Randomly sample 10 (250 or 500 m$^2$) cells inside co-op and adjacent landscape.
- Quantify land cover differences
Georgia Land Cover: Inside Cooperatives vs. Adjacent Landscape

Co-op Landscape

Percent of Landscape

Closed Canopy Deciduous  Early Successional  Herbaceous Wetland  Managed Exotic Grasses  Open Evergreen  Row Crop  Thinned Deciduous  Thinned Evergreen  Wildlife Opening

Landcover Type
Missouri Land Cover: Inside Cooperatives vs. Adjacent Landscape

Percent of Landscape

Landcover Type

- Closed Canopy Deciduous
- Early Successional
- Managed Exotic Grasses
- Row Crop
- Thinned Deciduous
- Wildlife Opening
- Woody Wetland

Co-op Landscape
Michigan Land Cover: Inside Cooperatives vs. Adjacent Landscape

Landcover Type

- Early Successional
- Herbaceous Wetland
- Managed Exotic Grasses
- Row Crop
- Thinned Deciduous
- Wildlife Opening
- Woody Wetland

Co-op Landscape

Graph showing comparisons between Michigan land cover inside cooperatives and adjacent landscapes.
What makes DMC’s Successful?

1. Landscapes  2. Members
Important Drivers of Co-op Formation

Preceived Hunting Quality

I believe that 10 years from now (2027), the deer hunting on my co-op will be...

- Much Better: 32.7%
- Better: 46%
- About the Same: 20.2%
- Worse: 0.6%
- Much Worse: 0.4%

Prior to DMC: 5.69
Current: 7.24

+15.5%
As a member of a DMC how likely are you too..

<table>
<thead>
<tr>
<th>Action</th>
<th>Likelihood</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifically manage habitat for species other than white-tailed deer</td>
<td>5.29</td>
<td>5.10</td>
</tr>
<tr>
<td>Increase days per year spent on habitat management</td>
<td>5.57</td>
<td>5.42</td>
</tr>
<tr>
<td>Increase money per year spent on habitat management</td>
<td>4.99</td>
<td>5.14</td>
</tr>
</tbody>
</table>

1.00  2.00  3.00  4.00  5.00  6.00  7.00

- **Very Unlikely** (1)
- **Unlikely** (2)
- **Slightly Unlikely** (3)
- **Neither Unlikely or Likely** (4)
- **Slightly Likely** (5)
- **Likely** (6)
- **Very Likely** (7)
DMC Importance-Satisfaction Analysis

- Q1: Keep Up The Good Work
- Q2: Concentrate Here
- Q3: Low Priority
- Q4: Possible Overkill
DMC Importance-Satisfaction Analysis

Attribute List

A. Seeing mature bucks when hunting
B. Seeing deer when hunting
C. The number of deer you kill
D. Harvesting mature bucks
E. Harvesting female deer
F. The antler and body size of bucks harvested
G. The number of fawns seen each deer season
H. Co-op harvest restrictions on bucks that limit buck harvest more than current state regulations
I. Neighbors following QDM practices
J. Co-op members sharing similar harvest goals
K. Control over deer density
L. Habitat for game animals other than deer
M. Habitat for non-game animals
N. Increased habitat management on your co-op
O. Land stewardship on your co-op
P. The size of your co-op (in acres)
Q. Relationships between co-op members/hunters
R. The amount of technical support received from your state wildlife agency
S. The amount of technical support received from conservation NGO’s
T. Forming relationships with neighboring landowners
U. Land-lease value of co-op property
V. Preventing crop damage from wildlife
Importance-Satisfaction Analysis

Overall ISA of Deer Management Cooperative Satisfaction

- Q1: Keep Up the Good Work
  - B. Seeing deer when hunting
  - C. The number of deer you kill
  - E. Harvesting female deer
  - G. The number of fawns seen each deer season
  - H. Co-op harvest restrictions on bucks that limit buck harvest more than current state regulations
  - I. Neighbors following QDM practices
  - J. Co-op members sharing similar harvest goals
  - Q. Relationships between co-op members/hunters

- Q2: Concentrate Here
  - I

- Q3: Low Priority
  - D

- Q4: Possible Overkill
  - C
Motivational Orientation Questions

**Disconnect: (CBA: 0.834)**
1) To have time to disconnect from technology
2) To experience solitude
3) To get away from crowds of people
4) To get away from the regular routine

**Locavore: (0.875)**
5) To know where my meat/food comes from
6) To be more sustainable/procure meat locally
7) To harvest deer for eating

**Social Fabric: (0.882)**
8) To be with others who enjoy the same things as me
9) To be with people of similar values
10) To spend time with family and friends

**Quality Harvest: (0.740)**
11) To harvest a mature buck
12) To harvest a trophy buck
13) To hunt a specific mature buck
14) To outwit white-tailed deer using sophisticated techniques
Cluster 1 ISA: Solitude Member

Solitude Member Importance-Satisfaction (N = 53)

- Q1: Keep Up the Good Work
- Q2: Concentrate Here
- Q3: Low Priority
- Q4: Possible Overkill

A. Seeing mature bucks when hunting
B. Seeing deer when hunting
C. The number of deer you kill
I. Neighbors following QDM practices
U. Land-lease value of co-op property
Cluster 2 ISA: Social Member

Social Member Importance-Satisfaction (N = 91)

Q2: Concentrate Here
Q1: Keep Up the Good Work
Q3: Low Priority
Q4: Possible Overkill

B. Seeing deer when hunting
C. The number of deer you kill
I. Neighbors following QDM practices
J. Co-op members sharing similar harvest goals
K. Control over deer density
Q. Relationships between co-op members/hunters
U. Land-lease value of co-op property

Importance

Satisfaction
Cluster 3 ISA: Representative Member

Representative Member Importance-Satisfaction (N = 224)

Q2: Concentrate Here
Q1: Keep Up the Good Work
Q3: Low Priority
Q4: Possible Overkill

B. Seeing deer when hunting
D. Harvesting mature bucks
G. The number of fawns seen each deer season
H. Co-op harvest restrictions on bucks that limit buck harvest more than current state regulations
I. Neighbors following QDM practices
J. Co-op members sharing similar harvest goals
Q. Relationships between co-op members/hunters
T. Forming relationships with neighboring landowners
Cluster 4 ISA: Quality Harvest Member

Quality Harvest Member Importance-Satisfaction (N = 91)

- **Q1:** Keep Up the Good Work
  - A. Seeing mature bucks when hunting
  - B. Seeing deer when hunting
  - D. Harvesting mature bucks
  - G. The number of fawns seen each deer season
  - H. Co-op harvest restrictions on bucks that limit buck harvest more than current state regulations
  - I. Neighbors following QDM practices
  - J. Co-op members sharing similar harvest goals
  - Q. Relationships between co-op members/hunters
  - T. Forming relationships with neighboring landowners

- **Q2:** Concentrate Here
  - I
  - D
  - K

- **Q3:** Low Priority
  - I
  - D
  - K
  - R
  - V
  - U

- **Q4:** Possible Overkill
  - A
  - J
  - B
  - H
  - G
  - Q

**Axes:**
- X: Importance (3 to 7)
- Y: Satisfaction (3.5 to 7)

**Legend:**
- A
- B
- C
- D
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- O
- P
- Q
- R
- S
- T
- U
- V
- W
- X
- Y
- Z
Discussion

• Higher quality habitat: game and non-game
• Connecting quality habitat
• More early successional, managed forest, and wildlife openings.
• Lower costs for state and federal agencies
• Multiple motivations for DMC membership/formation
• Ease of conservation implementation
• Satisfied hunters
• Healthy deer herds
Management Implications

• Use of DMCs to increase quality habitat
• Increasing connectivity for active management
• Importance of DMC member motivational diversity
Acknowledgements

Larry Williams, USFWS
Nick Meng, Warnell
Brian Murphy, QDMA
Matt Ross, QDMA
Kip Adams, QDMA

Acknowledgements