



**AN ASSESSMENT OF  
NEW JERSEY RESIDENT BOW HUNTER PARTICIPATION**

**Survey mailed: May 2010  
Data analyzed: July 2010**

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## **EXECUTIVE SUMMARY**

### Background

In late 2007, the Division of Fish and Wildlife conducted a random survey of resident New Jersey hunters regarding the inclusion of crossbow to the list of legal hunting weapons. Hunter support, in addition to research on crossbow ballistics and success rates, and a review of other States' crossbow seasons led the Fish and Game Council to approve the crossbow for inclusion as a legal hunting arm during all archery seasons beginning in the 2009-2010 deer season.

In 2009, the New Jersey Legislature legalized bow hunting on Sundays on private property and state Wildlife Management Areas. It offered a tremendous opportunity for bow hunters by adding 12-21 days to the archery seasons, depending on the deer management zone hunted.

In response to these new opportunities for bow hunters, the Division of Fish and Wildlife conducted a survey to gather information on bow hunter participation in the new crossbow and Sunday hunting regulations.

The survey was conducted in May 2010. A survey was mailed to 1,900 resident bow hunting license holders, randomly chosen from the Division's automated licensing system. Eight hundred ninety (890) surveys were returned (46.8%) indicating a very strong interest in this subject. A summary of results follows:

### **PARTICIPATION IN BOW HUNTING IN NEW JERSEY**

► Resident license buyers, 16 years or older who purchased a Resident Archery License, Resident Senior Archery License or All-around Sportsman license were surveyed (Youth Archery and Youth Firearm License buyers were excluded). Respondents were asked which deer seasons they participate in with bows and with firearms. Only seven percent of respondents did not bow hunt in 2009-2010. User groups were defined by the seasons hunted, breaking down deer hunters into bow and gun hunters, gun-only hunters, and bow-only hunters. Seventy-eight percent of participating deer hunters use bow and guns; 14% hunt with bows only; and 4% hunt with guns only. This is not representative of the total hunter population as firearm license purchasers were not included in this survey.

### **TYPES OF ARCHERY EQUIPMENT UTILIZED**

► Hunters were asked to identify all types of bows used in 2009-2010. Compound bows were the most commonly used, by 85% of respondents; followed by crossbows at 25%; recurve bows at 4%; and longbow at 2%.

▶ When asked to identify the primary bow used, 78% of respondents answered compound bow. Crossbows were the next popular choice at 19%, followed by recurve bows, 2%; and longbow, 1%.

#### INFLUENCE OF CROSSBOW LEGALIZATION

▶ Eighty-eight percent said that the legalization of crossbows had no influence on their decision to hunt. Those respondents who attributed a return to bow hunting due to crossbow legalization numbered 11%, and less than 1% said that crossbows influenced them to start bow hunting. Three percent of the participants did not respond.

#### METHOD (S) OF HUNTING

▶ The majority of respondents (93%) utilized elevated stands, 32% used ground blinds and 28% still-hunted or stalked.

#### HUNTERS USE OF BAIT

▶ Sixty percent of respondents hunted over or near bait. Most participants used multiple types of bait. Among the types bait, food attractants (i.e. corn, apples, etc) were the most common bait choice at 92%; 37% used scent attractants and 20% used mineral licks.

▶ Seventy-three percent of hunters thought baiting increased their success in harvesting a deer. Twenty-seven percent did not believe that baiting increased their success.

#### INFLUENCE OF SUNDAY BOW HUNTING LEGALIZATION

▶ The majority of respondents answered that Sunday bow hunting increased their days afield (56%). Forty percent of respondents indicated that Sunday bow hunting did not influence their decision to hunt.

#### PARTICIPATION IN SUNDAY BOW HUNTING

▶ Sixty percent of respondents participated in Sunday bow hunting during the fall bow season, 50% during the permit bow season and 29% during the winter bow season.

▶ During the fall bow season, 69% of respondents reported 1-4 days of Sunday hunting participation. During the permit bow season, 79% of respondents reported 1-4 days of Sunday hunting participation. During the winter bow season, 72% of respondents reported 1-4 days of Sunday hunting participation.

▶ The majority of participants hunted Sundays with a bow on only private property (66%); 12% utilized state Wildlife Management Areas only. Twenty-two percent used both private and state WMAs.

#### PURCHASE of ANTLERED DEER PERMITS

▶ The majority of respondents purchased an antlered deer permit for the Permit Bow season (73%); 27% did not purchase an antlered deer permit.

#### ANTLER POINT RESTRICTIONS

▶ Participants were asked if they were willing to pass up shooting smaller-antlered bucks and shoot more does, for the chance to shoot larger-antlered bucks in later years. Most respondents were in favor (67%), 20% opposed and 13% had no opinion.

▶ Further, participants were asked if they found it acceptable to pass up an average of 11 yearling bucks for every older age class buck in the harvest, based upon data from 2001-05 in the existing 3-point Antler Restriction Zones. Thirty-six percent responded in favor, 33% opposed and 31% had no opinion.

#### AFFILIATION

▶ The majority of respondents were unaffiliated (44%); 36% belonged to a private hunting club, 18% belonged to the NJ State Federation of Sportsmen's Clubs.

## YEARS HUNTED IN NEW JERSEY

- ▶ Participants were asked how many years they have been bow hunting in New Jersey. The majority (51%) of respondents has been hunting between 21 and 40 years. Note that youth hunters, ages 10 through 16, were not included in this survey.

## AGE AND GENDER

- ▶ The majority of participating hunters were 40 years old or older (76%).
- ▶ The overwhelming majority of respondents were male (99%).

## Introduction and Methodology

The study entailed a mail survey of resident hunting license holders to identify participation in crossbow and Sunday bow hunting in New Jersey. The sample was obtained through the Electronic Licensing System (ELS), which has accumulated data on license holders since its implementation in 2006. Specific aspects of the methodology employed are discussed below.

Survey participants were drawn from the ELS database of all resident hunting licenses applicable to archery deer hunting, excluding holders of youth archery licenses, valid for the calendar year 2009.

The survey package consisted of an introductory letter from the Deer Project, a one-page survey, and a self-addressed, stamped envelope. Instructions were to return the survey no later than June 4, 2010. Data entry was cut off on June 4, 2010.

The New Jersey resident bow hunter population size was determined to be 36,744. In order to obtain a 95% confidence interval, ensuring a maximum sampling error of 5%, a sample size of 380 returned and usable surveys was determined using the following formula.

$$B = \left( \sqrt{\frac{\frac{N_p (.25)}{N_s} - .25}{N_p - 1}} \right) (1.96)$$

Where: B = maximum sampling error

Np = population size (total number that could be surveyed)

Ns = sample size (total number of respondents surveyed)

(Derived from formula: p. 206 in Dillman, D.A. 2000. *Mail and Internet Surveys*. John Wiley & Sons, NY.)

Sampling error is the expected probable difference between a census (surveying all 36,744 resident bow hunters) versus a scientific sample drawn from the resident hunter population. Sampling error increases as the number responding to each question (n) decreases. Therefore, smaller subgroups of the total surveyed population are subject to more error than is the total surveyed population.

In order to obtain a completed survey size of 380, five times that amount, or 1,900 license holders names were pulled from the ELS database. Six resident license type data were pooled. The percentage of each license type was calculated from the total resident license types. Those percentages were then applied to the total sample pull of 1,900 to determine how many of each license type were needed. The total of each license type was then divided by the desired sample needed for that license type to obtain the sampling interval. Calculations showed every 19.34765 license for each type should be pulled. This was rounded down to every 19<sup>th</sup> license. Each

license type will be sorted by ascending CID number, and then every 19<sup>th</sup> license was pulled (see Table 1).

Table 1.

Privilege #	License type	number sold	% of total res sales	sample size	Number drawn
1	AA	14859	.40439255	768	19.34765
203	RB	18334	.49896581	948	19.34765
204	Sr B	2411	.06561616	125	19.34765
2	AA DV	871	.02370455	45	19.34765
216	RB DV	105	.00285761	5	19.34765
217	Sr RB DV	164	.00446331	9	19.34765
Total		36744	1	1900	

Fifty-four surveys were returned as non-deliverable. The response rate of usable surveys received before the data entry cut-off was 46.8%. The total number of completed surveys used was 890. Therefore, sampling error is plus or minus 3.0 percentage points when all respondents answered the question. Chi square statistical analysis was performed on responses between user groups to determine significance. An alpha level of 0.05 was used to determine significance among responses to questions by various user groups.

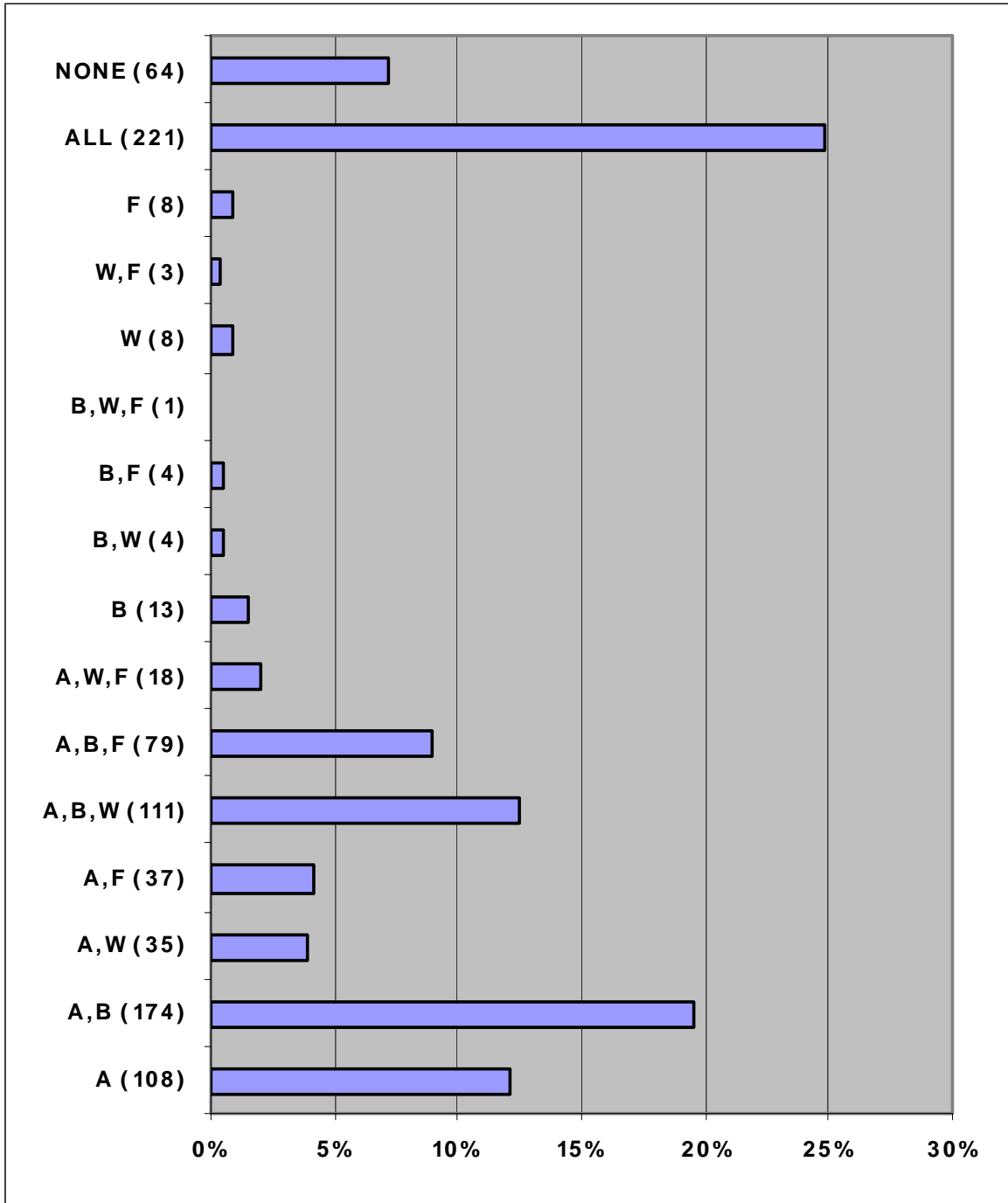
Note results may not sum exactly to 100% because of rounding.

**Q1. In which of the 2009-10 deer season(s) did you bow hunt?**

**Ninety-three percent of the respondents bow hunted in 2009-10.**

Season Codes: A – Fall Bow; B – Permit Bow; W – Winter Bow and F – Six-day Firearm Buck.

**ALL RESPONDENTS (n = 888)**



n=888 Sampling error +/- 3%

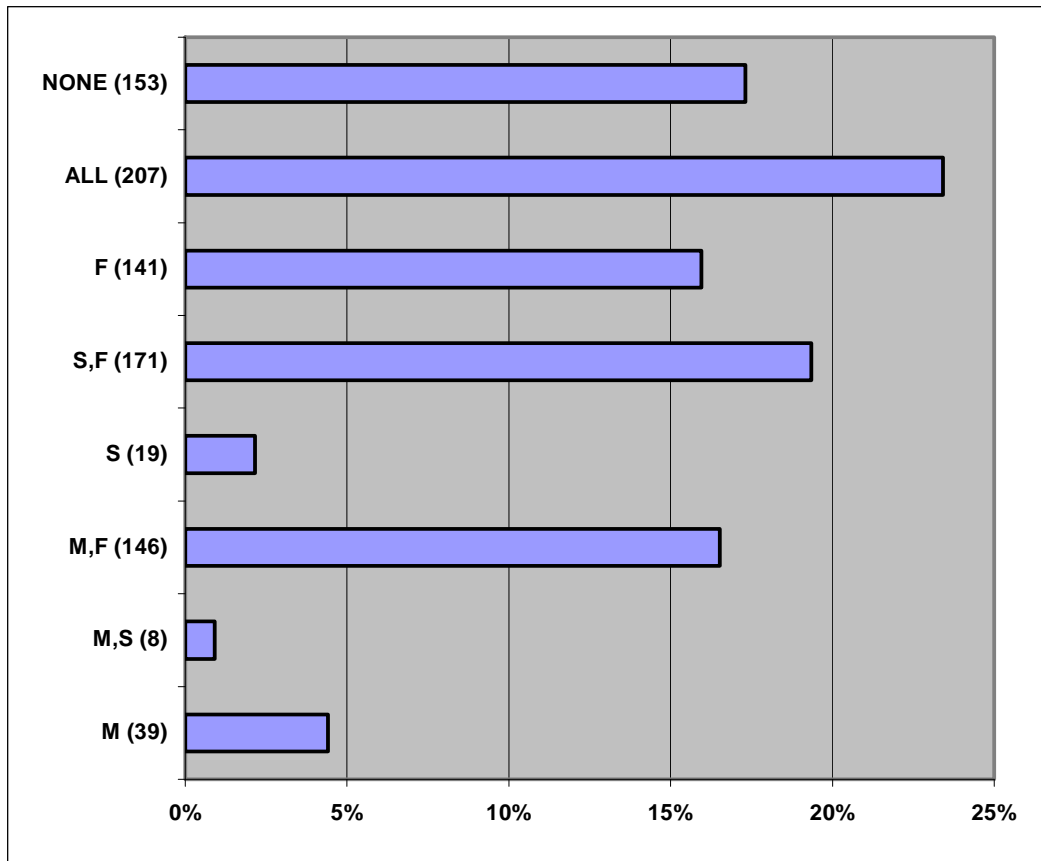


**Q2. Did you also hunt with a firearm in the 2009-10 deer season(s)?**

**Eighty-three percent of the respondents hunted with firearms in 2009-10.**

Season Codes: S – Permit Shotgun; M – Permit Muzzleloader; and F – Six-day Firearm Buck.

**ALL RESPONDENTS (n = 884)**

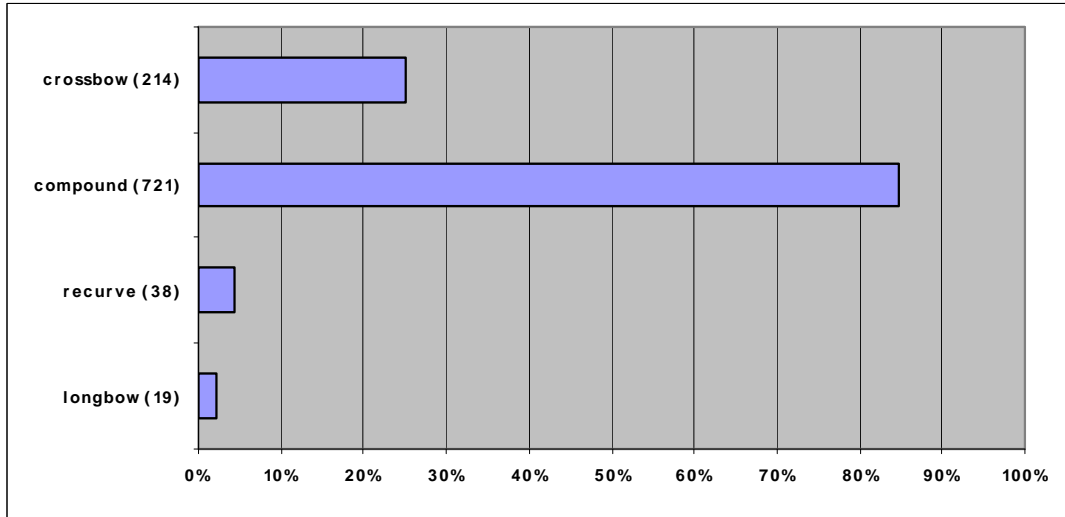


**n=884 Sampling error +/- 3%**

**Q3. What type(s) of bow did you use?**

Many participants used more than one type of bow. Most popular were compound bows (85%), followed by crossbows, 25%.

**ALL RESPONDENTS (n = 850)**

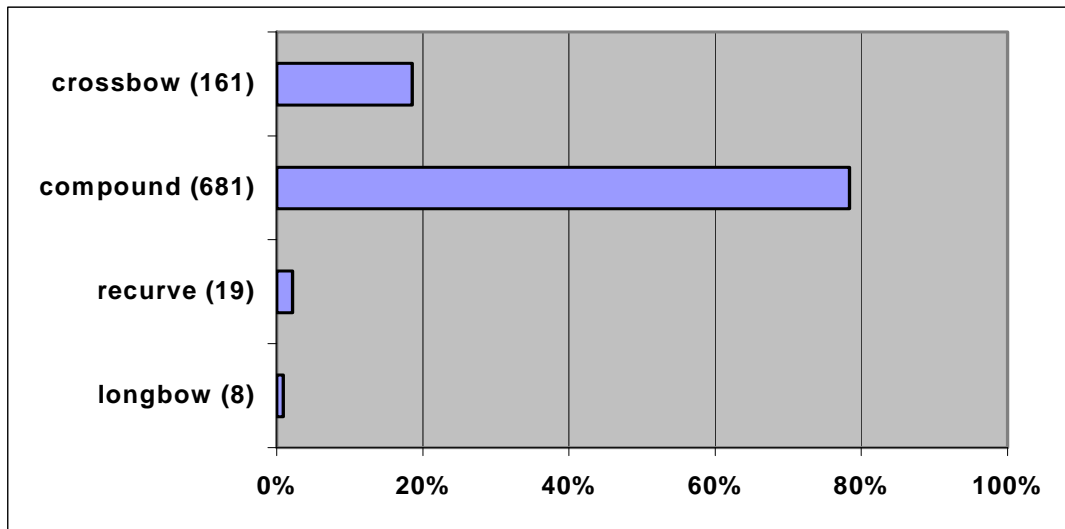


n=850 Sampling error +/- 3%

**Q4. What type of bow did you hunt with most?**

When asked which type of bow was used primarily, 78% of respondents answered compound bow, crossbows 19%, recurve bows 2%, and longbow 1%.

**ALL RESPONDENTS (n = 869)**

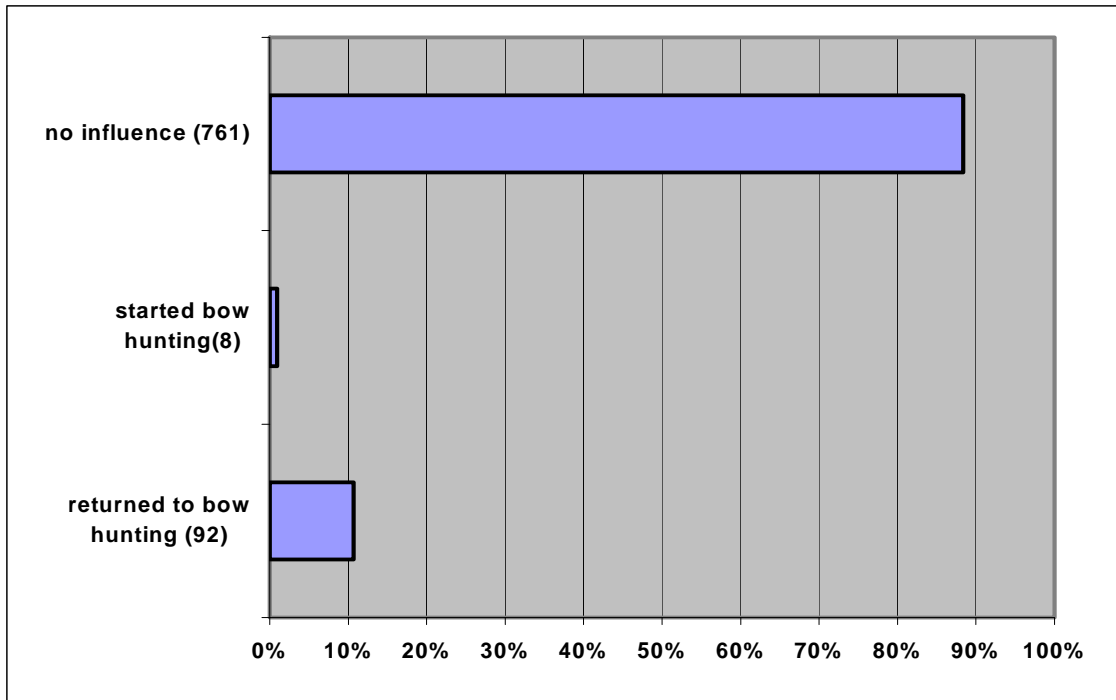


n=869 Sampling error +/- 3%

**Q5. Did the legalization of the crossbow impact your decision to bow hunt this year?**

The majority of respondents (88%) said that crossbows bore no influence on their decision to bow hunt. While crossbow legalization influenced 11% who returned to bow hunting; and 1% who started bow hunting.

**ALL RESPONDENTS (n = 861)**

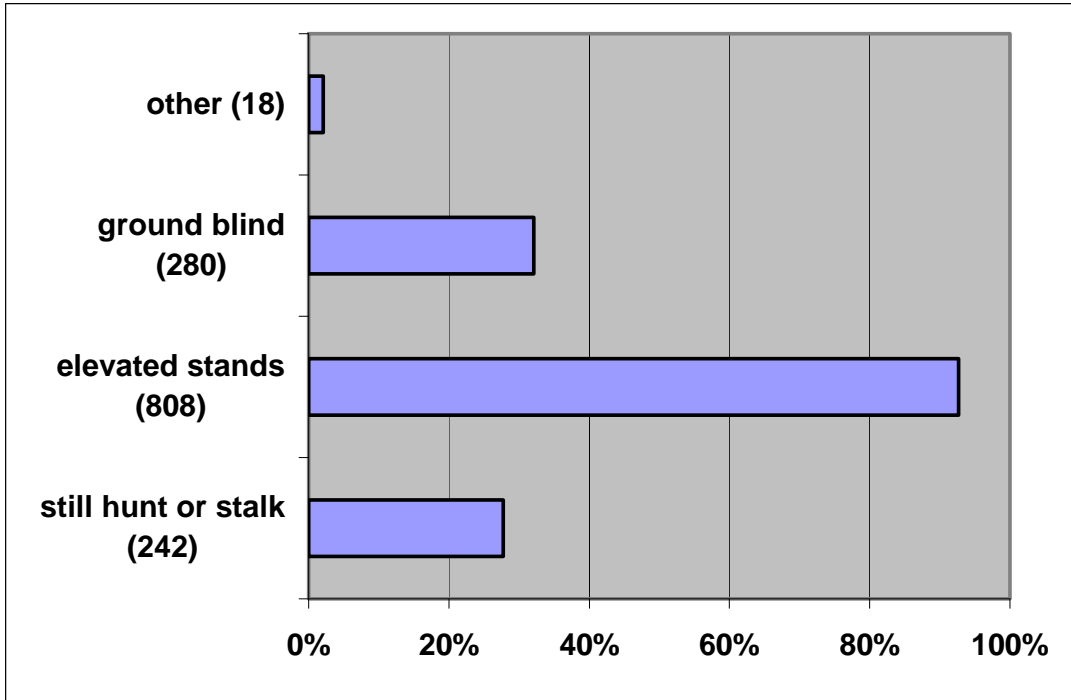


**n=861 Sampling error +/- 3%**

**Q6. What method(s) of hunting did you utilize?**

Many participants used multiple methods. Elevated stands were most popular (93%).

**ALL RESPONDENTS (n = 872)**



n=872 Sampling error +/- 3%

**Q7. Do you hunt over bait?**

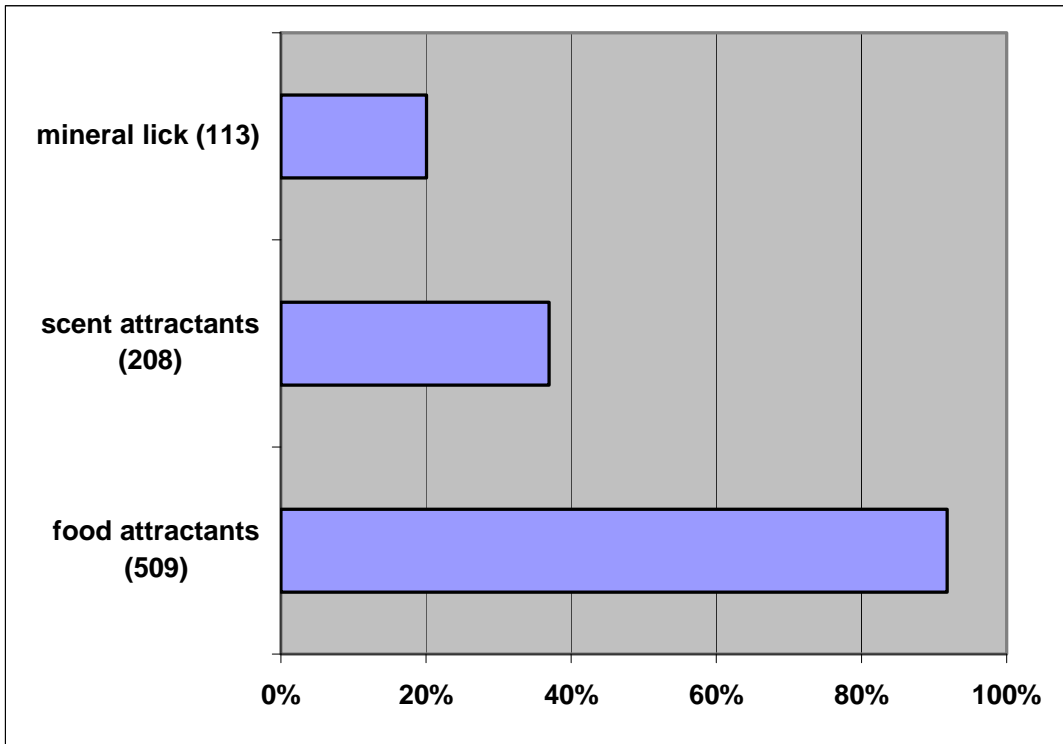
Yes	527	60%
No	350	40%

n=877 Sampling error +/- 3%

**Q8. What type of bait did you utilize?**

When asked which type of bait was used, the most popular response was food attractants (92%), including flood plots. Scent attractants were used by 37%, while mineral licks were 20% of respondents.

**ALL RESPONDENTS (n = 563)**



Thirty-seven percent of respondents chose not to answer.

**n=563 Sampling error +/- 4%**

**Q9. Do you believe that the use of bait increased your success in harvesting a deer?**

Yes	518	73%
No	195	27%

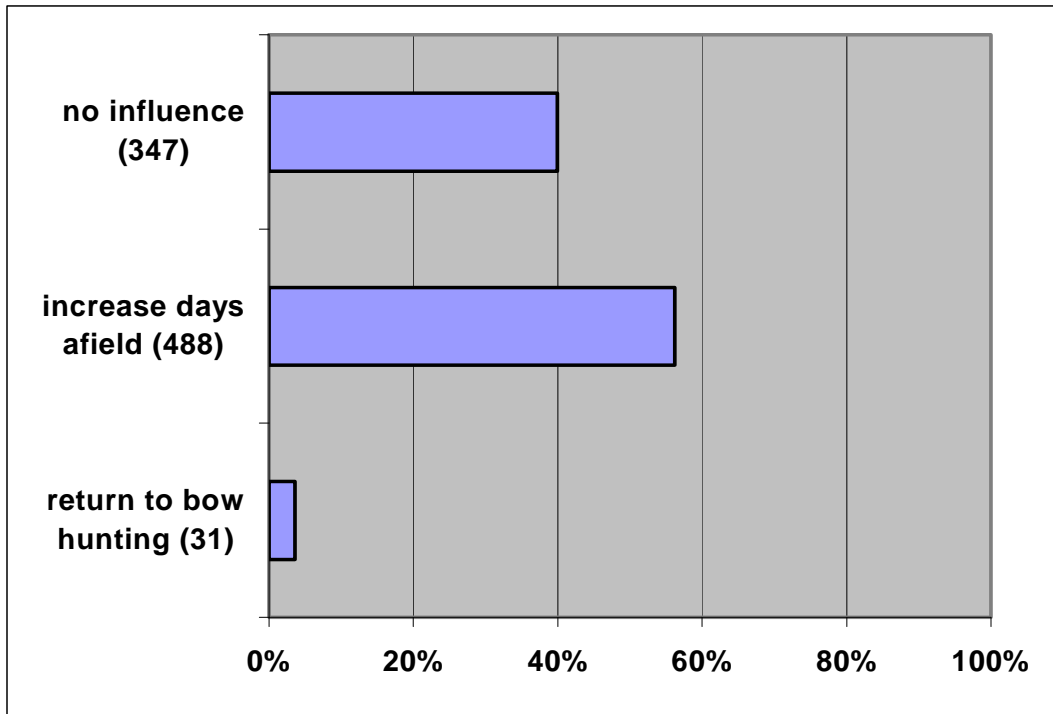
Twenty percent of respondents did not answer.

**n=713 Sampling error +/- 4%**

**Q10. Did the legalization of Sunday bow hunting impact your decision to hunt this year?**

**Most respondents said that Sunday bow hunting increased their days afield (56%), followed by those not influenced, 40%; and those who returned to bow hunting, 4%. Only 2 participants said they were influenced to start bow hunting.**

**ALL RESPONDENTS (n = 868)**



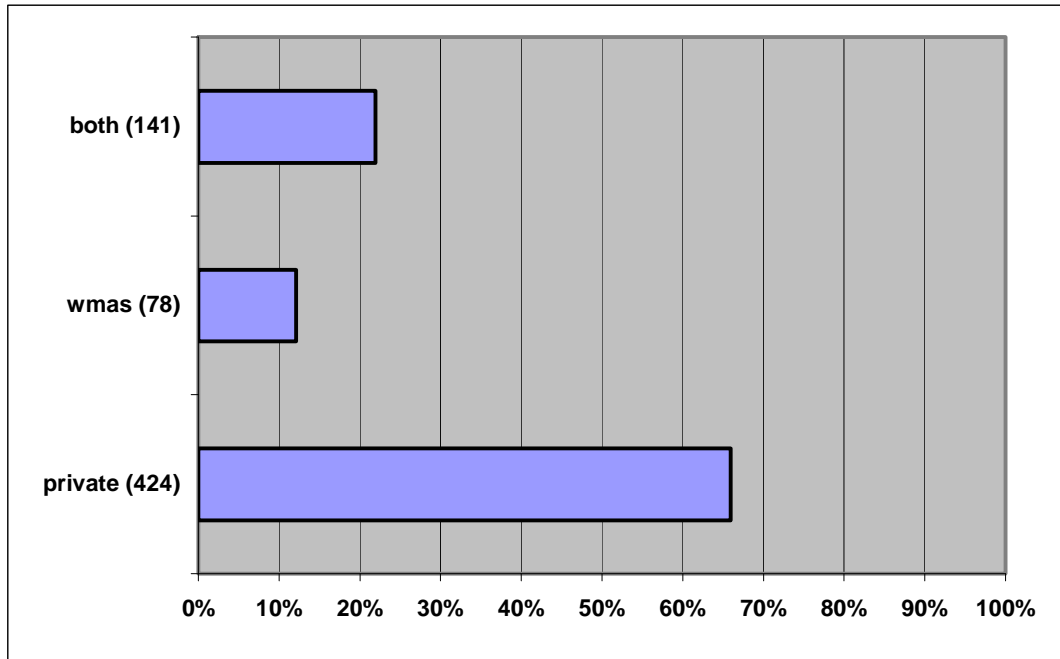
**n=868 Sampling error +/- 3%**

**Q11 - 13. Participation in Sunday Bow Hunting**

Please answer for each season listed below	Did you hunt Sundays?	How many Sundays hunted this season?	Number of antlerless deer harvested on Sundays this season	Number of antlered deer harvested on Sundays this season
<b>11. Fall Bow</b>  n=853 Sampling Error +/- 3%	Yes (514) 60%	No Answer (34) 7%	antlerless deer: 97	antlered deer: 25
		1 day (37) 7%	hunters reporting: 72	hunters reporting: 25
		2 days (135) 26%		
		3 days (106) 21%		
		4 days (76) 15%		
		5 days (23) 4%		
		6 days (16) 3%		
		7 days (87) 17%		
<b>12. Permit Bow</b>  n=852 Sampling Error +/- 3%	Yes (423) 50%	No Answer (35) 8%		
		1 day (55) 13%	hunters reporting: 38	hunters reporting: 30
		2 days (103) 24%		
		3 days (78) 18%		
		4 days (101) 24%		
		5 days (9) 2%		
		6 days (15) 4%		
		7 days (27) 6%		
<b>13. Winter Bow</b>  n=853 Sampling Error +/- 3%	Yes (251) 29%	No Answer (13) 5%		
		1 day (57) 23%	hunters reporting: 22	hunters reporting: 7
		2 days (62) 25%		
		3 days (29) 12%		
		4 days (31) 12%		
		5 days (8) 3%		
		6 days (32) 13%		
		7 days (19) 8%		

**Q14. On what type of property did you participate in Sunday bow hunting?**

**ALL RESPONDENTS (n = 643)**



Twenty-eight percent of respondents chose not to answer.

**n=643 Sampling error +/- 4%**

**Q15. Did you purchase an Antlered Deer Permit?**

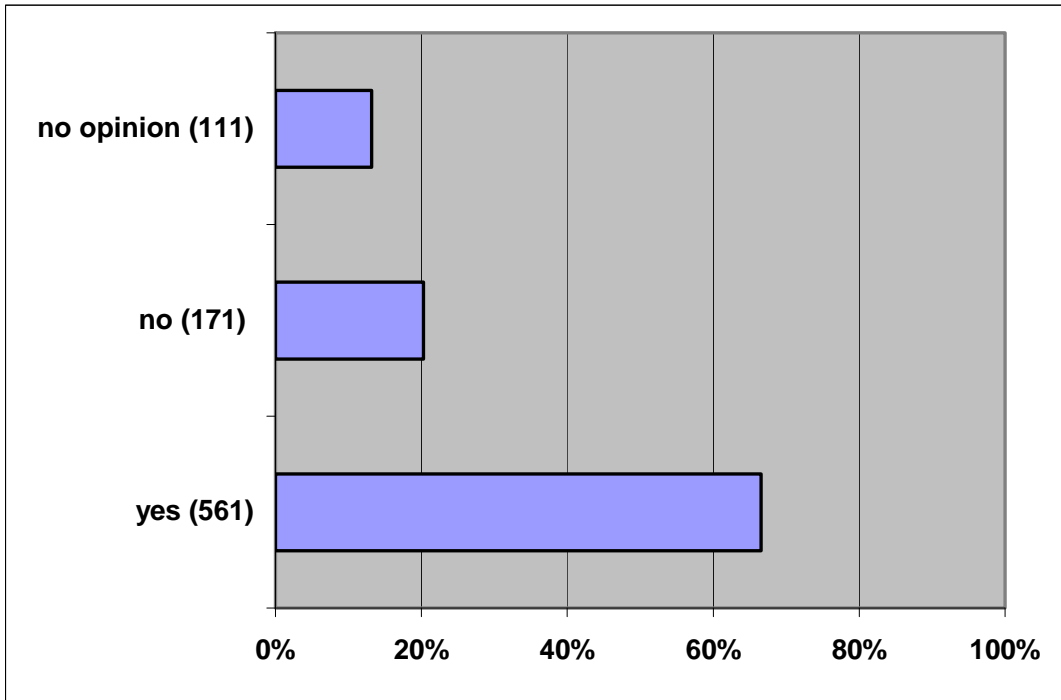
Yes	606	73%
No	223	27%

**n=829 Sampling error +/- 3%**



**Q16. Are you willing to give up the chance to shoot small-antlered bucks, for instance a buck with 6 points, and shoot more does in exchange for and increased chance to shoot large-antlered bucks in later years?**

**ALL RESPONDENTS (n = 843)**

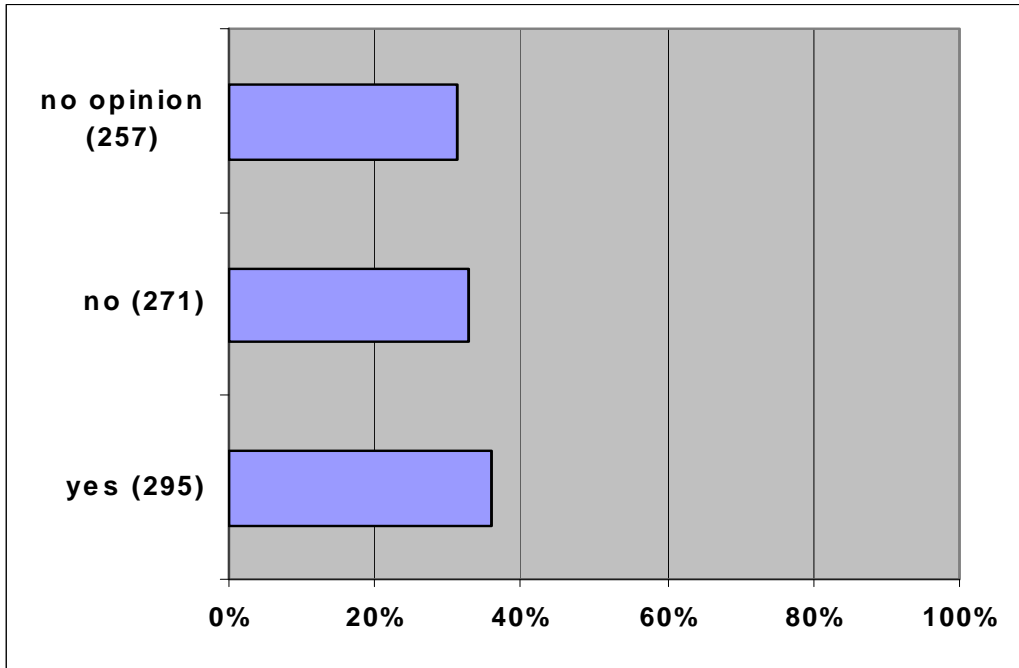


Five percent of respondents chose not to answer.

**n=843 Sampling error +/- 3%**

**Q17. Research on the current 3-point Antler Point Restrictions in zones 3, 6, 9, 13, 27, 29 & 63 from 2001-2005 in NJ has shown that on average, only one older age class buck shows up in the harvest for every 11 yearling bucks passed on due to APR regulations. Do you find this acceptable?**

**ALL RESPONDENTS (n = 823)**

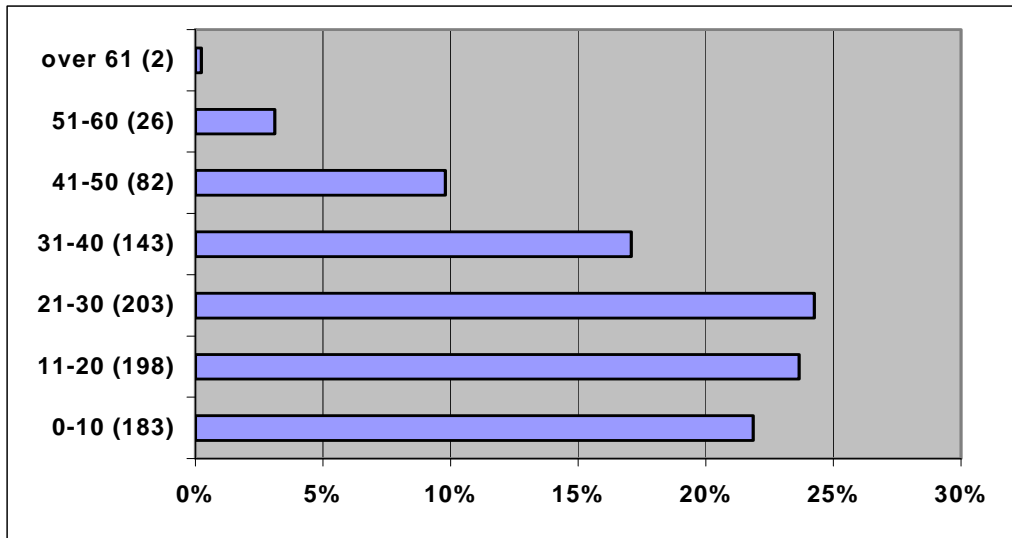


Eight percent of respondents chose not to answer.

**n=823 Sampling error +/- 3%**

**Q18. How many years have you been bow hunting?**

**ALL RESPONDENTS (n = 837)**



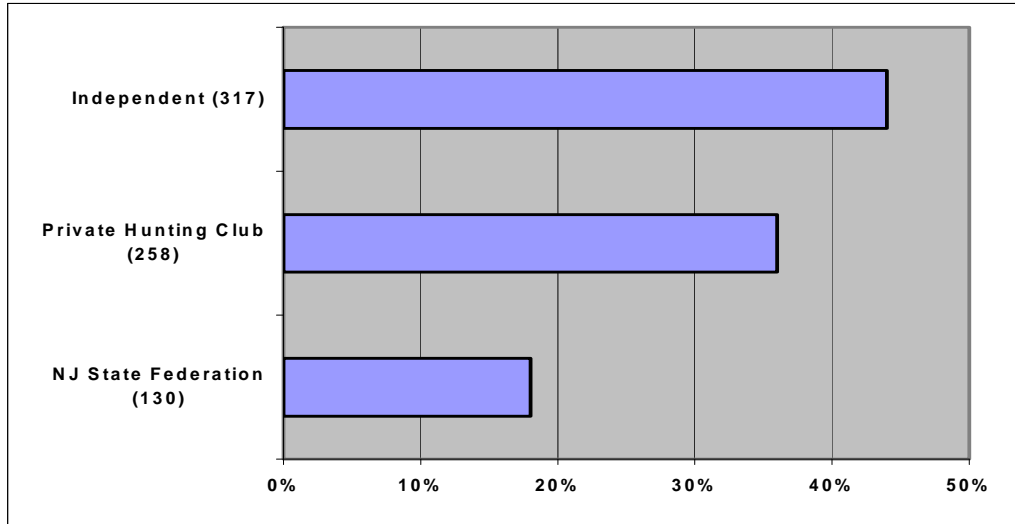
Six percent of respondents chose not to answer.

**n=837 Sampling error +/- 3%**

**Q19. Are you a member of a hunting club, sportsmen’s federation or organization?**

The majority of participants were unaffiliated (44%) with any clubs, federation or organizations; 36% were members of a private club and 18% were members of the New Jersey State Federation of Sportsmen’s Clubs.

**ALL RESPONDENTS (n = 714)**

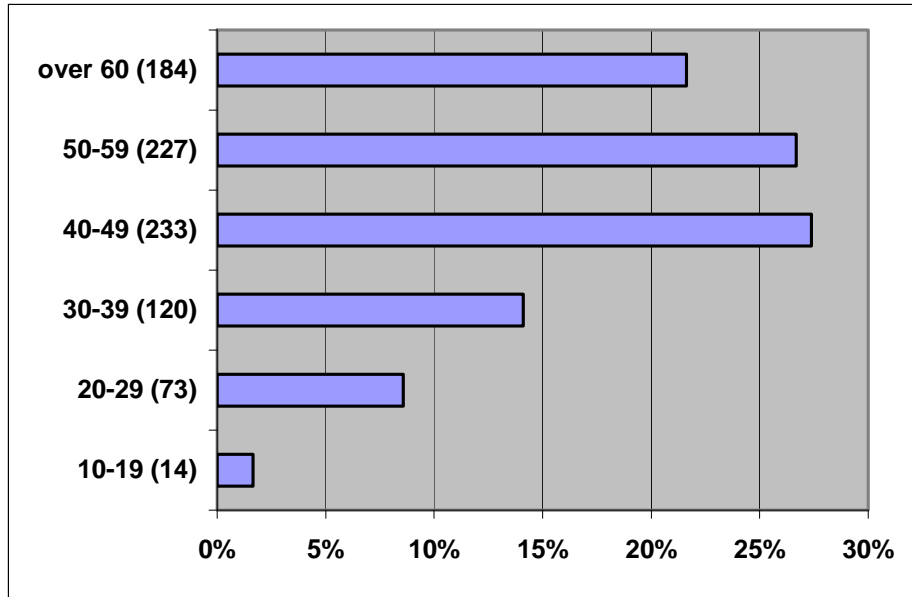


Twenty percent of respondents chose not to answer.

**n=714 Sampling error +/- 4%**

**Q20. In what age group do you fall?**

**ALL RESPONDENTS (n = 851)**



**n=851 Sampling error +/- 3%**

**Q21. What is your gender?**

<b>Male</b>	<b>840</b>	<b>99%</b>
<b>Female</b>	<b>11</b>	<b>1%</b>

**n=851 Sampling error +/- 3%**