

# Making Decisions for White-tailed Deer Buck Hunting in New York State

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*Our goal is to develop a decision framework that uses objective criteria to evaluate alternative strategies for reducing harvest of yearling bucks for different areas of New York State.*

## A Structured Decision Making Framework to Evaluate Alternative Buck Harvest Management Strategies

Deer hunters in New York State have diverse views about buck hunting. Although many hunters have voiced a desire to reduce yearling (1.5 year old) buck take to have a greater chance of taking an older buck with larger antlers, many hunters also prefer to have the freedom to choose which buck they harvest and to practice restraint voluntarily.

Changing the way that hunters pursue and take bucks is not necessary for the health of New York's deer herd, but it might better satisfy hunter desires in some portions of the state. To help managers make informed recommendations, the New York State Department of Environmental Conservation (DEC) developed a systematic process to evaluate potential buck hunting strategies in a way that accounts for regional variation in hunter values and the impacts of the strategies.

### **Structured Decision Making (SDM):**

SDM is an organized way to identify and evaluate creative options and make choices in complex decision situations. SDM is designed to give insight to decision makers about how well their objectives may be satisfied by alternative courses of action and clarifies the trade-offs that may exist between potential actions. It is especially helpful when stakeholders have conflicting ideas of how a resource should be managed. SDM uses scientific evaluation of population biology and stakeholder values to identify an outcome that may best balance competing interests. We used SDM to evaluate alternative buck harvest strategies and incorporate the biological and social aspects of buck harvest management in New York State.

### **The Steps of SDM:**

1. Define the Problem
2. Determine Objectives
3. Identify Alternative Management Actions
4. Evaluate Consequences (outcomes) of the Management Actions
5. Evaluate Tradeoffs Among Objectives
6. Decide and Take Action

## A Region-Specific Approach to Buck Harvest Management

Seven different **Buck Management Zones (BMZs)** were evaluated for optimal buck harvest strategies.

We analyzed ecological, deer harvest, and management data to identify logical groupings of Wildlife Management Units (WMUs) as BMZs.

BMZs are the level at which hunter preferences were measured and alternative buck harvest strategies were considered.

We decided in advance to delineate only

5-7 BMZs. We wanted to strike a

balance between capturing important regional differences in deer biology

and hunter desires and not

over-complicating our deer

hunting regulations. Because of

varying season structures,

Southern Zone WMUs were

separated from Northern Zone

WMUs, and Northern Zone WMUs

were grouped into two BMZs based on where Deer Management Permits

(DMPs; antlerless tags) are used. Additionally, because of distinctions in season structure and management authority, WMUs 1C (Suffolk County) and 3S (Westchester County) were treated as one BMZ.

We used land cover data (e.g., % forest and agriculture in each WMU), a winter severity index (average number of days with >15" of snow in each WMU), a crop productivity index (based on soil characteristics), and several deer population parameters (yearling antler beam diameter, mean fawn to doe ratio, buck kill per square mile) to create groupings. We then considered the number of deer hunter survey responses we had for each BMZ to ensure that each BMZ had enough responses to adequately represent hunter interests for decision making.

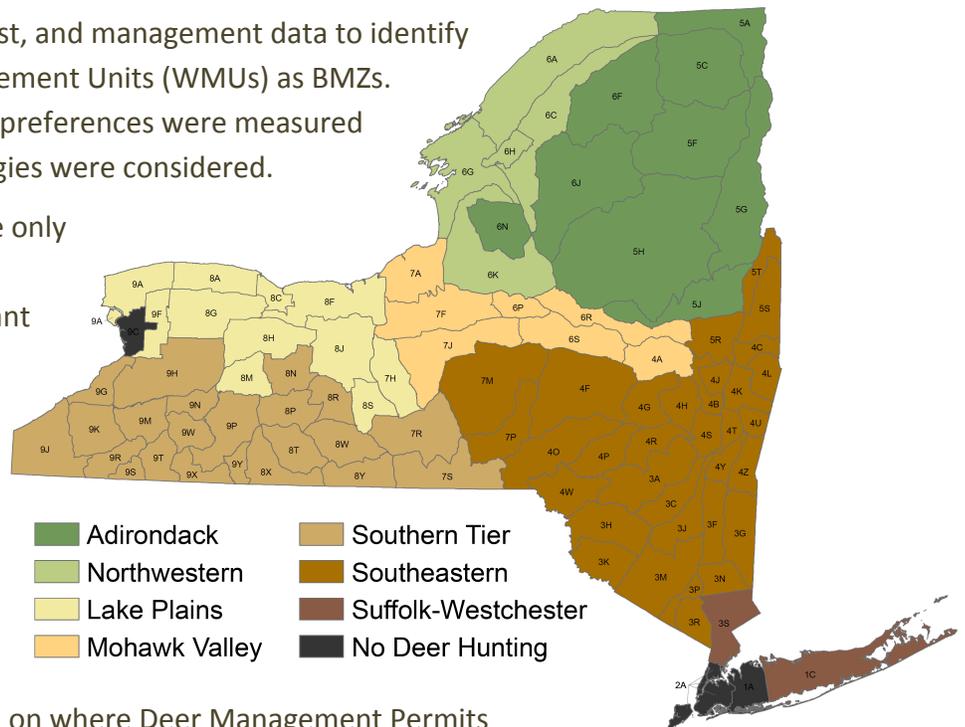


Photo: Dick Thomas

## Objectives for Buck Harvest Management in New York

1. Maximize hunter satisfaction
  - See/take a “big” ( $\geq 2.5$  year old) buck
  - See/take “any” ( $\geq 1.5$  year old) buck
  - See/take “any deer” (fawns, does, bucks)
  - Hunting opportunity and simple regulations (other satisfaction)
2. Minimize impact on DEC’s ability to manage and monitor deer populations
3. Minimize management costs

## Alternative Harvest Strategies

- No change
- Actively promote voluntary antler restrictions
- 1-buck bag limit (1 buck / hunter / year)
- Shorten the regular firearms season by 1 week in the Southern Zone and 2 weeks in the Northern Zone
- Mandatory antler point restriction (Bow season through the 1st week of regular firearms season)
- Mandatory antler point restriction (All seasons)

Note: because of geographic differences in antler growth, mandatory antler restrictions would be a 4-point on one side rule in the Lake Plains and a 3-point rule everywhere else.

## Consequences / Outcomes

We evaluated how well each of the management alternatives would do at achieving each of the specified objectives. We did this in a couple ways.

1. We created a population model to predict the outcomes of each of the potential management alternatives on the population size, and the number of legally harvestable deer of each age and sex.
2. We surveyed a random sample of hunters throughout New York to determine the desired outcomes of hunters, what aspects of hunting they value, and how important these aspects are. This helped us to determine, for each region, the relative importance of the hunter satisfaction objectives.
3. DEC biologists and law enforcement officers described how each management alternative would influence the ability to manage the population and the cost of management.

## Evaluation of Tradeoffs

Because buck harvest management is primarily a social tool, we placed most of the relative importance weight on hunter satisfaction (75% of decision), followed by population management (15%), and management costs (10%).

For each management alternative, we calculated a “score” to reflect the degree to which each objective was satisfied.



Photo: Dick Thomas

## Relative Score of Various Buck Management Strategies

(Highest score is the “optimal” strategy; top two highlighted for each zone)

	Buck Management Zone						
	Adirondack	Lake Plains	Mohawk Valley	North-western	South-eastern	Southern Tier	Suffolk/Westchester
No Change	<b>0.594</b>	<b>0.466</b>	<b>0.413</b>	<b>0.415</b>	<b>0.427</b>	<b>0.425</b>	<b>0.458</b>
Voluntary Restraint	0.546	<b>0.424</b>	<b>0.372</b>	0.371	0.384	<b>0.382</b>	<b>0.422</b>
1-Buck	0.517	0.392	0.338	0.339	0.344	0.351	0.372
Shorter Season	<b>0.577</b>	0.380	0.320	<b>0.386</b>	0.331	0.333	
MARs (partial season)	0.270	0.225	0.221	0.234	0.197	0.223	
MARs (full season)	0.463	0.340	0.364	0.370	<b>0.402</b>	0.371	0.329

## Next Steps for Buck Harvest Management in New York

The SDM process identified No Change as the optimal buck management strategy in all BMZs, consistent with the desire of a majority of hunters across the state to maintain freedom of choice in buck harvest. However, in light of the desire of many hunters to see more older-age bucks in the population, **DEC plans to increase its efforts statewide to encourage hunters to voluntarily pass up shots at younger, small-antlered bucks.**

Voluntary restraint from taking young bucks can be an effective way to increase the proportion of older-age bucks in the population. Many New York hunters are already practicing voluntary restraint, and their efforts are making a difference. Hunters in New York are now taking more older-age bucks than ever before – more than half of all antlered bucks taken in 2014 were at least 2 years old, and the number of at least 3 year old bucks taken in recent years is up about 30 percent compared to the early 2000s and up approximately 80 percent from the early 1990s. Similarly, other states have seen dramatic shifts in harvest toward older, larger-antlered bucks with active promotion of voluntary restraint by the state wildlife agency and partner organizations. **It is clear that hunter choices matter!**



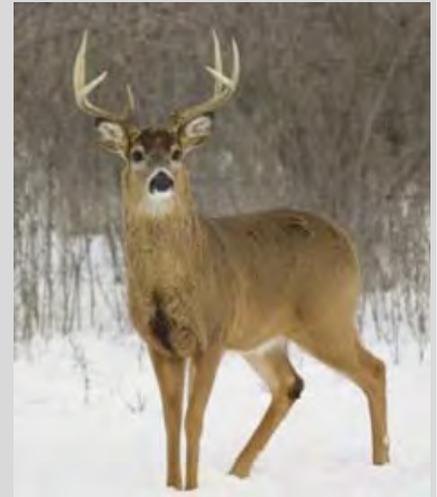
Photo: John Major

## Hunter Survey Highlights

Surveys were mailed to a random sample of 7,000 deer hunters statewide to obtain specific information needed for the SDM process. Approximately 40% of surveys were returned, which was sufficient to provide statistically reliable results for each Buck Management Zone.

### Many hunters are satisfied with their opportunities in New York:

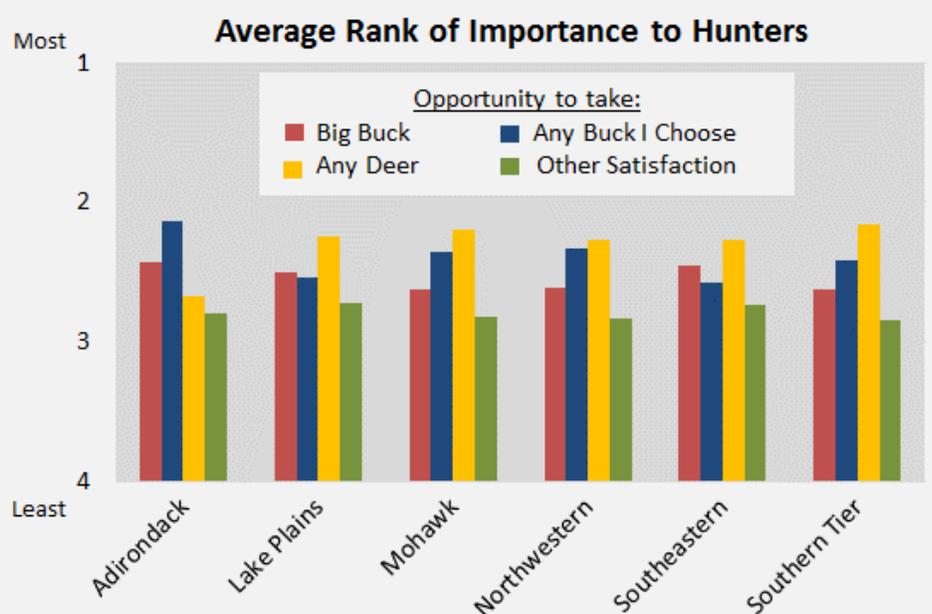
- 58% were moderately or very satisfied with current buck hunting rules.
- 41% were satisfied with their opportunity to take a large-antlered buck, but 25% were dissatisfied; the rest were undecided.



### HOWEVER, hunters have conflicting values about buck hunting:

- Statewide, 57% greatly value their freedom to choose what type of buck to harvest, but 55% greatly value a better chance to take a big, older buck.
- Among Buck Management Zones, 43-53% of hunters said that reducing harvest of young bucks was important or very important, while 29-37% said it was of low or no importance.
- 40-54% expressed high or very high willingness to accept limitations on their freedom of choice to achieve a reduction in harvest of young bucks; 30-46% had low or no willingness to accept restrictions.
- About 33% of hunters were primarily interested in seeing and taking older bucks and were supportive of restrictions on taking young bucks. Another 35% of hunters were primarily interested in the opportunity to take any buck of their choice and were not accepting of limitations of their opportunity. About 17% of hunters seemed to be on both sides of the fence, supportive of accepting restrictions but also highly valuing their freedom of choice. The final 15% were either unsure or not strongly opinionated.
- In most Buck Management Zones, hunters ranked “Opportunity to Take Any Buck I Choose” slightly higher than “Opportunity to Take a Big Buck” (see chart).

The survey did not ask directly about hunter preferences for various buck management strategies, as if a vote. We tried that in a 2010 survey, and the results were inconclusive. Rather, this survey focused on hunters’ values about buck hunting and acceptable tradeoffs.



## **Benefits of the SDM Approach**

SDM brought science into the decision process. Our objectives had to be clearly defined and measurable, and alternative buck management options were assessed systematically using social and biological data. SDM allowed us to consider hunter interests in context with management concerns, and it integrated hunter values with likely outcomes. We tested the SDM process with small changes in the population modeling and hunter survey data, and the outcomes remained consistent.

SDM is an adaptive process. Through our analysis, we identified several areas of uncertainty or information gaps, then incorporated new information as needed. For example, we recognized that we initially placed too much weight on the population management objective, considering that buck management is primarily a social issue. So we reassessed and shifted the greatest amount of decision weight by a large margin to the hunter satisfaction objective. Additionally, we recognized that although “freedom of choice” is a core value for some hunters, early iterations of our SDM analysis only accounted for the relative impacts of each management strategy on hunter opportunity and success rate. While opportunity and success may, over time, be only slightly reduced with regulatory strategies like mandatory antler restrictions, a hunter’s freedom of choice would remain limited. So we used data from the survey to incorporate hunter values about freedom of choice directly into the SDM process.

## **Challenge of the SDM Approach**

Because hunters have divided opinions about buck management strategies and disagree about the importance of reducing harvest of young bucks, even with the SDM process there is no “slam dunk” option for DEC to satisfy all New York hunters. SDM helps identify the option that best balances hunter interests.

## **Acknowledgments:**

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