

## RESEARCH REPORT

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# Duck Hunting on Public Lands in New York

*Findings from a 2020 Hunter Survey*

### PREPARED BY:

William F. Siemer, Richard C. Stedman, and T. Bruce  
Lauber



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## EXECUTIVE SUMMARY

Access to public lands (e.g., state parks, wildlife refuges, state wildlife management areas) and waters (e.g., publically accessible rivers, lakes, bays) plays an important role in waterfowl hunting involvement. In 2020, the New York State Department of Environmental Conservation (DEC) sponsored a survey to better understand hunter use of and beliefs about public lands for duck hunting in New York. This information will help wildlife managers better understand how policies on public lands may affect duck hunter satisfaction and participation.

## METHODS

We collected information from duck hunters using a web-based and a mail survey. This mixed-mode approach provided a cost-effective way to maximize survey sample size. We asked respondents the same questions whether they participated in the survey by mail or online. In cooperation with our DEC Contact Team, we developed a self-administered questionnaire that would improve understanding of what resident hunters value about duck hunting on public land in upstate New York State, especially lands administered by DEC. The questionnaire characterized: days of hunting by waterfowl management zone and land type; beliefs about and attitudes toward duck hunting on different types of public land; ability to access private land for duck hunting; and ratings and rankings of regulatory conditions on satisfaction with duck hunting on public lands.

Waterfowl hunters are required to participate in the New York State migratory game bird Harvest Information Program (HIP). All HIP registrants provide a mailing address and some provide an email address. We drew our sample from records of HIP registrants.

In 2020 there were 12,384 hunters in the target population for this study (i.e., HIP registrants in upstate NYS age 18 or older, who reported that they had hunted ducks in the 2019/20 hunting license year). About 39% (n=4,812) of those hunters provided an email address. From this pool DEC staff drew a sample of 3,000 hunters. Since 39% of the hunter pool provided an email address, DEC staff drew 39% of the sample (n=1,170) from the records of all hunters who provided an email address. These hunters were contacted via email and invited to participate in a web-based survey. The other 61% of the sample (n=1,830) was drawn from the records of hunters who provided only a mailing address. These hunters were contacted by mail and invited to participate in a mail survey. This sampling approach ensured that duck hunters who provided an email, and those who only provided a mailing address, had an equal likelihood of being drawn in the survey sample.

We implemented mail and web-based versions of the duck hunter survey in October and November, 2020. We contacted each non-respondent up to 4 times to encourage response.

After the survey was closed (December 2020), a team of trained phone interviewers at the Cornell Survey Research Institute (SRI) completed a set of follow-up interviews with 100 hunters who did not respond to the survey. The nonrespondent telephone interview contained a set of 18 questions from the survey instrument.

## **STUDY HIGHLIGHTS**

Our findings demonstrate the importance of public lands and waters for the future of duck hunting in upstate New York: we found that about a third of duck hunters in upstate New York hunted exclusively on public lands or waters and about four out of five hunted ducks on public lands or waters during the 2019/20 hunting license year. The finding that duck hunters in upstate New York are heavy users of public lands or waters was consistent with findings from a 2018 survey of duck hunters in New York State.

Data from this study document that finding places to hunt on private land is a challenge for many duck hunters. A majority of respondents described their ability to access private lands for duck hunting as “poor” or “limited.” Most (84%) respondents who hunted only on public lands described their opportunities to access private land as poor or limited. About half of respondents who mostly hunted on public lands described their opportunities to access private lands as “limited.” About a third (32%) of respondents had lost access to private lands for duck hunting in upstate New York in the past 5 years.

One of our study objectives was to identify regulatory conditions that influence satisfactions with hunting on public lands. Across hunter groups, we found that having flexibility on when one can hunt ducks was consistently rated as the condition most important to satisfaction with duck hunting on public lands. For most public land users, reducing conflict with other duck hunters was second in importance to satisfaction with hunting ducks on public lands. Hunters who preferred to use unrestricted public lands seem willing to accept the possibility of hunter conflict in order to have a place to hunt ducks. Having flexibility in when one can hunt was also ranked as most important by hunters who preferred to hunt restricted public lands, but for these hunters satisfaction was also linked to hunting in conditions that limited hunter conflict and set aside some areas as duck refugia.

## ACKNOWLEDGMENTS

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The Survey Research Institute (SRI) at Cornell University conducted nonrespondent follow-up interviews. Nancy Connelly (Cornell Center for Conservation Social Sciences) provided consultation on sampling strategy, data weighting, and analysis. Alexandra Sholk assisted with survey implementation and data coding.

Our survey instrument and request to conduct survey research was reviewed and approved by the Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants Protocol ID# 1101001927).

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## INTRODUCTION

Access to public lands (e.g., state parks, wildlife refuges, wildlife management areas) and waters (e.g., publically accessible rivers, lakes, bays) plays an important role in waterfowl hunting involvement. A previous statewide survey of duck hunters indicated that during the 2016/17 license year roughly 4 out of 5 active duck hunters spent at least 1 day on public lands/waters, and about 1 in 10 hunted exclusively on public lands/waters (Siemer et al. 2018). Although the relative importance of public lands for duck hunting is well known, quantitative information on how much New York hunters use specific types of public land, or what it is that hunters value most about hunting ducks on public lands, has been lacking.

The New York State Department of Environmental Conservation (DEC) manages dozens of wildlife management areas (WMAs) in upstate New York, most of which offer some form of duck hunting opportunity. The various WMA's provide access to lakeshores, bays, rivers, emergent wetlands and beaver ponds. Hunting opportunity can be found in all waterfowl zones. Most WMAs offer unrestricted access for duck hunting (i.e., no special permit required, no special hunting hours or days on these lands). A few WMAs (i.e., Oak Orchard WMA, Tonawanda WMA, Bashakill WMA, Perch Rivers WMA, Upper and Lower Lakes WMA) offer restricted duck hunting opportunities (e.g., special permits may be required, hunter numbers may be limited, shooting times are site-specific). Past surveys of hunters in New York have not been designed to provide detailed information about duck hunting on public lands. Research quantifying hunter use of and beliefs about public lands will help wildlife managers better understand how access policies on DEC lands may affect hunter satisfaction and participation.

In 2020, CCSS and DEC staff collaborated to design a study that would improve understanding of what resident hunters value about duck hunting on public land in upstate New York State, especially lands administered by DEC. In this report, we describe findings from a statewide survey of resident duck hunters completed to address our study objectives.

### Study Objectives

1. Improve understanding of duck hunter use of public lands.
2. Identify what duck hunters find satisfying about regulatory conditions on public lands.
3. Characterize hunters' perceptions of duck hunting experiences on different types of public lands
4. Identify groups of public land hunters and characterize their beliefs, attitudes, and perceptions.

## METHODS

We collected information from duck hunters using a web-based and a mail survey. This mixed-mode approach provided a cost-effective way to maximize survey sample size.

## **Survey Instrument**

In cooperation with a DEC Contact Team, we developed a self-administered questionnaire to address our research objectives (Appendix A). The questionnaire characterized: days of hunting by waterfowl management zone and land type; beliefs about and attitudes toward duck hunting on different types of public land; ability to access private land for duck hunting; and perceived importance of 5 regulatory conditions that may influence satisfaction with duck hunting on public lands. The Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants, Protocol ID# 1101001927) approved the questionnaire for use with human subjects.

## **Sampling**

Waterfowl hunters are required to participate in the New York State migratory game bird Harvest Information Program (HIP). All HIP registrants provide a mailing address and some provide an email address. We drew our sample from records of HIP registrants.

In 2020 there were 12,384 hunters in the target population for this study (i.e., HIP registrants in upstate NYS age 18 or older, who reported that they had hunted ducks in the 2019/20 hunting license year). About 39% ( $n=4,812$ ) of those hunters provided an email address.

The study team decided to use a total sample size of 3,000 hunters. From the pool of 12,384 hunters in the target population, DEC staff drew 39% of the sample ( $n=1,170$ ) from the records of all hunters who provided an email address. They drew 61% of the sample ( $n=1,830$ ) from the records of all hunters who provided only a mailing address (not an email address). This approach ensured that duck hunters who provided an email, and those who only provided a mailing address, had an equal likelihood of being included in the survey sample.

## **Survey implementation**

### **Web-based Survey**

CCSS staff sent out invitation emails to members of the online sample on October 16, 2020 and reminder emails to non-respondents on October 23, October 30, and November 6, 2020. Data collection ended on December 7, 2020.

### **Mail Survey**

CCSS staff contacted each member of the mail survey sample up to 4 times. We completed all mail and email contacts between October 13, 2020 and November 13, 2020. As with the web survey, data collection ended on December 7, 2020. To encourage survey response by mail or online, several characteristics of the Dillman (2008) Total Design Method were incorporated, including a brief, respondent-friendly questionnaire, multiple contacts, and cover letter elements that personalized correspondence.

## **Nonrespondent Follow-up Interviews**

A team of trained phone interviewers at the Cornell Survey Research Institute (SRI) completed a set of 100 follow-up interviews from the pool of mail and web survey nonrespondents. The nonrespondent telephone interview contained a set of 18 questions from the survey instrument. SRI staff completed these interviews between December 7, 2020 and December 18, 2020. Reaching the goal of 100 interviews required contacting 259 nonrespondents. Final disposition of telephone contacts were as follows: interview completed (n=100), pending [called <6 times with no resolution (n=144)], ineligible (had already returned questionnaire) (n=43), nonworking telephone number (n=11), physically unable to respond (n=1).

The core questions in the survey were a set of hunter ratings and rankings of conditions that could influence hunter satisfaction with duck hunting experiences on public lands. We did not include these questions in the nonrespondent interview because the questions are complex (and difficult to administer via telephone) and including the whole set of questions would have extended the length of the interview beyond acceptable limits.

## **Analysis**

We used IBM SPSS Statistics 24.0 software (IBM Corp. 2016) to calculate frequencies and measures of central tendency (e.g., mean, standard deviation). We placed respondents into groups (e.g., majority public land vs. majority private land) for comparison. We used the chi-square statistic and t-tests to test for significant differences between respondents and nonrespondents at the  $P < 0.05$  level.

About 16% (n=101) of respondents to the mail survey did not correctly complete the question in which they were asked to rank importance of 5 factors that could influence satisfaction with duck hunting experiences on public lands. The most common error was using the same ranking number more than once (the web survey instrument was structured such that respondents could not use any ranking more than once). When analyzing results from questions where hunters were asked to rank the importance of factors that could affect their satisfaction with waterfowl hunting season dates, we excluded cases where a respondent did not follow ranking instructions.

## **RESULTS**

A total of 1,058 hunters completed the mail or web questionnaire, resulting in a 36.5% combined response rate after removing the 104 undeliverable questionnaires (i.e., 1,058 returns from a deliverable sample size of 2,896). Response to the web survey was approximately 33% (i.e., 384 returns from a deliverable sample size of 1,150); response to the mail survey was approximately 39% (i.e., 674 returns from a deliverable sample size of 1,746). Because the proportions of completed mail and web surveys were relatively close to the sample proportions, we did not weight the data based on survey mode.

## Nonresponse Bias Analysis

Respondents and nonrespondents did not differ in their gender (98% of respondents were male, 97% of nonrespondents were male, chi square=3.47,  $p=0.06$ ), nor the proportion who had hunted at least one day in 2019/20 on: private lands, public waters, WMAs that restrict hunter access, or other public lands that restrict access (Appendix B, Table B1). In both groups about 68% could be classified as avid hunters (i.e., they regarded duck hunting as their most important, or one of their most important recreational activities) (Appendix B, Table B2).

Nonrespondents differed from respondents in several ways: nonrespondents were younger than respondents (nonrespondents:  $n=1,871$ ,  $M=39$  years old,  $SD=15.63$ ; respondents:  $n=1,057$ ,  $M=48$  years old,  $SD=14.32$ ;  $t(1,2,116)=14.23$ ,  $p<0.001$ ), and had hunted ducks for fewer years (nonrespondents:  $n=100$ ,  $M=14.24$  years of duck hunting,  $SD=12.71$ ; respondents:  $n=1,041$ ,  $M=22.32$  years of duck hunting,  $SD=16.75$ ;  $t(1,139)=5.89$ ,  $p<0.001$ ). Nonrespondents were also more likely than respondents to have hunted at least one day on public lands with open access (57% of nonrespondents vs. 40% of respondents, chi square=9.06,  $p=0.002$ ) (Appendix B, Table 1).

Nonrespondents were more likely than respondents to disagree with the statement, “It has become increasingly difficult to find places to hunt ducks” (39% of nonrespondents vs. 16% of respondents, chi square=53.51,  $p<0.001$ ) (Appendix B, Table 3). Nonrespondents were more likely than respondents to agree with the statement, “I have access to multiple places to hunt ducks” (59% of nonrespondents vs. 33% of respondents, chi square=39.11,  $p<0.001$ ) (Appendix B, Table 4). Nonrespondents were more likely than respondents to disagree with the statement, “I rely heavily on public lands for duck hunting” (35% of nonrespondents vs. 25% of respondents, chi square=27.85,  $p<0.001$ ) (Appendix B, Table 5). Nonrespondents were more likely than respondents to agree with the statement, “I am confident I will have access to private land for duck hunting in the future” (66% of nonrespondents vs. 39% of respondents, chi square=37.71,  $p<0.001$ ) (Appendix B, Table 6).

The combination of low response rate (37%) and differences between respondents and nonrespondents raise concern about the possibility of nonresponse bias (Dillman 1991, Groves 2006, Groves and Peytcheva 2008, Peytchev 2013, Wright 2015). We took two steps to address potential nonresponse bias. First, we used responses from nonrespondent interviews to weight results from questions that assessed hunter’s: (1) use of public and private lands for duck hunting, and (2) experiences with and attitudes about access to public lands (Appendix C). Second, we created tables to report results by hunter age cohort for hunter ratings and rankings of conditions that influence hunter satisfaction with duck hunting experiences on public lands. These tables allow readers to see similarities among and differences across age cohorts on the variables of greatest interest given our study objectives.

## Overview of Respondents and Where They Hunted

Respondents averaged 48 years old. Nearly all respondents (98%) were male. About 29% had hunted ducks for <10 years, 31% had hunted ducks for 10 – 24 years, 30% had hunted ducks for 25 – 49 years, and 10% had hunted ducks for 50 years or more (M=22.3 years, range 1 – 75 years). A majority (60%) of respondents who reported hunting one or more days in the 2019/20 hunting license year had hunted in the western duck hunting zone. A third or more had hunted in the northeastern zone (40%) or the southeastern zone (34%). Few (3%) had hunted in the Long Island zone in the 2019/20 license year (Table 1).

**Table 1.** Number of days hunted in each New York State waterfowl hunting zone in 2019-2020 season.

		N	N	% of respondents	mean	median	mode
Western zone	Mail	602	345	57.3%	9.82	8	10
	Web	355	227	63.9%	11.62	10	5
	All	957	572	59.8%			
Northeast zone	Mail	602	236	39.2%	8.76	5	5
	Web	355	145	40.8%	7.77	5	2
	All	957	381	39.8%			
Southeastern zone	Mail	602	203	33.7%	9.57	6	10
	Web	355	118	33.2%	8.94	6	2
	All	957	321	33.5%			
Lake Champlain zone	Mail	602	32	5.3%	9.25	5.5	1
	Web	355	26	7.3%	7.09	2.5	1
	All	957	58	6.1%			
Long Island zone	Mail	602	15	2.5%	5.13	3	3
	Web	355	10	2.8%	2.30	2	1
	All	957	25	2.6%			

A majority (70%) of active hunters had spent one or more days hunting ducks on private lands in 2019/20. Nearly as many (67%) had hunted on public waters during the 2019/20 hunting license year (Table 2).

Most of DEC's wildlife management areas (WMAs) offer unrestricted access for duck hunting (i.e., no special permit required, no special hunting hours or days on these lands). About half (51%) of active hunters had hunted on public lands with unrestricted access. A few WMAs, state

parks, and national wildlife refuges offer restricted duck hunting opportunities (e.g., special permits may be required, hunter numbers may be limited, shooting times are site-specific). In 2019/20 about 13% of active hunters had hunted on DEC wildlife management area that restricts access and 15% of active hunters had hunted on other public lands that restrict access for duck hunting (e.g., state parks, national wildlife refuges) (Table 2).

**Table 2.** Number of days hunted and proportion of active hunters who utilized each land or water type in New York State in 2019-2020 season.

		N	n	% of hunters <sup>c</sup>	Days of hunting		
					mean	median	mode
Private lands	Mail	602	381	63.3%	7.81	5	10
	Web	344	230	66.9%	6.97	5	2
	All <sup>a</sup>	946	611	64.6%	7.49	5	2
	Weighted <sup>b</sup>	2,563	1,788	69.8%			
Public waters	Mail	602	355	58.9%	8.70	6	2
	Web	344	231	67.2%	8.65	6	3
	All <sup>a</sup>	946	586	61.9%	8.68	6	2
	Weighted <sup>b</sup>	2,563	1,726	67.3%			
Public lands with open (unrestricted) access	Mail	602	213	35.4%	6.34	4	2
	Web	344	168	48.8%	8.11	5	2
	All	946	381	40.3%	7.12	5	2
	Weighted <sup>b</sup>	2,563	1,299	50.7%			
DEC WMAs that restrict access	Mail	602	102	16.9%	4.66	3	2
	Web	344	72	20.9%	4.96	3	2
	All <sup>a</sup>	946	174	18.4%	4.78	3	2
	Weighted <sup>b</sup>	2,563	339	13.2%			
Other public lands that restrict access	Mail	602	75	12.5%	3.77	3	2
	Web	344	60	17.4%	4.78	3	1
	All <sup>a</sup>	946	135	14.3%	4.22	3	2
	Weighted <sup>b</sup>	2,563	374	14.6%			

<sup>a</sup> All respondents who hunted ducks in the 2019/2020 hunting license year.

<sup>b</sup> Weighted to account for participation rates by respondents and nonrespondents who had hunted ducks in the 2019/20 hunting license year.

<sup>c</sup> Percent of active hunters who had hunted on the land or water type listed during the 2019/20 hunting license year.

Travel distance may play a role in whether hunters use WMAs for duck hunting. Nearly half (48%) of those who had hunted on a WMA sometime during the past 5 years reported that the furthest distance they had driven from home to hunt on a WMA was one hour or less. Smaller percentages had driven up to 2 hours (28%), up to 3 hours (13%), or more than 3 hours (12%) to hunt on a WMA.

## **Characterizing Hunters by Dependence on Public Lands**

To address our final study objective, we placed respondents into one of 3 groups based on the proportion of duck hunting days they spent on public or private lands during the 2019/20 hunting license year.

*Public-only hunters:* respondents who hunted entirely on public lands/waters during the 2019/20 hunting license year.

*Public-dominant hunters:* respondents who spent >50% of their hunting days on public lands/waters during the 2019/20 hunting license year.

*Private-dominant hunters:* respondents who spent >50% of their hunting days on private lands during the 2019/20 hunting license year.

Mean age differed slightly by hunter group. Mean years of age was 48 in the public-only group, 45 in the public-dominant group and 50 in the private-dominant group.

In upstate New York, more public lands and waters are available in the western and northeastern waterfowl zones than in the southeastern zone, and that may affect choices about where to hunt ducks. Less than half of participants who hunted primarily in the southeastern zone spent most or all of their duck hunting days on public lands or waters. In contrast, over two-thirds of participants who hunted primarily in the western or northeastern zones spent most or all of their duck hunting days on public lands or waters (Table 3).

Use of public lands for duck hunting was extensive. About 81% (n=768) of active hunters had spent at least one day hunting on public lands or waters during the 2019/20 hunting license year. More than a third of active hunters (n=338) hunted entirely on public lands in 2019/20. About 27% (n=253) spent >50% of their hunting days on public lands/waters (i.e., public-dominant hunters). The remaining 38% (n=356) spent >50% of their days on private lands (i.e., private-dominant hunters) (Table 4).

Public-only and public-dominant hunters showed similar patterns of overall land and water use for duck hunting, but public-dominant hunters were more likely to use public waters (83% vs. 72%; chi square=9.23; p=0.002), public lands with open access (60% vs. 51%; chi square=4.22; p=0.039), and restricted public lands other than WMAs (e.g., state parks, national wildlife refuges) (25% vs. 15%; chi square=7.33; p=0.005) (Table 4).

**Table 3.** Proportion of hunters in each land use hunter group by waterfowl hunting zone that participants used most.

Hunter group, based on use of public land	All active hunters (n=946)	Waterfowl hunting zone hunted most often in 2019-20 license year		
		Western Zone (n=465)	Northeast Zone (n=185)	Southeast Zone (n=206)
	%	%	%	%
Public only <sup>a</sup>	35.7	35.5	43.8	26.2
Public dominant <sup>b</sup>	26.7	29.2	24.9	21.4
Private dominant <sup>c</sup>	37.6	35.3	31.3	52.4
Total	100.0	100.0	100.0	100.0

<sup>a</sup> All duck hunting in the 2019/20 hunting license year occurred on public lands.

<sup>b</sup> 51% – 99% of duck hunting days in the 2019/20 hunting license year occurred on public lands.

<sup>c</sup> >50% of duck hunting days in the 2019/20 hunting license year were on private lands.



**Table 4.** Percentage of hunters who spent at least one day hunting ducks on different land and water types during the 2019/20 hunting license year, by land use hunter group.

	N	n	% of hunter1 <sup>a</sup>	Days of hunting				
				mean	median	mode	range	
Private lands								
Public only <sup>a</sup>	338	0	0	-	-	-	-	
Public dominant <sup>b</sup>	253	253	100.0	4.74	3.00	2	1-35	
Private dominant <sup>c</sup>	356	356	100.0	9.44	8.00	10	1-66	
Public waters								
Public only <sup>a</sup>	338	242	71.6	9.27	7.0	10	1-60	
Public dominant <sup>b</sup>	253	209	82.6	10.44	8.0	2	1-60	
Private dominant <sup>c</sup>	356	132	37.1	4.89	3.0	2	1-60	
Public lands with open (unrestricted) access								
Public only <sup>a</sup>	338	173	51.2	7.59	5.0	2	1-40	
Public dominant <sup>b</sup>	253	151	59.7	8.07	5.0	2	1-60	
Private dominant <sup>c</sup>	356	57	16.0	3.18	2.0	2	1-14	
DEC WMAs that restrict access								
Public only <sup>a</sup>	338	77	22.8	5.44	3.0	2	1-35	
Public dominant <sup>b</sup>	253	65	25.7	4.94	4.0	2	1-16	
Private dominant <sup>c</sup>	356	32	9.0	2.88	2.0	1	1-11	
Other public lands that restrict access								
Public only <sup>a</sup>	338	52	15.4	3.88	2.0	2	1-20	
Public dominant <sup>b</sup>	253	62	24.5	4.82	4.0	2	1-17	
Private dominant <sup>c</sup>	356	21	5.9	3.29	3.0	1	1-10	

<sup>1</sup> Percent of hunters in group who had hunted on the land or water type listed during the 2019/20 hunting license year.

<sup>a</sup> All duck hunting in the 2019/20 hunting license year occurred on public lands.

<sup>b</sup> 51% – 99% of duck hunting days in the 2019/20 hunting license year occurred on public lands.

<sup>c</sup> >50% of duck hunting days in the 2019/20 hunting license year were on private lands.

Tables 1-4 provide insights about the access *choices* within each hunting group. In the following sections we describe hunting-related *beliefs* within each hunter group.

### **Duck Hunting Avidity Level**

A majority (68%) of respondents were characterized as avid duck hunters (i.e., they described duck hunting as their most important recreational activity or more important than many of their recreational activities). The proportion of avid hunters was highest in the public-dominant hunter group (82% compared to 68% of public-only hunters and 63% of private-dominant hunters (Table 5). Public-dominant hunters averaged more days afield per year (mean=20.6 days) than did public-only or private-dominant hunters (12.4 and 12.2 days per year, respectively).

### **Access Experiences and Perceptions**

Our survey results document that finding places to hunt ducks on private land is a challenge for many duck hunters. Most (84%) respondents who had hunted only public land in 2019/20 reported that their opportunities to hunt ducks on private land over the last 5 years had been poor or limited. About half of public-dominant hunters described their opportunities to hunt private lands as “limited.” Even in the private-dominant hunter group only half described their opportunities to hunt ducks on private land as “good” or “excellent” (Table 6).

Our findings also shed light on the dynamic nature of access to private lands for duck hunting. Over a multi-year timeframe a hunter’s ability to hunt ducks on specific parcels of private land can change for a variety of reasons, and those changes may influence their use of public land for duck hunting. We asked hunters whether they had lost access to any duck hunting areas on private land in upstate New York in the past 5 years, and if so, how they responded to those losses.

About 21% of public-only hunters reported that they had lost access to duck hunting areas on private land sometime during the past 5 years; they were most likely to respond to loss of access to private land by hunting more on public land (61%) or hunting ducks less often (46%). Few (9%) responded by finding alternative places to hunt ducks on private land. About 45% of public-dominant hunters had lost access to duck hunting areas on private land in the last 5 years. A majority of public-dominant hunters (61%) responded to losing access to hunt on private lands by hunting more on public lands, but 24% responded by finding alternative private land on which to hunt ducks. About 35% of private-dominant hunters had lost access to duck hunting areas on private land, but few of them (13%) responded by hunting more on public land; about 66% of private-dominant hunters responded by spending more time on other parcels of private land to which they still had access, or by finding alternative private land on which to hunt (Table 7).

**Table 5.** Importance respondents placed on duck hunting as a recreational activity, by land use hunter group.

	All active hunters (n=942)	Group based on use of public land		
		Public only <sup>a</sup> (n=309)	Public dominant <sup>b</sup> (n=229)	Private dominant <sup>c</sup> (n=337)
	%	%	%	%
It's my most important recreational activity	16.0	13.7	25.4	11.5
It's more important than many of my recreational activities	54.0	55.5	56.3	51.0
It's no more important than my other recreational activities	24.9	23.0	16.7	32.7
It's less important than many of my recreational activities	4.0	6.0	1.6	3.9
It's one of my least important recreational activities	1.0	1.8	0.0	0.8
	100.0	100.0	100.0	100.0

<sup>a</sup> All duck hunting in the 2019/20 hunting license year occurred on public lands.

<sup>b</sup> 51% – 99% of duck hunting days in the 2019/20 hunting license year occurred on public lands.

<sup>c</sup> >50% of duck hunting days in the 2019/20 hunting license year were on private lands.

**Table 6.** Perceived level of opportunity to hunt ducks on private land in upstate New York in the past 5 years, by land use hunter group.

	All <sup>d</sup> (n=977)	Group based on use of public lands		
		Public only <sup>a</sup> (n=332)	Public dominant <sup>b</sup> (n=251)	Private dominant <sup>c</sup> (n=353)
Poor- I had no access to private land to hunt ducks.	21.8	52.7	7.2	2.8
Limited- I had very few opportunities to hunt ducks on private land.	35.5	31.3	53.0	27.5
Fair- I had a number of opportunities to hunt ducks on private land.	15.4	9.9	16.3	20.1
Good - I often had opportunities to hunt ducks on private land.	13.3	3.6	15.5	21.0
Excellent- I could hunt ducks on private land pretty much whenever I wanted to.	14.0	2.4	8.0	28.6

<sup>a</sup> All duck hunting in the 2019/20 hunting license year occurred on public lands.

<sup>b</sup> 51% – 99% of duck hunting days in the 2019/20 hunting license year occurred on public lands.

<sup>c</sup> >50% of duck hunting days in the 2019/20 hunting license year were on private lands.

<sup>d</sup> Includes respondents who did not hunt ducks in the 2019/20 hunting license year.

**Table 7.** Actions taken by respondents who had lost access to private lands for duck hunting in upstate New York in the past 5 years, by land use hunter group.

Response to losing access to private land <sup>1</sup>	All (n=308)	Group based on use of public lands		
		Public only <sup>a</sup> (n=67)	Public dominant <sup>b</sup> (n=109)	Private dominant <sup>c</sup> (n=119)
Used more public land to hunt ducks	39.6	61.2	60.6	12.6
Hunted ducks less often	42.2	46.3	37.6	42.9
Spent more time on the private land I could still access	27.9	9.0	23.9	42.9
Found alternative private land to hunt ducks	18.2	9.0	17.4	22.7

<sup>a</sup> All duck hunting in the 2019/20 hunting license year occurred on public lands.

<sup>b</sup> 51% – 99% of duck hunting days in the 2019/20 hunting license year occurred on public lands.

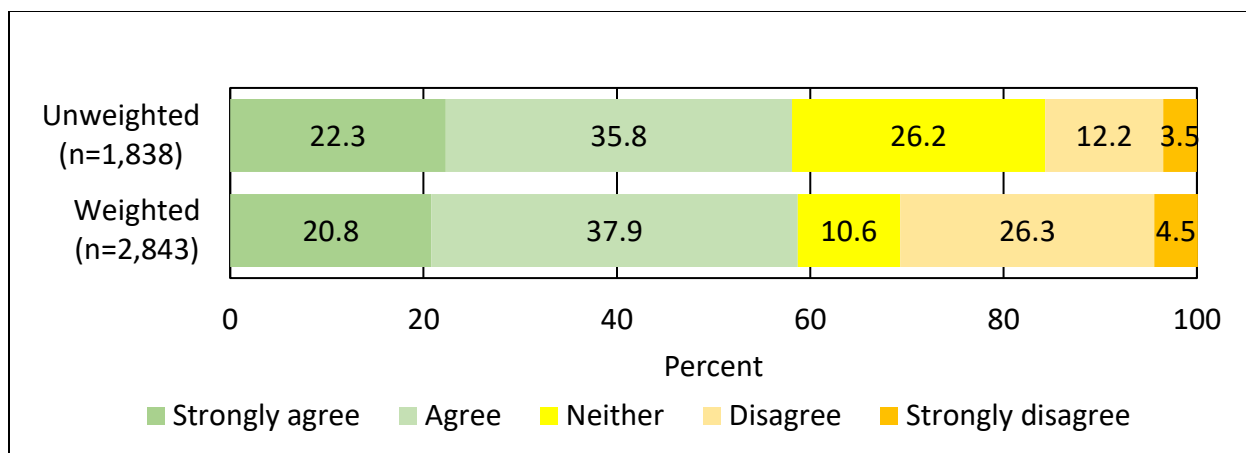
<sup>c</sup> >50% of duck hunting days in the 2019/20 hunting license year were on private lands.

<sup>1</sup> 32% of respondents had lost access to private lands for duck hunting in upstate NY in the past 5 years. Twenty-one percent of the public land only, 45% of the mostly public land, and 35% mostly private lands groups had lost access to private land in the last 5 years.

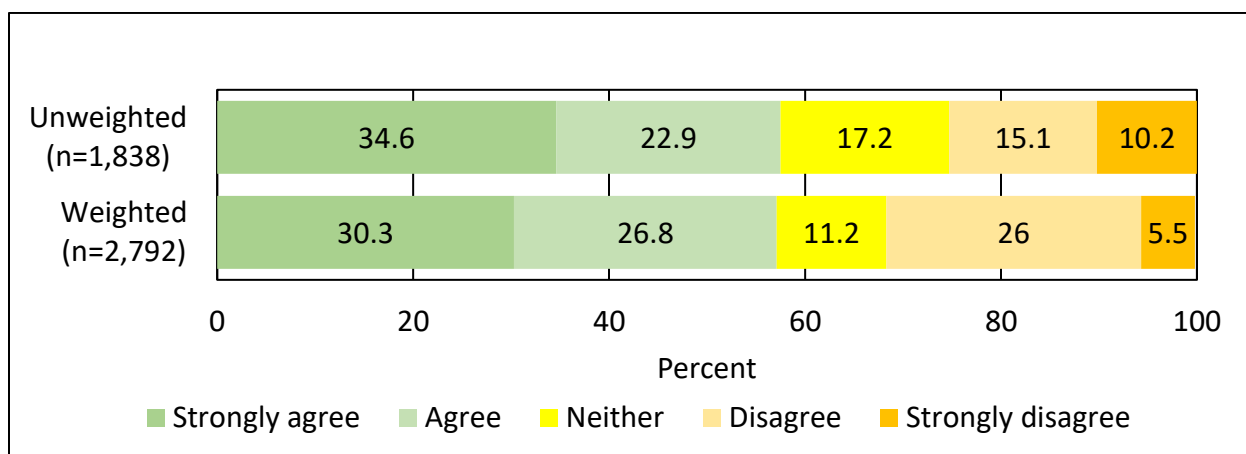
A majority (58%) of active duck hunters agreed with the statement, “It has become increasingly difficult for me to find places to hunt ducks.” After weighting to adjust for nonresponse, 59% of the sample agreed with this statement (Figure 1). Even in the private-dominant group a majority reported increasing difficulty in finding places to hunt ducks. In the public-only and public-dominant groups majorities agreed with the statement, “I rely heavily on public lands for duck hunting.” Only minorities of public lands hunters were confident that they would have access to private lands in the future (Table 8).

A majority (58%) of active duck hunters agreed with the statement, “I rely heavily on public lands for duck hunting (Table 8). After weighting to adjust for nonresponse, 57% of the sample agreed with this statement (Figure 2). Even in the private-dominant group some hunters agreed that they rely heavily on public lands for duck hunting.

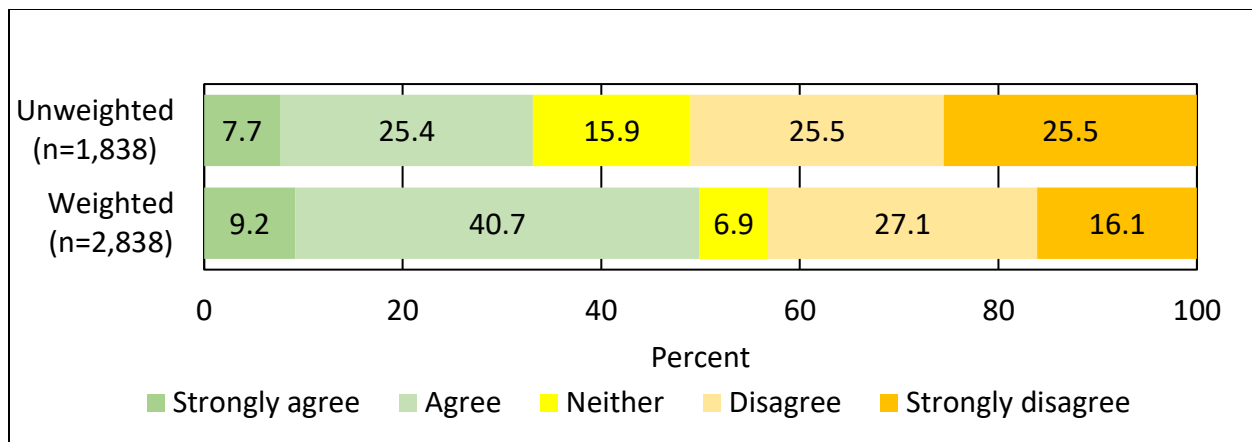
Hunters who have access to multiple parcels of private land may be more resilient to changes that may result in loss of hunting access to any specific parcel, and should feel more confident about their future prospects for hunting on private land. About 33% of active hunters agreed with the statement, “I have access to multiple locations on private land where I can hunt ducks” (Table 8). After weighting to adjust for nonresponse, 50% of the sample agreed with this statement (Figure 3). About 39% of active hunters agreed with the statement, “I am confident I will have access to private land for duck hunting in the future” (Table 8). After weighting to adjust for nonresponse, 56% of the sample agreed with this statement (Figure 4).



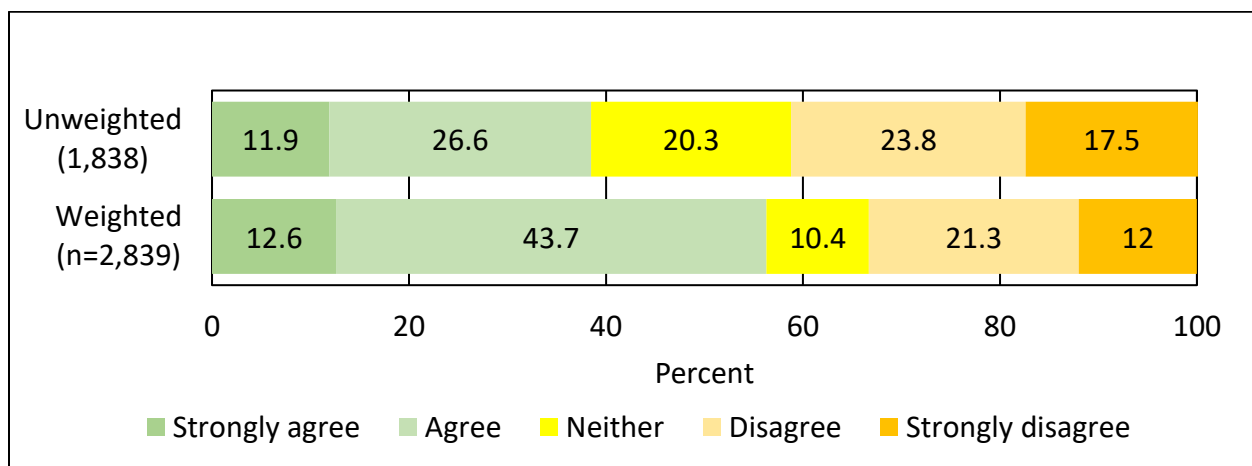
**Figure 1.** Unweighted and weighted response to the statement, “It has become increasingly difficult for me to find places to hunt ducks.”



**Figure 2.** Unweighted and weighted response to the statement, “I rely heavily on public lands for duck hunting.”



**Figure 3.** Unweighted and weighted response to the statement, “I have access to multiple locations on private land where I can hunt ducks.”



**Figure 4.** Unweighted and weighted response to the statement, “I am confident I will have access to private land for duck hunting in the future.”

**Table 8.** Hunter beliefs about access to public and private lands for duck hunting in New York State, by land use hunter group.

	n	Strongly agree	Agree	Neither	Disagree	Strongly disagree
		%	%	%	%	%
It has become increasingly difficult for me to find places to hunt ducks						
All respondents	1005	22.3	35.8	26.2	12.2	3.5
Public-only hunters <sup>a</sup>	333	24.0	34.5	25.2	13.2	3.0
Public-dominant hunters <sup>b</sup>	248	24.6	38.3	23.4	10.9	2.8
Private-dominant hunters <sup>c</sup>	349	19.8	34.1	29.5	12.0	4.6
I rely heavily on public lands for duck hunting						
All respondents	1000	34.6	22.9	17.2	15.1	10.2
Public-only hunters <sup>a</sup>	333	66.7	22.5	5.4	2.1	3.3
Public-dominant hunters <sup>b</sup>	247	36.4	33.2	17.8	8.5	4.0
Private-dominant hunters <sup>c</sup>	345	3.5	15.9	27.5	32.2	20.9
I have access to multiple locations on private land where I can hunt ducks						
All respondents	1000	7.7	25.4	15.9	25.5	25.5
Public-only hunters <sup>a</sup>	330	2.4	10.3	12.7	25.5	49.1
Public-dominant hunters <sup>b</sup>	247	5.7	25.9	13.0	36.4	19.0
Private-dominant hunters <sup>c</sup>	349	14.6	37.5	20.3	19.5	8.0
I am confident I will have access to private land for duck hunting in the future						
All respondents	1001	11.9	26.6	20.3	23.8	17.5
Public-only hunters <sup>a</sup>	331	3.9	12.1	19.6	28.7	35.6
Public-dominant hunters <sup>b</sup>	248	9.7	28.2	26.6	25.4	10.1
Private-dominant hunters <sup>c</sup>	347	21.9	38.3	17.3	16.1	6.3

<sup>a</sup> All duck hunting in the 2019/20 hunting license year occurred on public lands.

<sup>b</sup> 51% – 99% of duck hunting days in the 2019/20 hunting license year occurred on public lands.

<sup>c</sup> >50% of duck hunting days in the 2019/20 hunting license year were on private lands.

Difficulty in finding places to hunt on private land could provide motivation to hunt on public land despite the potential for conflict with other duck hunters. This rationale is consistent with the finding that majorities of hunters who spent all or most of their duck hunting time on public lands agreed with the statement, “I can tolerate some hunting crowding on public land in exchange for a guaranteed place to hunt” (Table 9).

Perceptions of hunter crowding are assumed to negatively influence hunting satisfactions (Shelby and Vaske 2007). We asked respondents who had hunted on private land or public lands in the previous hunting license year how crowded they felt when hunting those lands. Nearly three-quarters of those who had hunted on private lands reported that they felt “not at all” crowded when hunting on private lands. In contrast, about 60% of those who had hunted on public lands reported that they felt “moderately” or “very” crowded when hunting on public lands (Table 10).

### **Conditions that Influence Satisfaction with Hunting on Public Lands**

We asked hunters how they would rate 5 conditions that could influence satisfaction with duck hunting on public lands. All 5 were at least slightly important to most respondents. Seventy-nine percent reported that having flexibility in when they can hunt ducks was very or extremely important to their satisfaction. About two-thirds (67%) reported that reducing conflicts with other hunters also was very or extremely important to their hunting satisfaction. Reducing complexity of rules regulating use of public lands was very or extremely important to more than half of respondents. Having opportunities to bag as many ducks as allowed, and having part of an area set aside as refugia for ducks, was very or extremely important to over 40% of respondents. Mean importance of having opportunities to bag as many ducks as allowed, and having part of an area set aside as refugia for ducks, were not statistically different (Table 11). In all age cohorts hunters were most likely to rate flexibility and reducing hunter conflicts as extremely or very important to their satisfaction with hunting experiences on public land (Table 12).

When asked to rate the importance of conditions that affect their satisfaction, hunters may indicate that every condition is highly important. Asking hunters to rank conditions forces them to prioritize (place relative weights on) those conditions. We asked hunters how they would rank the above conditions from most to least important. In this analysis we included only respondents who followed directions to rank the conditions from 1 to 5, using each ranking only once. We compared respondents grouped by survey mode (Table 13), reliance on public lands (Table 14), and age cohort (Table 15). In all groups respondents ranked flexibility in when they could hunt ducks as the most important condition, and reducing potential conflicts with other duck hunters as the second or third most important condition. They ranked opportunities to bag as many ducks as allowed, reducing complexity of rules regulating use of public lands, and creating duck refuge areas on public lands as less important conditions (Figure 5).



**Table 9.** Hunter perceptions of crowding when hunting ducks on public or private lands in New York State.

How you felt when hunting ducks in upstate NY last season on	n	Response categories <sup>a</sup>			
		Not at all	Slightly	Moderately	Very
		%	%	%	%
Private lands	563 <sup>b</sup>	72.8	17.2	7.8	2.1
Public lands	680 <sup>c</sup>	20.6	39.1	41.9	19.2

<sup>a</sup> 1=not at all crowded, 2=slightly crowded, 3=moderately crowded, 4=very crowded, 5=does not apply (I did not hunt ducks on that land type last season)

<sup>b</sup> Includes only respondents who indicated that they had hunted at least one day on private lands in the 2019/20 hunting license year.

<sup>c</sup> Includes only respondents who indicated that they had hunted at least one day on private lands in the 2019/20 hunting license year.

**Table 10.** Hunter tolerance for crowding when hunting ducks on public lands in New York State, by land use hunter group.

	n	Strongly agree	Agree	Neither	Disagree	Strongly disagree
		%	%	%	%	%
I can tolerate some hunter crowding on public land in exchange for having a guaranteed place to hunt						
All respondents	998	10.3	41.3	24.6	15.9	7.8
Public-only hunters <sup>a</sup>	332	16.0	48.2	19.3	11.4	5.1
Public-dominant hunters <sup>b</sup>	247	10.1	44.9	20.2	21.9	2.8
Private-dominant hunters <sup>c</sup>	345	5.5	33.3	32.5	15.4	13.3

<sup>a</sup> All duck hunting in the 2019/20 hunting license year occurred on public lands.

<sup>b</sup> 51% – 99% of duck hunting days in the 2019/20 hunting license year occurred on public lands.

<sup>c</sup> >50% of duck hunting days in the 2019/20 hunting license year were on private lands.

**Table 11.** Importance of five hunting conditions to satisfaction with duck hunting experiences on public lands in New York State.

	n <sup>a</sup>	Mean <sup>b</sup> (Upper CI) (Lower CI)	Level of importance				
			Ext. Imp. (1) %	Very Imp. (2) %	Mod. Imp. (3) %	Slightly Imp. (4) %	Not at All imp. (5) %
Having flexibility in when I can hunt ducks	848	1.87 (1.94) (1.80)	45.5	33.3	13.9	3.7	3.8
Reducing potential conflicts with other duck hunters	845	2.12 (2.19) (2.05)	32.8	34.9	23.0	6.2	3.2
Reducing complexity of rules regulating how duck hunters can use a public property	847	2.31 (2.39) (2.24)	27.5	33.4	25.6	7.2	6.3
Having opportunities to bag as many ducks per day as allowed by the bag limits	848	2.66 (2.74) (2.58)	19.1	25.8	33.3	13.2	8.6
Restricting waterfowl hunting access on portions of the property (refuges) to hold ducks in the area longer	847	2.70 (2.77) (2.63)	14.0	28.5	39.6	9.3	8.6

<sup>a</sup>Includes only respondents who correctly completed the satisfaction ranking question.

<sup>b</sup>Mean 1= extremely important 2=very important 3=moderately important 4=slightly important 5=not at all important.

**Table 12.** Importance of five hunting conditions to satisfaction with duck hunting experiences on public lands in New York State, by age cohort.

		n <sup>a</sup>	Mean <sup>b</sup>	Level of importance				
				1	2	3	4	5
				%	%	%	%	%
Having flexibility in when I can hunt ducks								
	18-37	287	1.73	50.2	33.1	11.8	3.5	1.4
	38-57	305	1.84	46.2	32.8	14.4	3.9	2.6
	58-77	242	2.05	39.3	33.9	16.1	3.7	7.0
Reducing potential conflicts with other duck hunters								
	18-37	287	2.03	38.0	31.4	21.6	7.3	1.7
	38-57	302	2.11	30.1	37.4	25.5	5.0	2.0
	58-77	242	2.22	30.6	35.5	21.1	6.6	6.2
Reducing complexity of rules regulating how duck hunting can use a public property								
	18-37	287	2.31	33.0	34.8	22.9	6.3	3.1
	38-57	304	2.25	28.3	34.5	25.0	7.9	4.3
	58-77	242	2.39	24.4	34.7	26.9	5.8	8.3
Having opportunities to bag as many ducks per day as allowed by the bag limits								
	18-37	287	2.47	24.4	26.8	32.1	10.5	6.3
	38-57	304	2.69	16.4	27.6	33.6	15.1	7.2
	58-77	243	2.84	16.5	22.6	34.6	13.6	12.8
Restricting waterfowl hunting access on portions of the property (refuges) to hold ducks in the area longer								
	18-37	287	2.56	17.8	27.5	39.7	10.8	4.2
	38-57	304	2.71	12.2	29.6	40.8	9.9	7.6
	58-77	242	2.86	12.0	26.9	38.8	7.4	14.9

<sup>a</sup>Includes only respondents who correctly completed the satisfaction ranking question.

<sup>b</sup>Mean 1= extremely important 2=very important 3=moderately important 4=slightly important 5=not at all important.

**Table 13.** Importance ranking hunters assigned to five hunting conditions that can influence satisfaction with duck hunting experiences on public lands in New York State, by survey mode.

	Survey mode	n	Mean <sup>1</sup>	Rank order
Having flexibility in when I can hunt ducks (e.g., being able to hunt on any day of the week, or hunt in the morning or afternoon)	Mail	516	2.03	1
	Web	337	1.97	1
	All	853	2.00	1
Reducing potential conflicts with other duck hunters	Mail	516	3.01	2-3
	Web	337	3.00	2
	All	853	3.00	2
Having opportunities to bag as many ducks per day as allowed by the bag limits (i.e., maximizing success Rate)	Mail	516	3.32	3-4
	Web	337	3.18	3-4
	All	853	3.20	3-4
Reducing complexity of rules regulating how duck hunters can use a public property	Mail	516	3.22	4-5
	Web	337	3.37	4-5
	All	853	3.34	4-5
Restricting waterfowl hunting access on portions of the property (refuges) to hold ducks in the area longer	Mail	516	3.42	4-5
	Web	337	3.48	4-5
	All	853	3.44	4-5

<sup>1</sup> Range 1 – 5, 1 = most important, 5=least important. Includes only respondents who correctly completed the satisfaction ranking question.

**Table 14.** Importance ranking hunters assigned to five hunting conditions that can influence satisfaction with duck hunting experiences on public lands in New York State, by age cohort.

	Age cohort	n	Mean <sup>1</sup>	Rank order
Having flexibility in when I can hunt ducks (e.g., being able to hunt on any day of the week, or hunt in the morning or afternoon)	18-37	302	2.08	1
	38-57	331	1.99	1
	58-77	298	2.05	1
Reducing potential conflicts with other duck hunters	18-37	302	2.97	2
	38-57	331	3.01	2
	58-77	298	2.94	2
Having opportunities to bag as many ducks per day as allowed by the bag limits (i.e., maximizing success Rate)	18-37	302	3.12	3
	38-57	331	3.24	4
	58-77	298	3.34	4
Reducing complexity of rules regulating how duck hunters can use a public property	18-37	302	3.45	5
	38-57	331	3.22	3
	58-77	298	3.23	3
Restricting waterfowl hunting access on portions of the property (refuges) to hold ducks in the area longer	18-37	302	3.40	4
	38-57	331	3.54	5
	58-77	298	3.42	5

<sup>1</sup> Range 1 – 5, 1 = most important, 5=least important. Includes only respondents who correctly completed the satisfaction ranking question.

**Table 15.** Importance ranking hunters assigned to five hunting conditions that can influence satisfaction with duck hunting experiences on public lands in New York State, by land use hunter group.

	Group based on use of public lands	n	Mean <sup>1</sup>	Rank order
Having flexibility in when I can hunt ducks (e.g., being able to hunt on any day of the week, or hunt in the morning or afternoon)	Public only <sup>a</sup>	290	1.90	1
	Public dominant <sup>b</sup>	228	1.98	1
	Private dominant <sup>c</sup>	282	2.07	1
Reducing potential conflicts with other duck hunters	Public only <sup>a</sup>	290	3.05	2-3
	Public dominant <sup>b</sup>	228	3.08	2-3
	Private dominant <sup>c</sup>	282	2.93	2
Having opportunities to bag as many ducks per day as allowed by the bag limits (i.e., maximizing success rate)	Public only <sup>a</sup>	290	3.18	3-4
	Public dominant <sup>b</sup>	228	3.13	3-4
	Private dominant <sup>c</sup>	282	3.32	3-4
Reducing complexity of rules regulating how duck hunters can use a public property	Public only <sup>a</sup>	290	3.28	3-4
	Public dominant <sup>b</sup>	228	3.50	4-5
	Private dominant <sup>c</sup>	282	3.31	3-4
Restricting waterfowl hunting access on portions of the property (refuges) to hold ducks in the area longer	Public only <sup>a</sup>	290	3.59 <sup>ab</sup>	5
	Public dominant <sup>b</sup>	228	3.31 <sup>a</sup>	4-5
	Private dominant <sup>c</sup>	282	3.38 <sup>b</sup>	3-4

<sup>a</sup> All duck hunting in the 2019/20 hunting license year occurred on public lands.

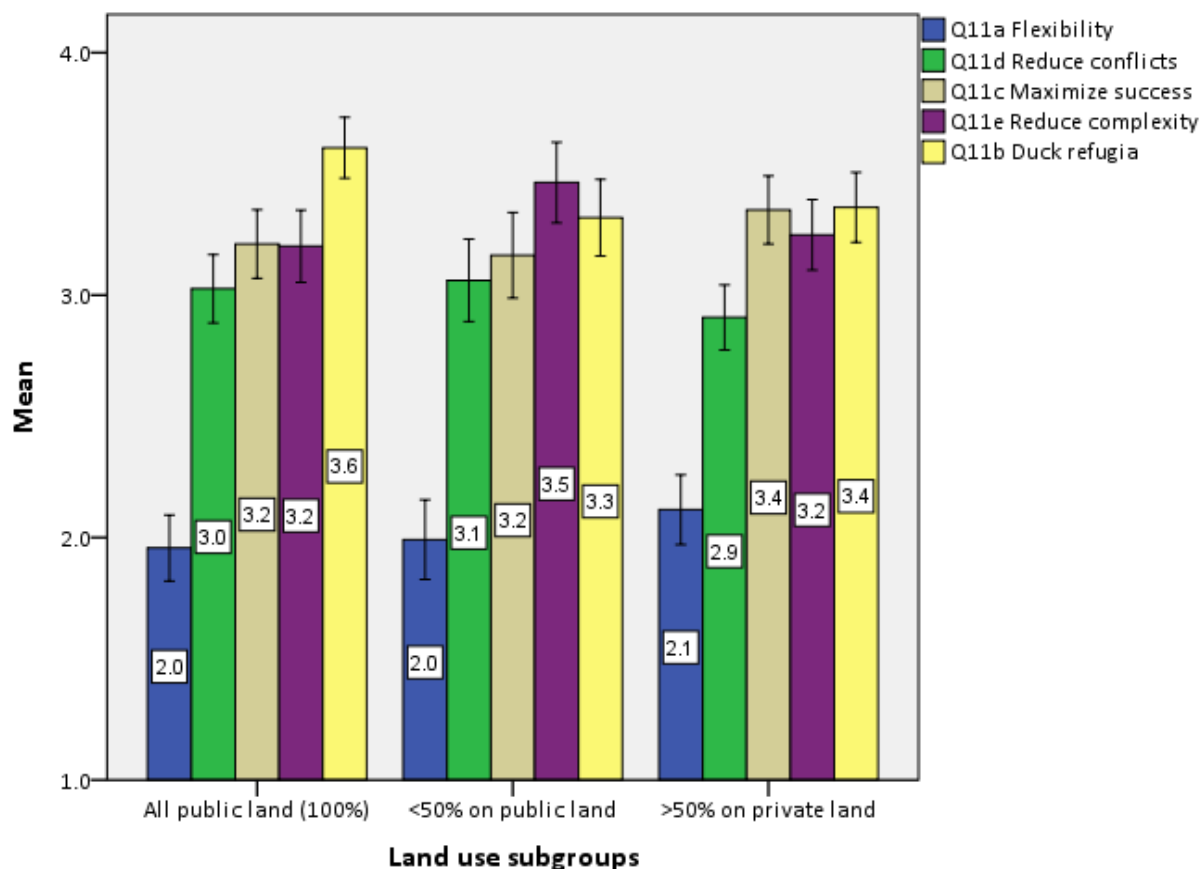
<sup>b</sup> 51% – 99% of duck hunting days in the 2019/20 hunting license year occurred on public lands.

<sup>c</sup> >50% of duck hunting days in the 2019/20 hunting license year were on private lands.

<sup>1</sup> Range 1 – 5, 1 = most important, 5=least important. Includes only respondents who correctly completed the satisfaction ranking question.

<sup>aa</sup> Means with the letter a superscript are different at p=0. 01.

<sup>bb</sup> Means with the letter b superscript are different at p=0. 05.



**Figure 5.** Rank order of conditions that may affect satisfaction with duck hunting on public lands in upstate New York, by land use hunter group (1=most important, 5=least important).

We also compared hunters who prefer restricted access public lands to those who prefer unrestricted public lands. Both groups ranked flexibility in when they could hunt as the most important condition affecting their hunting satisfaction on public lands. But in comparison to hunters who preferred open access lands, hunters who preferred restricted access lands placed higher importance on reducing hunter conflicts and having refugia areas for ducks (Table 16).

### Views on Hunting Unrestricted vs. Restricted Public Lands

Most of DEC's wildlife management areas (WMAs) offer unrestricted access for duck hunting (i.e., no special permit required, no special hunting hours or days on these lands). A few WMAs, state parks, and national wildlife refuges offer restricted duck hunting opportunities (e.g., special permits may be required, hunter numbers may be limited, shooting times are site-specific). We asked duck hunters a series of questions to gain insights about their views on public lands with restricted vs. unrestricted access.

**Table 16.** Importance ranking hunters assigned to five hunting conditions that can influence satisfaction with duck hunting experiences on public lands in New York State, among hunters who prefer restricted public land and those who prefer unrestricted public land.

	Hunter group	n	Mean <sup>1</sup>	Rank order	P value
Having flexibility in when I can hunt ducks	Restricted public	173	2.50	1	<0.001
	Unrestricted public	355	1.76	1	
Reducing potential conflicts with other duck hunters	Restricted public	173	2.72	2-3	<0.001
	Unrestricted public	355	3.16	2-3-4	
Having opportunities to bag as many ducks per day as allowed by the bag limits maximizing success rate)	Restricted public	173	3.19	4	NS
	Unrestricted public	355	3.22	2-3-4	
Reducing complexity of rules regulating how duck hunters can use a public property	Restricted public	173	3.85	5	<0.001
	Unrestricted public	355	3.03	2-3-4	
Restricting waterfowl hunting access on portions of the property (refuges) to hold ducks in the area longer	Restricted public	173	2.75	2-3	<0.001
	Unrestricted public	355	3.82	5	

<sup>1</sup> Range 1 – 5, 1 = most important, 5=least important. Includes only respondents who correctly completed the satisfaction ranking question.

Majorities of public-only and public-dependent hunters characterized the quality of duck hunting opportunities on unrestricted (open) public lands as “good” or “fair” (Table 17, Figure 6). Nearly half of all respondents reported that they do not hunt public lands with restricted access and were unsure about the quality of duck hunting on such lands (Table 17).



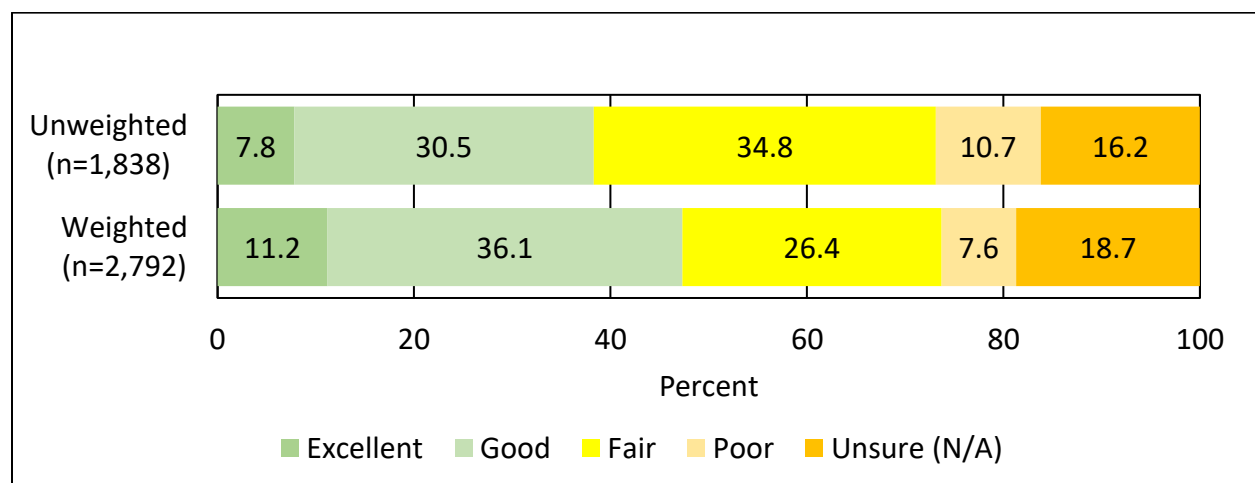
**Table 17.** Perceived quality of duck hunting opportunities on public and private lands, by land use hunter group.

		Quality rating					
		n	Excellent %	Good %	Fair %	Poor %	Unsure %
Quality on public lands that restrict access							
	All respondents	953	7.8	20.6	19.1	5.6	47.0
	Public-only hunters <sup>a</sup>	325	10.2	18.8	20.3	5.5	45.2
	Public-dominant hunters <sup>b</sup>	240	9.6	22.9	20.4	5.0	42.1
	Private-dominant hunters <sup>c</sup>	322	4.0	19.9	17.7	5.9	52.5
Quality on public lands with open access							
	All respondents	954	7.8	30.5	34.8	10.7	16.2
	Public-only hunters <sup>a</sup>	327	11.6	32.7	37.0	10.1	8.6
	Public-dominant hunters <sup>b</sup>	239	7.5	39.3	39.3	6.7	7.1
	Private-dominant hunters <sup>c</sup>	322	4.3	22.0	30.4	13.0	30.1
Quality on private lands							
	All respondents	933	18.4	34.9	21.2	5.7	19.7
	Public-only hunters <sup>a</sup>	312	8.7	19.2	14.7	5.1	52.2
	Public-dominant hunters <sup>b</sup>	233	23.2	38.6	29.2	6.4	2.6
	Private-dominant hunters <sup>c</sup>	325	24.6	46.8	20.6	5.5	2.5

<sup>a</sup> All duck hunting in the 2019/20 hunting license year occurred on public lands.

<sup>b</sup> 51% – 99% of duck hunting days in the 2019/20 hunting license year occurred on public lands.

<sup>c</sup> >50% of duck hunting days in the 2019/20 hunting license year were on private lands.



**Figure 6.** Perceived quality of duck hunting opportunities on public land with unrestricted (open) access, unweighted and weighted based on nonrespondent interviews.

We compared hunters who preferred open-access to restricted-access public lands. Those who preferred restricted-access public lands were more likely to believe that opportunity to see ducks, opportunity to bag at least one duck, and hunter behavior were all better on that type of land (Table 18). Only 10% (n=48) of the hunters who preferred open-access public lands had hunted on restricted-access public lands in the 2019/20 hunting license year.

Among the 60% of respondents who had a preference, twice as many respondents preferred open-access to restricted-access public lands. Public-only hunters were most likely to express a preference for hunting public lands with open access policies (Table 19).

**Table 18.** Perceived duck hunting opportunities on restricted access public lands compared to open access public and private lands, among hunters who prefer restricted public land and those who prefer unrestricted public land.

		Restricted access public lands compared to open access public lands			
		Better	Same as	Worse	Unsure
		%	%	%	%
Opportunity to see ducks					
All respondents	953	27.6	26.4	3.8	42.2
Prefer restricted public lands	187	61.5	16.6	2.1	19.8
Prefer open public lands	381	15.5	29.1	5.2	50.1
Opportunities to bag at least one duck					
All respondents	947	22.9	33.2	3.7	40.2
Prefer restricted public lands	184	54.9	23.4	2.7	19.0
Prefer open public lands	380	12.6	33.9	4.5	48.9
Behavior of other hunters					
All respondents	950	19.9	27.6	8.3	44.2
Prefer restricted public lands	186	45.2	24.7	7.5	22.6
Prefer open public lands	382	10.7	30.1	7.1	52.1

**Table 19.** Type of public land that duck hunters prefer to hunt, by land use hunter group.

	All (n=976)	Group based on use of public lands		
		Public only <sup>a</sup> (n=322)	Public dominant <sup>b</sup> (n=239)	Private dominant <sup>c</sup> (n=346)
	%	%	%	%
Public lands that <u>restrict access</u> to improve hunt quality	20.4	18.9	23.8	18.8
Public lands with <u>open access</u> to maximize opportunity to go hunting, regardless of hunt quality	40.1	53.1	41.8	26.9
No preference- I like each type of public land about the same	22.8	23.3	28.0	19.7
Not applicable- I don't hunt ducks on public lands	16.7	4.7	6.3	34.7
	100.0	100.0	100.0	100.0

## DISCUSSION AND CONCLUSIONS

**Study Limitations** About 16% of respondents did not follow instructions for our questions about ranking conditions that might affect hunter satisfaction. Those respondents could not be included in the analyses reported in Tables 13-15. It is challenging to use ranking questions in survey research and some data loss can be expected anytime ranking questions are used. Some of the problems associated with ranking questions can be mitigated by using web-based surveys (where forms can be set to reject duplicate rankings) or by reducing the number of items to be ranked.

In any survey a combination of low response rate and differences between respondents and nonrespondents raise concern about the possibility of nonresponse bias (Stedman et al. 2019). We addressed the potential for nonresponse bias in this study by adjusting responses to key questions using results from nonrespondent interviews. Although we could have weighted responses based on age we made a decision not to do so, because the younger hunter age cohort (which was underrepresented in responses) was not substantively different from the older hunter age cohorts in rankings of conditions affecting satisfaction with hunting on public lands. We found that respondents and nonrespondents were no different in likelihood of using private lands, public waters, WMAs that restrict hunter access, or other public lands that restrict access. We believe the unweighted survey results are representative of rates of use on those types of lands and waters. Importantly, we were able to use nonrespondent interviews to weight questions about future access to private lands. Access to private land may be more

prevalent than the unweighted results of this study would suggest. Weighted data indicate that more than half of New York duck hunters have access to private land and are confident that they will have some access to private land for duck hunting in the future. Nevertheless, this survey suggests that as much as a third of duck hunters in New York are very reliant on public land for duck hunting and are not confident that they will have access to private land for duck hunting in the future.

Mixed Mode Survey Research Previous waterfowl hunter surveys in New York and elsewhere have used a mixed-mode implementation (Siemer et al. 2018, Lesser et al. 2011, Laborde et al. 2014). Findings from this study suggest that it is reasonable to use a mixed-mode approach to data collection from waterfowl hunters. Using a combination of web and mail surveys was an efficient way to increase sample size while containing survey implementation costs. The utility of mixed mode surveys, or the sole use of web-based surveys, will continue to increase as more hunters provide email addresses on their hunting licenses or HIP registration form.

Heavy Reliance on Public Lands and Waters Our findings demonstrate the importance of public lands and waters for the future of duck hunting in upstate New York. We found that about a third of duck hunters in upstate New York hunt exclusively on public lands or waters, and 4 out of 5 spend some of their duck hunting time on public land.

The finding that about two-thirds of active hunters in 2019/20 had hunted ducks on public *waters* (i.e., public lakes, navigable rivers, bays) was noteworthy. Previous duck hunter surveys in New York had not specifically documented use of public waters. Hunter surveys in other states have documented heavy use of public waters (e.g., Robinson and Howell [2021] found that 76% of North Carolina duck hunters has used public waters for duck hunting sometime during the past 5 years). Wildlife managers may be able to have a positive impact on waterfowl hunting participation by facilitating or maintaining access to public waters. This could involve capital investments (e.g., maintaining or creating public boat launches that give duck hunters access to public waters) or communication activities aimed at reducing or averting conflicts between duck hunters using public waters and owners of adjacent waterfront property. We documented that the proportion of hunters who spend time on open, unrestricted, public lands far exceeds the proportion who spend time on restricted access properties managed by DEC or other agencies. This pattern of land use may be explained in part by hunter preference, but also by the relative scarcity of and uneven distribution of restricted access public lands.

Segmenting the Hunter Population by Access One of the objectives of this study was to characterize duck hunters into meaningful groups according to hunting access. We expected to find subgroups of hunters based on how hunters ranked the importance of five conditions that may influence satisfaction with duck hunting on public lands. We did identify hunter groups based on lands used for duck hunting. But the clearest distinction between these groups was their ability to access private lands rather than their ranking of conditions that affect hunting satisfactions on public lands. A portion of the duck hunter population—perhaps a third of all hunters—believe they have poor opportunities to hunt ducks on private lands and spend all their hunting time on public lands. Another portion—perhaps two-thirds of the duck hunter

population—have some access to private lands, but many hunters in this group don't have access to multiple private parcels. Only a minority—perhaps one in five hunters—spent most or all of their hunting time on private lands and are confident that they will have places to hunt ducks on private lands in the future. These patterns have important implications for retention of duck hunter in coming years.

Managing for Competing Objectives One of our study objectives was to identify regulatory conditions that influence satisfactions with hunting on public lands. We found that having flexibility on when one can hunt ducks was consistently rated as the condition that had greatest effect on satisfaction with hunting on public lands. But reducing conflict with other duck hunters was also highly valued by duck hunters. Wildlife agencies face tradeoffs when managing duck hunting areas to achieve hunter desires for both freedom of choice in when to hunt ducks and freedom from conflicts with other duck hunters. Tradeoffs are necessary because the main tools managers have to reduce hunter conflicts are access restrictions that reduce hunter choices about when and where they hunt ducks. These findings don't provide clear-cut guidance to managers about the best ratio of restricted to unrestricted public lands. Rather, the findings confirm that a minority of duck hunters prefer restricted lands because they perceive restricted public lands as places with better opportunities to see and shoot ducks and manage hunter behavior, while many other public land users are willing to accept some hunter conflict in exchange for having a place to hunt ducks.

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## APPENDIX A: STUDY QUESTIONNAIRE

### Duck Hunting on Public Land:

#### Your Views and Activities

Duck hunting occurs on several kinds of public land in New York, including wildlife management areas (WMAs) operated by the New York State Department of Environmental Conservation (DEC), as well as some state parks, wildlife refuges, and state forests. DEC is sponsoring this survey to learn more about hunters' opinions about, and use of, public lands in upstate New York.

Information from this study will help DEC understand hunters' use of public land and the kinds of duck hunting experiences hunters desire on public lands in upstate New York.

**Please take a few minutes to complete this questionnaire.** Your identity will be kept confidential and the information you give us will never be associated with your name.

To return this questionnaire, simply seal it with the white reusable seal (postage has already been provided) and drop it in the nearest mailbox.

**THANK YOU FOR YOUR HELP!**

## PART I: YOUR DUCK HUNTING

### Public Land in Upstate New York

This survey focuses on duck hunting on public lands in upstate New York. “Upstate” means all of New York State north of Rockland and Westchester counties.

“Public land” means DEC wildlife management areas, New York state parks, national wildlife refuges, and other lands such as state forests and forest preserves (public waters – like public lakes or navigable rivers—are not included). Examples of public lands are provided below.

DEC Wildlife Management Areas (WMAs): Perch River, Oak Orchard, Upper and Lower Lakes, Tonawanda, Northern Montezuma

NYS Parks: Beaver Island, Delta Lake, Fort Niagara, Sampson, Seneca Lake, Wilson-Tuscarora

USFWS National Wildlife Refuges: Montezuma, Iroquois

1. About how many total years have you hunted ducks in New York? (Write a number.)

\_\_\_\_\_ years

2. How important is duck hunting to you? (Circle one number.)

1	It's my <b>most important</b> recreational activity
2	It's <b>more</b> important than many of my recreational activities
3	It's no more important than my other recreational activities
4	It's <b>less</b> important than many of my recreational activities
5	It's one of my <b>least important</b> recreational activities

3. Last season (2019-20 license year), how many days did you hunt ducks in each of the following waterfowl hunting zones in New York State? (if none, write in 0.)

Western Zone	_____ days
Northeastern Zone	_____ days
Lake Champlain Zone	_____ days
Southeastern Zone	_____ days
Long Island Zone	_____ days



4. During the 2019-2020 season, about how many days did you hunt ducks on each of the following types of land or water in New York State? (if none, write in 0.)

DEC wildlife management areas <u>that restrict access</u> for duck hunting (require a special permit or have area-specific hunting days or hours) (e.g., Tonawanda WMA, Oak Orchard WMA, Perch River WMA, Wilson Hill WMA, Bashakill WMA)	_____ days
Other public lands <u>that restrict access</u> for duck hunting (e.g., state parks, Montezuma NWR, Iroquois NWR)	_____ days
Public lands <u>with open and unrestricted access</u> for duck hunting (no special permit required, no special hunting hours or days on these lands) (e.g., Northern Montezuma WMA, state forests, forest preserves)	_____ days
Public waters (public lakes, navigable rivers bays) (e.g., Cayuga Lake, Hudson River)	_____ days
Private land	_____ days

## PART II: YOUR ACCESS TO PRIVATE LAND

5. Do you own or lease land in upstate New York on which you hunt ducks? (Circle one number per row.)

	No	Yes
Hunt ducks on land I own in upstate NY	1	2
Hunt ducks on land I lease in upstate NY	1	2

6. How would you describe your level of opportunity to hunt ducks on private land in upstate New York during the past 5 years? (Circle one number.)

- 1 Poor – I had no access to private land to hunt ducks
- 2 Limited – I had very few opportunities to hunt ducks on private land
- 3 Fair – I had a number of opportunities to hunt ducks on private land
- 4 Good – I often had opportunities to hunt ducks on private land
- 5 Excellent – I could hunt ducks on private land pretty much whenever I wanted to

**7. Did you lose access to any duck hunting areas on private land in upstate New York during the past 5 years? (Circle one number.)**

- 1 No → → IF NO, SKIP TO QUESTION 9
- 2 Yes → → CONTINUE TO NEXT QUESTION

**8. If yes, how did you deal with that loss of access? (Circle all that apply.)**

- 1 I found alternative private land to hunt ducks
- 2 I spent more time hunting on other private land I still have access to
- 3 I used more public land to hunt ducks
- 4 I hunted ducks less

### PART III: YOUR VIEWS ABOUT HUNTING ACCESS

**9. To what extent do you agree or disagree with the following statements about access for hunting ducks in New York? (Circle one number per row.)**

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
It has become increasingly difficult for me to find places to hunt ducks	1	2	3	4	5
I have access to multiple locations on private land where I can hunt ducks	1	2	3	4	5
I rely heavily on public lands for duck hunting	1	2	3	4	5
I prefer to hunt on public lands where the number of hunters is limited by permit	1	2	3	4	5
I prefer to hunt on public land where hunter access is open to all (unrestricted)	1	2	3	4	5
I can tolerate some hunter crowding on public land in exchange for having a guaranteed place to hunt	1	2	3	4	5
I am confident I will have access to private land for duck hunting in the future	1	2	3	4	5

**PART IV: ACCESS POLICIES AND YOUR SATISFACTION WITH DUCK HUNTING ON PUBLIC LANDS IN NEW YORK STATE**

These questions will help DEC understand how access policies affect your satisfaction with duck hunting experiences on public land. (**Note:** *public land means wildlife management areas managed by DEC, state parks, state forests and forest preserves, and national wildlife refuges. It refers to lands and wetlands, not public lakes or navigable rivers.*)

10. How important are each of the following conditions to your satisfaction with duck hunting experiences on public lands? (Circle one number per row.)

On public lands, how important is...	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Having flexibility in <u>when</u> I can hunt ducks (e.g., being able to hunt on any day of the week, or hunt in morning or afternoon)	1	2	3	4	5
Restricting waterfowl hunting access on portions of the property (refuges) to hold ducks in the area longer	1	2	3	4	5
Having opportunities to bag as many ducks per day as allowed by bag limits (i.e., maximizing success rate)	1	2	3	4	5
Reducing potential conflicts with other duck hunters	1	2	3	4	5
Reducing complexity of rules regulating how duck hunters can use a public property	1	2	3	4	5

- 11.** The conditions you rated in the last question are repeated below. **RANK** the conditions in order from 1 to 5, according to how much they influence your satisfaction with duck hunting experiences on public lands.

**1 = MOST important condition**

2 = 2<sup>nd</sup> most important      4 = 4<sup>th</sup> most important

3 = 3<sup>rd</sup> most important      5 = **LEAST important condition**

**USE EACH NUMBER (1-5) ONLY ONCE  
IN THE TABLE BELOW**

	Rank in order from 1st to 5th
Having flexibility in <u>when</u> I can hunt ducks (e.g., being able to hunt on any day of the week, or hunt in morning or afternoon)	Rank: ____
Restricting waterfowl hunting access on portions of the property (refuges) to hold ducks in the area longer	Rank: ____
Having opportunities to bag as many ducks per day as allowed by bag limits (i.e., maximizing success rate)	Rank: ____
Reducing potential conflicts with other duck hunters	Rank: ____
Reducing complexity of rules regulating how duck hunters can use a public property	Rank: ____

**\*\*\* Remember to use each number only once**

--Rank the conditions 1st, 2nd, 3rd, 4th, and 5<sup>th</sup>

--Rank the most important condition 1<sup>st</sup>

--Rank the least important condition 5<sup>th</sup>

**12. How would you rate the quality of duck hunting experiences available on the following types of public land? (Circle one number per row.)**

Quality of duck hunting experiences available on...	Excellent	Good	Fair	Poor	Unsure (I do not hunt there)
<u>Public lands that restrict access</u> for duck hunting (require a special permit or have specific hunting days or hours)	1	2	3	4	5
Public lands <u>with open access</u> for duck hunting (no special permit required, no special hunting hours or days)	1	2	3	4	5
Private land in New York	1	2	3	4	5

**13. In your opinion, how do public lands with restricted access compare to public lands with unrestricted/open access? (Circle one number per row.)**

How do <u>restricted access</u> public lands compare to <u>open access</u> public lands on...	<u>Better</u> than open access land	About the same	<u>Worse</u> than open access land	Unsure/No opinion
Opportunity to see ducks	1	2	3	4
Opportunities to bag at least 1 duck	1	2	3	4
Behavior of other duck hunters	1	2	3	4

**14. Some public lands restrict access to improve hunt quality. Others allow open access to maximize opportunity to go duck hunting. Which type of public land do you prefer to hunt? (Circle one number.)**

- 1 Public lands that restrict access (e.g., limit the number of days a property is open to duck hunting, provide duck refuge areas, limit the number of hunters per day, or limit shooting hours) to improve hunt quality
- 2 Public lands with open access to maximize opportunity to go hunting, regardless of hunt quality
- 3 No preference – I like each type of public land about the same
- 4 Not applicable – I don't hunt ducks on public lands

**15. On average, how crowded did you feel when hunting ducks on private land or public land in upstate New York last season (2019-20 license year)? (Circle one number per row. Circle "Does not apply to me" if you did not hunt ducks on that land type last season.)**

How you felt when hunting ducks in upstate NY last season on...	Not at all crowded	Slightly crowded	Moderately crowded	Very crowded	Does not apply to me
Private lands	1	2	3	4	5
Public lands	1	2	3	4	5

**16. In the past 5 years, what is the furthest distance you have driven (one way) from home to hunt ducks on a DEC wildlife management area? (Circle one number.)**

- 1 Not applicable—I have never hunted ducks on a WMA
- 2 Within a 1-hour drive of home
- 3 Within a 2-hour drive of home
- 4 Within a 3-hour drive of home
- 5 Further than a 3-hour drive from home

**THANK YOU FOR YOUR INPUT!**

## APPENDIX B: NONRESPONDENT – RESPONDENT COMPARISONS

Table B1. Comparison of nonrespondents and respondents on percentage who hunted ducks on different types of land.

		Hunted ducks in 2019-20 season		%	$\chi^2$	P value
		N	n			
Hunted on private lands						
	Nonrespondents	88	64	72.8	2.35	NS
	Respondents	946	611	64.6		
Hunted on public waters						
	Nonrespondents	88	62	70.5	2.49	NS
	Respondents	946	586	61.9		
Public lands with open (unrestricted) access						
	Nonrespondents	88	50	56.8	9.06	0.002
	Respondents	946	381	40.3		
DEC WMAs that restrict access						
	Nonrespondents	88	9	10.2	3.68	NS
	Respondents	946	174	18.4		
Other public lands that restrict access						
	Nonrespondents	88	13	14.8	0.02	NS
	Respondents	946	135	14.3		
Hunted on public lands or waters						
	Nonrespondents	88	70	79.5	0.20	NS
	Respondents	946	771	81.5		

Table B2. Comparison of nonrespondents and respondents on personal importance they place on hunting ducks.

	<u>Nonrespondents</u>		<u>Respondents</u>		$\chi^2$	P value
	n	%	n	%		
It is my <i>most important</i> recreational activity	16	16.0	160	15.4	0.53	0.97 (NS)
It is <i>more</i> important than many of my recreational activities	52	52.0	545	52.4		
It is no more important than my other recreational activities	24	24.0	272	26.1		
It is less important than many of my recreational activities	6	6.0	50	4.8		
It is one of my <i>least important</i> recreational activities	1	1.0	14	1.3		
Total	100	100.0	1,041	100.0		

Table B3. Comparison of nonrespondents and respondents to statement “It has become increasingly difficult for me to find places to hunt ducks.”

	<u>Nonrespondents</u>		<u>Respondents</u>		$\chi^2$	P value
	n	%	n	%		
Strongly agree	20	20.0	224	22.3	53.51	<0.001
Agree	39	39.0	360	35.8		
Neither	2	2.0	263	26.2		
Disagree	34	34.0	123	12.2		
Strongly disagree	5	5.0	35	3.5		
Total	100	100.0	1,005	100.0		



Table B4. Comparison of nonrespondents and respondents to statement “I have access to multiple locations on private land where I can hunt ducks.”

	<u>Nonrespondents</u>		<u>Respondents</u>		$\chi^2$	P value
	n	%	N	%		
Strongly agree	10	10.0	77	7.7	39.11	<0.001
Agree	49	49.0	254	25.4		
Neither	2	2.0	159	15.9		
Disagree	28	28.0	255	25.5		
Strongly disagree	11	11.0	255	25.5		
Total	100	100.0	1,000	100.0		

Table B5. Comparison of nonrespondents and respondents to statement “I rely heavily on public lands for duck hunting.”

	<u>Nonrespondents</u>		<u>Respondents</u>		$\chi^2$	P value
	n	%	n	%		
Strongly agree	28	28.0	346	34.6	27.85	<0.001
Agree	29	29.0	229	22.9		
Neither	8	8.0	172	17.2		
Disagree	32	32.0	151	15.1		
Strongly disagree	3	3.0	102	10.2		
Total	100	100.0	1,000	100.0		

Table B6. Comparison of nonrespondents and respondents to statement “I am confident I will have access to private land for duck hunting in the future.”

	<u>Nonrespondents</u>		<u>Respondents</u>		$\chi^2$	P value
	n	%	n	%		
Strongly agree	13	13.0	119	11.9	37.71	<0.001
Agree	53	53.0	266	26.6		
Neither	5	5.0	203	20.3		
Disagree	20	20.0	238	23.8		
Strongly disagree	9	9.0	175	17.5		
Total	100	100.0	1,001	100.0		

Table B7. Comparison of nonrespondents and respondents on perceived quality of duck hunting experiences on public lands that restrict access.

	<u>Nonrespondents</u>		<u>Respondents</u>		$\chi^2$	P value
	n	%	n	%		
Excellent	1	1.0	74	7.8	--- <sup>a</sup>	---
Good	8	8.0	196	20.6		
Fair	11	11.0	182	19.1		
Poor	7	7.0	53	5.6		
Unsure (don't hunt there)	73	73.0	448	47.0		
Total	100	100.0	953	100.0		

<sup>a</sup> Number of nonrespondents who had hunted on public lands that restricted access was below 30, so we did not calculate a test statistic.

Table B8. Comparison of nonrespondents and respondents on perceived quality of duck hunting experiences on public lands that have unrestricted access.

	<u>Nonrespondents</u>		<u>Respondents</u>		$\chi^2$	P value
	n	%	n	%		
Excellent	13	13.0	74	7.8	12.23	0.015
Good	39	39.0	291	30.5		
Fair	22	22.0	332	34.8		
Poor	6	6.0	102	10.7		
Unsure (don't hunt there)	20	20.0	155	16.2		
Total	100	100.0	953	100.0		

## APPENDIX C: RESULTS WEIGHTED USING NONRESPONDENT INTERVIEW DATA

Table C1. Comparison of nonrespondents and respondents to statement “It has become increasingly difficult for me to find places to hunt ducks.”

	<u>Nonrespondents</u> Adjusted <sup>a</sup>			<u>Respondents</u>		<u>Weighted<sup>b</sup></u>	
	n	n	%	n	%	n	%
Strongly agree	20	367	20.0	224	22.3	591	20.8
Agree	39	717	39.0	360	35.8	1,077	37.9
Neither	2	37	2.0	263	26.2	300	10.6
Disagree	34	625	34.0	123	12.2	748	26.3
Strongly disagree	5	92	5.0	35	3.5	127	4.5
Total	100	1,838	100.0	1,005	100.0	2,843	100.0

<sup>a</sup>Data from 100 nonrespondent interviews extrapolated to represent all 1,838 survey nonrespondents.

<sup>b</sup>Data weighted to represent responses from both respondents and nonrespondents.

Table C2. Comparison of nonrespondents and respondents to statement “I have access to multiple locations on private land where I can hunt ducks.”

	<u>Nonrespondents</u> Adjusted			<u>Respondents</u>		<u>Weighted<sup>b</sup></u>	
	n	n <sup>a</sup>	%	n	%	n	%
Strongly agree	10	184	10.0	77	7.7	261	9.2
Agree	49	901	49.0	254	25.4	1,155	40.7
Neither	2	37	2.0	159	15.9	196	6.9
Disagree	28	514	28.0	255	25.5	769	27.1
Strongly disagree	11	202	11.0	1,000	25.5	457	16.1
Total	100	1,838	100.0	2,865	100.0	2,838	100.0

<sup>a</sup>Data from 100 nonrespondent interviews extrapolated to represent all 1,838 survey nonrespondents.

<sup>b</sup>Data weighted to represent responses from both respondents and nonrespondents.

Table C3. Comparison of nonrespondents and respondents to statement “I rely heavily on public lands for duck hunting.”

	<u>Nonrespondents</u>			<u>Respondents</u>		<u>Weighted<sup>b</sup></u>	
	Adjusted					n	%
	n	n <sup>a</sup>	%	n	%		
Strongly agree	28	515	28.0	346	34.6	861	30.3
Agree	29	533	29.0	229	22.9	762	26.8
Neither	8	147	8.0	172	17.2	319	11.2
Disagree	32	588	32.0	151	15.1	739	26.0
Strongly disagree	3	55	3.0	102	10.2	157	5.5
Total	100	1,838	100.0	1,000	100.0	2,792	100.0

<sup>a</sup>Data from 100 nonrespondent interviews extrapolated to represent all 1,838 survey nonrespondents.

<sup>b</sup>Data weighted to represent responses from both respondents and nonrespondents.

Table C4. Comparison of nonrespondents and respondents to statement “I am confident I will have access to private land for duck hunting in the future.”

	<u>Nonrespondents</u>			<u>Respondents</u>		<u>Weighted<sup>b</sup></u>	
	adjusted					n	%
	n	n <sup>a</sup>	%	n	%		
Strongly agree	13	239	13.0	119	11.9	358	12.6
Agree	53	974	53.0	266	26.6	1,240	43.7
Neither	5	92	5.0	203	20.3	295	10.4
Disagree	20	368	20.0	238	23.8	606	21.3
Strongly disagree	9	165	9.0	175	17.5	340	12.0
Total	100	1,838	100.0	1,001	100.0	2,839	100.0

<sup>a</sup>Data from 100 nonrespondent interviews extrapolated to represent all 1,838 survey nonrespondents.

<sup>b</sup>Data weighted to represent responses from both respondents and nonrespondents.

Table C5. Comparison of nonrespondents and respondents on perceived quality of duck hunting experiences on public lands that have unrestricted access.

	<u>Nonrespondents</u>			<u>Respondents</u>		<u>Weighted<sup>b</sup></u>	
	n	Adjusted n <sup>a</sup>	%	n	%	n	%
Excellent	13	239	13.0	74	7.8	313	11.2
Good	39	717	39.0	291	30.5	1,008	36.1
Fair	22	404	22.0	332	34.8	736	26.4
Poor	6	110	6.0	102	10.7	212	7.6
Unsure (don't hunt there)	20	368	20.0	155	16.2	523	18.7
Total	100	1,838	100.0	953	100.0	2,792	100.0

<sup>a</sup>Data from 100 nonrespondent interviews extrapolated to represent all 1,838 survey nonrespondents.

<sup>b</sup>Data weighted to represent responses from both respondents and nonrespondents.