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# License Structure & Pricing Options Plus Revenue Considerations

Summary Report

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Produced for the:

West Virginia Division of Natural Resources (WVDNR)



**SOUTHWICK**  
ASSOCIATES

## Introduction

In 2019 the West Virginia Division of Natural Resources (WVDNR) commissioned a series of projects to identify the combinations of hunting and fishing privileges most often purchased in West Virginia, lifetime license price points and whether current licenses were over- or under-priced. This report quantifies which licenses and permits – whether existing or proposed new license concepts – are most desirable, the ideal suite of licenses from a participation and revenue perspective and possible customer response to potential pricing.

This study was conducted using a statistical procedure known as conjoint analysis. Based on an online survey of resident and non-residents who purchased at least one hunting or fishing license in 2017-2019, this process uses customer input to design new licenses buyers would most prefer at prices they would find acceptable. Questions are presented in a way that reduces the bias associated with people “low balling” the price they would actually pay for a license. The results identify which licenses West Virginia hunters and anglers prefer, based on the options presented.

In all, 4,653 completed surveys were received from 71,917 email invitations sent to residents and non-residents for a response rate of 6.5%. Statistical procedures were carefully designed and implemented to ensure the results represented all license buyers and not just those more likely to respond to an online survey. Recognizing potential differences in internet usage across the state, a separate mail survey was underway at the time this report was written to identify if any significant biases might exist between online and mail survey approaches. Findings from that survey along with any corresponding adjustments to this preliminary summary will be shared in the final report.

This summary presents the results of the online survey, followed by observations and recommendations that are based on both the survey and the license studies conducted as part of this project. We recommend delaying any final licensing decisions until the mail survey is complete and any biases in the online survey that could impact results and interpretations are identified and reported.

Please note that the results presented here reflect how West Virginia license customers would have responded in 2020 if the proposed licenses were in effect. Any changes from an economic, social, hunting and fishing perspective since 2019 may affect how customers would respond in future years.

## Summary Results

Results are presented first for residents, followed by non-residents. Each option is initially presented in a question format, followed by the results and recommendations. After this section, insights and cautionary notes are shared.

### Part I. Potential Demand for New Resident Licenses

#### Hunting and Combination Licenses

1) What would happen if a Six-Day Small Game license was added? (Table 1)

- There is very little interest in the Six-Day Small Game license. About one hundred could be expected to sell annually. The cost of introducing and managing this license might be greater than the negligible revenue increase it would generate.

2) What if an annual Fishing & Small Game Hunting Combination license was added along with the Six-Day Small Game license? (Table 1)

- Likewise, there is very little interest in an annual Fishing & Small Game Hunting combination license, with approximately 250 expected to sell each year.

3) Along with adding a Six-Day Small Game license and an annual Fishing & Small Game Hunting Combination license, what if the current Hunting & Trapping (Class A) license was dropped? (Table 1)

- Removing the Hunting & Trapping (Class A) license would drive roughly 750 license buyers to the proposed annual Fishing & Small Game license but would result in some license buyers moving to the higher-cost Sportsman license. The net change over the current scenario would be a one-half percent decline in the number of resident hunters but a 3% revenue increase.
- If the price of the Sportsman license was increased from \$35 to \$39, the overall number of resident hunters would fall 5% but revenues would increase 9%.

**Table 1. Resident Hunting License Options**

Resident Hunting License	Current License Structure		Add Six-Day Small Game Hunting		Add Six-Day Small Game Hunting and Annual Fishing & Small Game Combination		Add Six-Day Small Game Hunting and replace Hunting & Trapping (A) with annual Fishing & Small Game Combination		Add Six-Day Small Game Hunting and replace Hunting & Trapping (A) with annual Fishing & Small Game Combination with 10% Sportsman price increase	
	Price	# Sold	Price	# Sold	Price	# Sold	Price	# Sold	Price	# Sold
Six-Day Small Game Hunting			\$13.00	104	\$13.00	103	\$13.00	141	\$13.00	201
Fishing and Small Game Hunting (AB)					\$25.00	256	\$25.00	1,014	\$25.00	1,058
Hunting & Trapping (A)	\$24.00	12,703	\$24.00	12,696	\$24.00	12,622				
Sportsman Hunting/Trapping/Fishing (X)	\$35.00	94,201	\$35.00	94,135	\$35.00	94,030	\$35.00	105,100	\$39.00	100,320
Total Resident Hunters	106,903		106,936		107,012		106,255		101,579	
Resident Hunting License Revenue	\$3,601,886		\$3,600,799		\$3,601,743		\$3,705,683		\$3,941,544	

Privileges Offered by the Resident Sportsman Deer License

What would happen to sales and revenue if the privileges associated with the current resident Sportsman license were changed to allow one either sex deer in any season plus one antlerless deer in any applicable antlerless season? (Table 2)

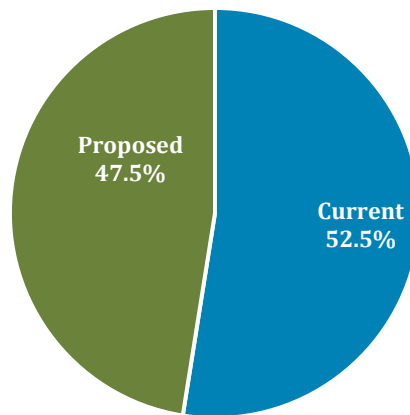
- Exchanging flexibility in the seasons hunted for a reduction in the number of deer allowed would likely decrease demand. Changing to the proposed set of deer privileges but leaving the price unchanged would likely reduce the number of Sportsman licenses sold and revenue by nearly 7%.
- Changing to the proposed set of deer privileges and raising the price 10% or 20% will result in lower sales and revenue.
- However, hunters were statistically split between either option, with 52.5% preferring the current license based on results of the conjoint question. However, a follow up question asking which set of deer privileges they would prefer given the same price produced a statistical tie. The current mail survey may offer additional insights to help decide which approach is best. (Figure 1).
- Hunters with greater avidity had a stronger preference for the current set of privileges compared to less-avid hunters.
- Pricing tests run in this analysis show that West Virginia hunters value the proposed bundle of privileges for Sportsman licenses at \$34.62, just 38 cents below the \$35 price for the current bundle of privileges.

**NOTE:** These results are likely somewhat exaggerated. In the survey, respondents were given a choice between the two options. If they did not have a choice and had to purchase the offered license, we expect net revenues and buyers would only decrease by a small marginal amount, as the preference for each option was almost evenly split between hunters. The difference in the value, or price, assigned to each option by hunters was only one percent.

**Table 2. Sportsman License Deer Privilege Options**

Sportsman License	Current Deer Privileges	Proposed Deer Privileges	Proposed Deer Privileges with 10% Price Increase	Proposed Deer Privileges with 20% Price Increase
Price:	\$35.00	\$35.00	\$38.50	\$42.00
Sportsman Licenses Sold	94,263	87,910	54,278	31,542
Revenue from Sportsman License	\$3,299,211	\$3,076,866	\$2,089,722	\$1,324,760

**Figure 1. Share of preference for deer privileges at current price based on conjoint results**



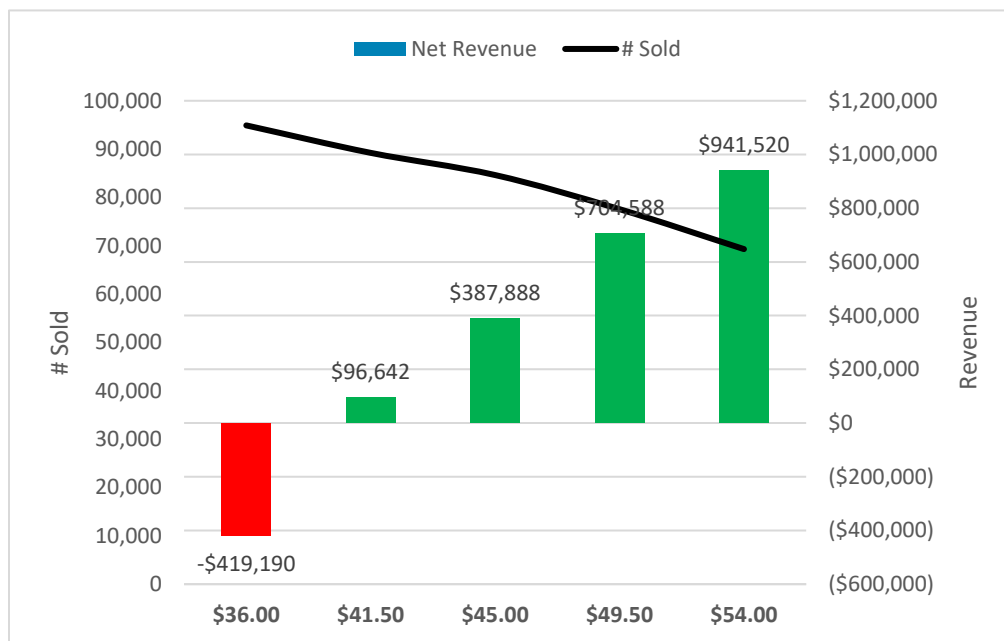
Super Sport License

The WVDNR could offer a Super Sport License. This proposed resident license would include the following privileges: Hunting and Trapping (Class A), Fishing (Class B), Conservation Stamp (Class CS), and Big Game (Class BG); along with two *either sex, any season* deer permits, and trout fishing (Class O). *The current Sportsman license does not include trout but does include one antlered buck firearm permit, one either sex deer archery/crossbow permit, and one either sex deer muzzleloader permit.* This license was tested among hunters and anglers at five different price points: \$36, \$41.50, \$45, \$49.50 and \$54.

By introducing this license, what would be the resulting demand and revenue?

- At \$36, considering 54% of the 2019’s Sportsman license buyers also bought a trout stamp at a total cost of \$45, the net revenue per buyer would fall, resulting in more than \$400,000 in revenue losses. (Figure 2)
- However, revenues would increase at each increased price point.
- If current license prices are not changed, we recommend a \$45 price point, as anything higher is above the value of the license (Sportsman + Trout). Plus, as seen when the bundle of privileges offered by the Sportsman license was tested, hunters put less value on the two either sex, any season deer privilege option.

**Figure 2: Price vs. Revenue and Unit Sales for Proposed Resident Super Sport Licenses**



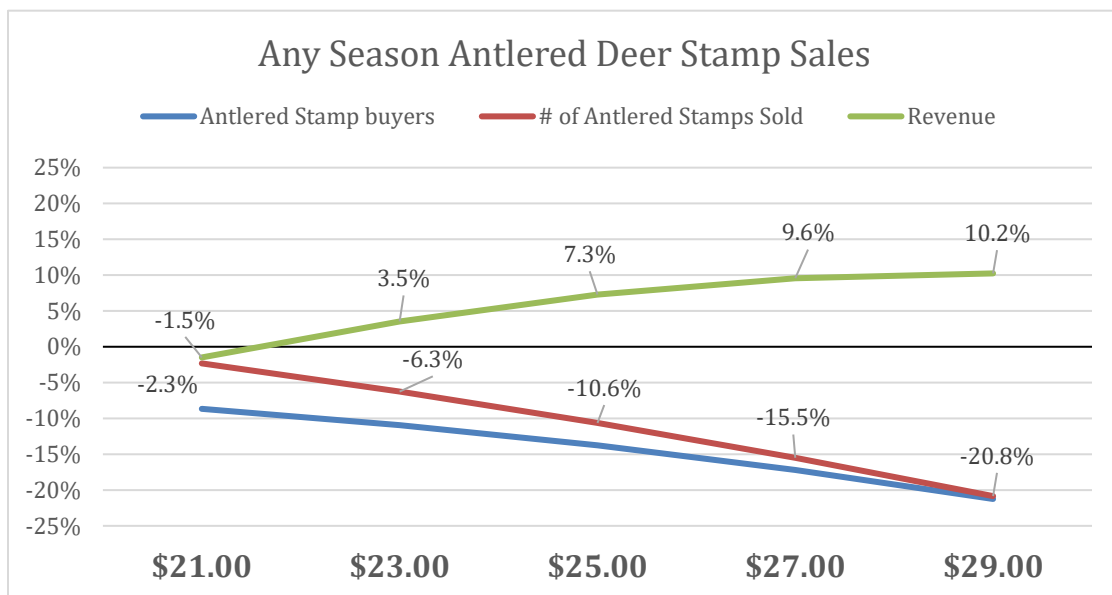
Any Deer Any Season Stamps vs. Season-Specific Stamps

How many stamps would sell if the season/weapon specific antlered deer stamps now offered were replaced with Additional Any Season Antlered Deer Stamps, which could be used in *any applicable season*? This stamp could be used to harvest an additional buck in archery/crossbow, gun, or muzzleloader season. Residents surveyed could select 0, 1 or 2 stamps. Five price points were tested: \$21 (current stamp price), \$23, \$25, \$27 and \$29. Results are displayed in Figure 3.

- Changing to an Any Season Antlered Deer Stamp would result in 9% fewer resident hunters purchasing deer stamps and 2.3% fewer stamps sold, even at the current price (\$21).
- At \$21, annual revenue from the Any Season Antlered Deer Stamp would be less than currently received. Revenue would increase at the higher price points, while the number of purchased stamps, and possibly the deer harvest, would decrease.
- At the highest tested price (\$29), a 10% increase in revenue would be expected but the number of antlered deer stamps purchased would be reduced by 21%.

- One way to reduce the buck harvest without an across-the-board reduction in the buck quota or season would be to increase the current price of antlered deer stamps.
- There would be a greater reduction in stamp buyers and stamps sold among annual license buyers compared to lifetime license holders, but both groups show lower revenue would be generated at the current \$21 price if the change was made.
- Among annual license buyers, revenue from the Any Season Antlered Deer Stamp would be greatest at the \$27 price point rather than \$29.
- Considering the jump from \$27 to \$29 would only boost revenues from the Any Season Antlered Deer Stamp by less than one percent, we recommend avoiding the \$29 price point. (Table 3).

**Figure 3. Expected Changes if an Any Season Antlered Deer Stamp is Introduced (Annual + Lifetime License Holders Included)**



**Table 3: Resident Any Season Antlered Deer Stamp Buyers, Sales and Revenue at Tested Price Points**

Price	Buyers*	Stamps per Buyer	Total Stamps Sold	Total Stamp Revenue
Current prices by weapon/season	28,649	1.31	37,604	\$783,004
<i><u>Any Season Antlered Deer Stamps**</u></i>				
\$21.00	26,165	1.40	36,730	\$771,320
\$23.00	25,511	1.38	35,251	\$810,766
\$25.00	24,703	1.36	33,604	\$840,105
\$27.00	23,723	1.34	31,776	\$857,962
\$29.00	22,562	1.32	29,765	\$863,182
* Excluding antlerless stamps (Class N)				
** Valid during buck gun, archery, & muzzleloader seasons.				

## Fishing Licenses

1) What would happen if the WVDNR included trout privileges in all fishing licenses instead of requiring the additional purchase of the trout stamp (type O)? (See Table 4)

- By eliminating fishing licenses that do not include a trout privilege, revenue will not change but a 12% drop in resident anglers would occur.
- Lowering the price of licenses that offer trout privileges by 10% will partially offset the decline in resident anglers but would yield a 5% drop in revenue.

**Table 4: Fishing License Options Compared to Including Trout Privileges**

Resident Fishing License	A) Current License Structure		B) Include Trout Fishing with All Licenses		C) Include Trout Fishing with All Licenses but Lower Price by 10%	
	Price	# Sold	Price	# Sold	Price	# Sold
Five-day Fishing (L)	\$13.00	1,541	x		x	
Five-day Fishing + Trout (L+O)	\$23.00	416	\$23.00	2,500	\$20.00	2,593
Fishing (B)	\$24.00	37,642	x		x	
Fishing + Trout (B+O)	\$34.00	38,098	\$34.00	65,734	\$30.00	68,711
Sportsman Hunting/Fishing/Trapping (X)	\$35.00	43,162	x		x	
Sportsman Hunting/Fishing/Trapping + Trout (X+O)	\$45.00	51,016	\$45.00	83,176	\$40.00	90,796
Total Resident Anglers		171,874		151,410		162,099
Resident Fishing License Revenue		\$6,034,698		\$6,035,362		\$5,745,015

2) What would happen if the current fishing-only licenses (B and B+O) were replaced by a fishing and small game basic combination license? (Table 5)

- Eliminating the fishing-only license (class B) and the separate trout privilege but adding a fishing and small game combination license (with and without trout privileges) would result in a 6% decline in resident anglers and a 4% decrease in revenue.
- The biggest decrease would come from people who purchase the annual fishing license without the trout privilege. A significant portion of anglers would switch to the lower-cost 5-day license.
- Though this option would decrease the overall number of anglers, West Virginia would see an increase of 48,700 certified hunting license buyers. Since the WVDNR received \$16.25 in Federal Aid from the Wildlife Restoration Fund for each 2019 hunting license sold, these additional licenses would have provided about \$791,000 in additional federal revenues. Even when considering the



expected revenue decrease from fewer anglers buying this license (-\$258,000), this still would have produced a net gain of \$532,000 (+9%) in annual federal funds for the WVDNR.

*CAUTION:* the amount of federal funds provided annually depends on the total excise tax revenues collected nationally plus the number of licenses sold in each state, so the revenues received annually per license sold fluctuates. This means there are no guarantees that future federal funds would be in excess of any decrease from price-driven reductions in West Virginia’s anglers.

- By furthering eliminating the five-day fishing license (L) and not offering the Sportsman combination license without trout privileges (X) or the annual fishing + trout license (B+O) – essentially offering only a five-day fishing license (without trout)(L+O), a fishing+small game license with trout privileges (AB+O) and a Sportsman license with trout (X+O) – the State would see a 17% decline in resident anglers and a 5% decrease in revenue.
- In 2019, the increase in federal funds generated by the increase in certified hunting license holders would have resulted in a \$276,000 net gain – a 5% increase. Please note that the amount of funds received in the future is uncertain and will fluctuate.

**Table 5: Resident Fishing Licenses Compared to Fishing + Small Game Options**

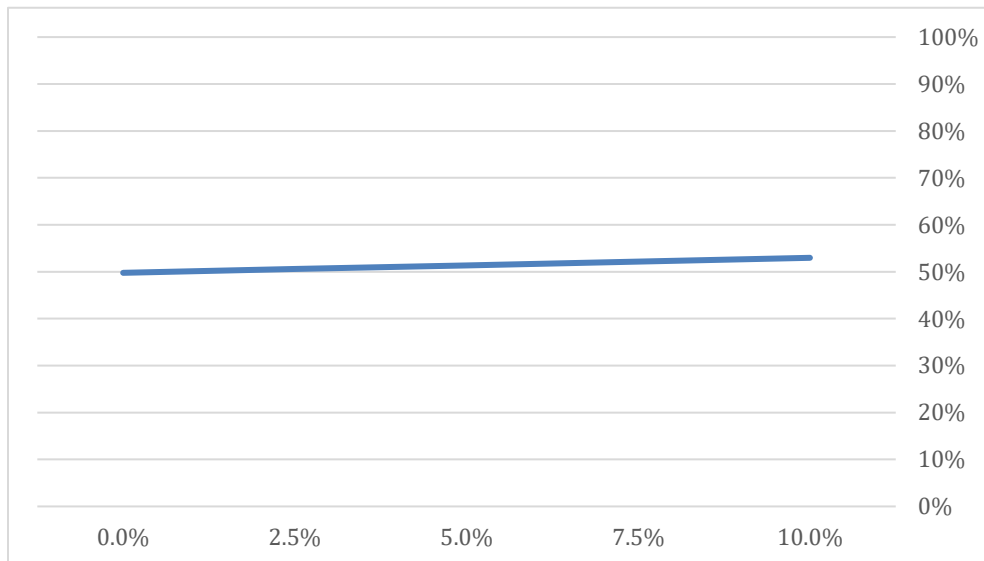
Resident Fishing License	Current License Structure		Replace Fishing (B) with Fishing+Small Game Hunting		Replace Fishing (B) with Fishing+Small Game Hunting and Include Trout in All Licenses	
	Price	# Sold	Price	# Sold	Price	# Sold
Five-day Fishing (L)	\$13.00	1,541	\$13.00	12,947		
Five-day Fishing + Trout (L+O)	\$23.00	416	\$23.00	5,516	\$23.00	11,773
Fishing (B)	\$24.00	37,642				
Fishing + Trout (B+O)	\$34.00	38,098				
Fishing & Small Game Hunting (AB)			\$25.00	5,717		
Fishing & Small Game Hunting + Trout (AB+O)			\$35.00	35,428	\$35.00	47,223
Sportsman Hunting/Fishing/Trapping (X)	\$35.00	43,162	\$35.00	48,003		
Sportsman Hunting/Fishing/Trapping + Trout (X+O)	\$45.00	51,016	\$45.00	53,729	\$45.00	84,091
Total Resident Anglers		171,874		161,341		143,088
Resident Fishing License Revenue		\$6,034,698		\$5,776,017		\$5,707,701

### Three-Year Resident Licenses

If offered, how many customers would be interested in purchasing a three-year hunting, fishing, or sportsman license? The license would save customers the transaction fees for the second and third year plus offer the convenience of not having to renew their licenses for the following two seasons. This license was tested at different discounted price points: 2.5%, 5%, 7.5% and 10% off the cost of purchasing three separate annual licenses.

- This license would be expected to increase total revenues by reducing the number of years hunters and anglers skip buying a license.
  - However, if popular and promoted aggressively, resulting in a large number of customers switching to this license, overall license revenues would spike in the first year and drop in the second and third years. To offset uneven annual budgets, we recommend that the revenues from multi-year licenses are allocated evenly across their valid years.
- Slightly more hunters and anglers would be very likely to purchase a three-year license at a 10% discount compared to no discount. (Figure 4)
  - However, the increase in additional customers would be less than the price discount. For example, a 2.5% price discount would only attract 0.8% more buyers and the 10% discount would only boost sales by 3.2%. This license, if offered, should be priced the same as three annual licenses, as customers will still save 66% on transaction fees plus receive the convenience of a three-year license.

**Figure 4: Percent of Resident Customers Reporting to be Very Interested in Three-Year Licenses, Per Possible Price Discount**



## Part II. Potential Demand for New Non-Resident Licenses

### Fishing Licenses

1) What would be the effect of including trout fishing privileges with all non-resident fishing licenses, both at current pricing and with a 10% price hike?

- Only offering non-resident fishing licenses with trout privileges included at current prices would increase non-resident fishing license revenue by 5% but lead to an almost 15% decline in the number of non-resident anglers. (Table 6)
- Raising the price by 10% would increase revenue further (6.4% above current levels) but lead to a 21% drop in the number of non-resident anglers and their associated tourism dollars.

**Table 6. Non-Resident Fishing Licenses Compared to Including Trout Privileges**

Nonresident Fishing License	Current License Structure		Include Trout Fishing with All Licenses		Include Trout Fishing with All Licenses and Price Raised by 10%	
	Price	# Sold	Price	# Sold	Price	# Sold
One-Day Fishing (LL)	\$16.00	11,842				
One-Day Fishing w/Trout (LL+OO)	\$32.00	7,455	\$32.00	15,824	\$35.00	15,036
Fishing (F)	\$50.00	5,709				
Fishing w/Trout (F+OO)	\$66.00	9,437	\$66.00	13,607	\$72.50	12,353
Total Nonresident Anglers		34,443		29,430		27,389
Nonresident Fishing License Revenue		\$1,336,307		\$1,404,397		\$1,421,856

2) What would be the effect of adding a three-day non-resident fishing license? Plus, what would be the effect of including trout privileges and a 10% price increase?

- Adding a three-day non-resident license is a winning idea. By offering a three-day license at \$22 and maintaining all other non-resident licenses and prices, the number of non-resident anglers would increase 7% and revenue would grow by 6%. (Table 7)
- Only offering these licenses with trout privileges included at current prices would lead to a small (2%) decline in non-resident anglers, but a greater increase in non-resident fishing license revenue (13%).
- Raising prices by 10% would increase revenue even further (17%) but lead to a 7% decline in the number of non-resident anglers.
- Adding a three-day license, dropping the one-day license, and only selling licenses with trout privileges included could be an optimal solution, as it leads to very little loss of non-resident anglers but a greater increase in revenue. It also results in a simpler license structure.
  - The results indicate that one-day non-resident fishing license buyers frequently purchase two or more of these licenses annually. The proposed \$38 three-day trout license represents a significant discount compared to buying three separate one-day fishing licenses - with or without trout privileges.

Table 7. Non-Resident Fishing Licenses Compared to Adding Three-day Licenses and Trout Privileges

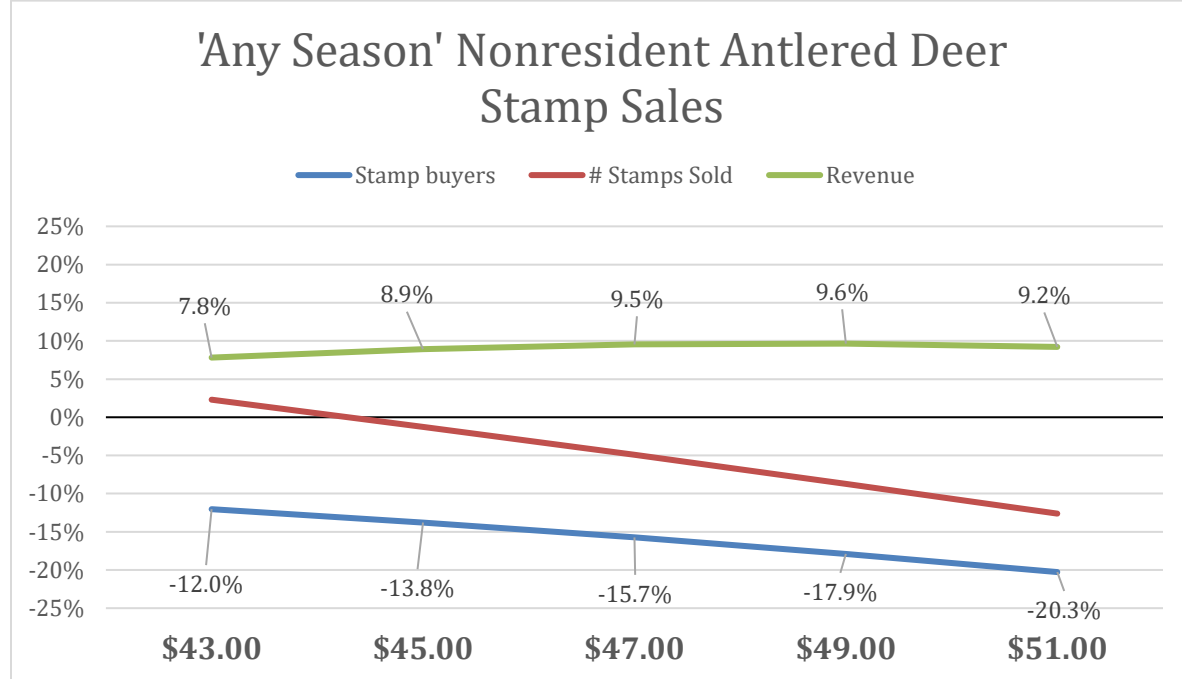
Nonresident Fishing License	Current License Structure		Add Three-day License		Add Three-day License; Trout Included with All		Add Three-day License; Trout Included with All and Price Raised by 10%	
	Price	# Sold	Price	# Sold	Price	# Sold	Price	# Sold
One-Day Fishing (LL)	\$16.00	11,842	\$16.00	9,573				
One-Day Fishing w/Trout (LL+OO)	\$32.00	7,455	\$32.00	2,897	\$32.00	7,512	\$35.00	7,205
Three-Day Fishing			\$22.00	651				
Three-Day Fishing w/Trout			\$38.00	11,685	\$38.00	16,483	\$42.00	15,705
Fishing (F)	\$50.00	5,709	\$50.00	5,280				
Fishing w/Trout (F+OO)	\$66.00	9,437	\$66.00	6,742	\$66.00	9,760	\$72.50	9,049
Total Non-resident Anglers		34,443		36,827		33,754		31,958
Nonresident Fishing License Revenue		\$1,336,307		\$1,413,177		\$1,510,849		\$1,567,781

Any Deer, Any Season Stamps vs. Season-Specific Stamps

How many stamps would sell if the non-resident season/weapon-specific deer antlered stamps now offered were replaced with non-resident Additional Any Season Antlered Deer Stamps, which could be used in *any applicable season*? This stamp could be used to harvest an additional buck in archery/crossbow, gun, or muzzleloader season. Non-residents were allowed to select 0, 1 or 2 stamps. Five price points were tested: \$43, \$45, \$47, \$49 and \$51.

- Switching to a non-resident any season antlered deer stamp would increase revenue at all of the prices tested. (Figure 5)
- However, the net increase between the lowest and highest prices tested (\$43 and \$51) would have negligible revenue effect but greater impacts on non-resident participation and tourism. We recommend this stamp for non-residents at the \$43 price point.
  - If the goal is to reduce buck harvest, then offer this permit at \$51 or higher.
- As this stamp is not required, it is expected to have a lesser effect on tourism than would be experienced by price hikes to primary licenses, though some unknown level of impact should still be expected.

**Figure 5. Expected Changes if a Non-Resident 'Any Season' Antlered Deer Stamp Format is Introduced**



**Table 8: Expected Effects of Non-Resident Any-Season Antlered Deer Stamps at Various Prices**

Price	Number of buyers*	Number of Stamps per buyer	Total Number of Stamps	Total Revenue
Current prices by weapon/season	5,761	1.17	6,757	\$275,689
<b><i>Any Season Antlered Deer Stamps**</i></b>				
\$43.00	5,068	1.36	6,912	\$297,235
\$45.00	4,967	1.34	6,673	\$300,281
\$47.00	4,854	1.32	6,425	\$301,974
\$49.00	4,730	1.30	6,169	\$302,268
\$51.00	4,593	1.29	5,904	\$301,128

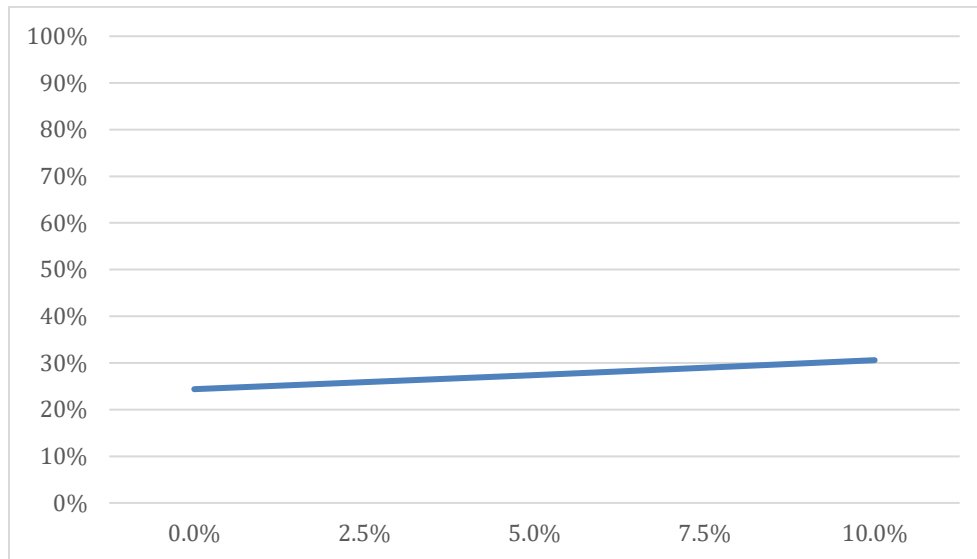
\* Excluding antlerless stamps (Class NN)  
 \*\* Valid during buck gun, archery, & muzzleloader seasons.

### Three-Year Licenses

How many non-residents would be interested in purchasing a three-year hunting, fishing, or sportsman license, if the WVDNR was to offer one? The license would save customers the transaction fees for the second and third year plus offer the convenience of not having to renew their license for the following two seasons. This license was tested at different discounted price points: 2.5%, 5%, 7.5% and 10% off the cost of purchasing three separate annual licenses. (Figure 6).

- The percent of non-resident anglers and hunters who would be very likely to purchase a three-year license varies between 24% and 31% depending on the level of discount.
- No discounts should be offered on three-year licenses as the increase in the percent of non-residents interested in these licenses is lower than each incremental discount. Specifically, for each additional 2.5% discount, sales only increase 1.5% to 1.6%. Each additional discount would reduce WVDNR revenues. The 66% reduction in transaction fees and convenience of a three-year license are incentive enough for many to purchase this license.

**Figure 6: Percent of Non-Residents Reporting to be Very Interested in Three-Year Licenses, Per Possible Price Discount Point**



### Part III. Conservation Stamp and License Year Preferences

Both residents and non-residents were asked if they preferred the current system where a conservation stamp must be purchased in addition to their license(s) or if they would prefer it be included in the price of the license (as it is with the Resident Sportsman license).

- Residents preferred the current system by 55% to 45%. (Table 9)
- Non-residents were evenly split.

**Table 9. Resident Conservation Stamp (Annual License Buyers)**

Currently resident hunters and anglers are required to purchase a \$5 Conservation Stamp annually unless they hold a Resident Sportsman or Lifetime license. Please select which of the following statements you agree with the most:	%
I would rather pay more for my license and have the conservation stamp automatically included	45.2%
It's fine the way it is	54.8%
<i>N=1,613</i>	

**Table 10. Non-Resident Conservation Stamp**

Currently non-resident hunters and anglers are required to purchase a \$5 Conservation Stamp annually unless they hold a Resident Sportsman or Lifetime license. Please select which of the following statements you agree with the most:	%
I would rather pay more for my license and have the conservation stamp automatically included	50.0%
It's fine the way it is	50.0%
<i>N=1,558</i>	

Both residents and non-residents were asked whether they prefer the current, calendar year-based license year, or would instead prefer a fiscal year license valid from July 1 through June 30 of the following year.

- Residents overwhelmingly prefer the current, calendar year licenses. There was a little more support for the fiscal year license among hunters, but almost half still preferred the calendar year. (Table 11)
- Non-residents were more split with hunters preferring the July 1 to June 30 license year and anglers (who don't also hunt) preferring the current license year by a large margin. (Table 12)

**Table 11. Resident License Year Preference**

Which of these year-long license periods would you prefer?	Only fished	Hunted in past	All
January 1 – December 31	54.5%	47.1%	49.3%
July 1 – June 30	23.9%	32.1%	29.7%
No preference	21.6%	20.8%	21.0%
	<i>N=</i> 345	1310	1655

**Table 12. Non-Resident License Year Preference**

Which of these year-long license periods would you prefer?	Only fished	Hunted in past	All
January 1 – December 31	48.5%	28.2%	36.2%
July 1 – June 30	13.7%	38.6%	28.7%
No preference	37.9%	33.2%	35.1%
	<i>N=</i> 345	1310	1655



### **Part III. Additional Observations & Recommendations**

#### Residents

1. We strongly recommend offering the suggested resident Super Sport license at the \$45 price point.
2. Overall, resident hunters are not excited about replacing the current season/weapon-specific antlered deer permits with an Any Season Antlered Deer Stamp. The number of overall buyers would decrease but the number of stamps bought per person would increase, indicating the remaining buyers see this as a worthwhile opportunity to harvest antlered deer. Prices would have to increase though to replace lost revenue, if that is a concern. At each higher price point, fewer permits would be sold, which provides a tool to help reduce buck harvest, if desired.
  - a. We suspect the actual decrease in stamps sold may be exaggerated. It is possible that some respondents did not fully read this somewhat complex question, and answered “no” to buying these proposed new stamps, falsely thinking they would be able to continue buying their traditional stamps as always, which depresses our overall estimate of the number of stamps that would actually be sold. Explicit marketing and communications efforts would be needed to educate customers about this change and its lack of impact on hunting opportunity, if implemented.
3. Continue to offer fishing licenses that do not include trout privileges. Requiring all licenses to have a trout permit will reduce participation and revenue.
4. Use caution when dropping some or all fishing-only licenses in favor of fishing+small game options. While the short-term reduced revenues resulting from lower participation would likely be replaced by an increase in Federal Aid in Wildlife Restoration funds, in the long run the average Federal Aid funds received per license could fall and is beyond control of the WVDNR. Plus, the state would need to increase its non-federal matching funds required to access Federal Aid dollars.
5. Three-year licenses are a definite winner and should be instituted. These licenses should be priced at the face value of their corresponding annual license times three. No discounts or incentives are necessary beyond the reduced transaction fees and greater convenience of buying a license once every three years.
6. If the state is required to allocate 100% of revenues from the sale of a multi-year license to the year in which it's sold, the introduction of desirable multi-year licenses can cause a spike in the first year's revenues followed by two years of reduced revenues, followed by other spikes and decreases, with each subsequent round becoming smaller over time. If possible, allow revenues from multi-year licenses to be allocated evenly across the years they are valid.
7. Regarding the licenses currently offered by the WVDNR, if no new licenses are introduced, lowering the price of the Additional Gun Deer (RG) stamp no further than \$14.50 would increase revenues and the number of people buying this stamp. This approach would likely encourage greater deer harvest. An alternative would be to leave this license as-is and over time inflation would gradually have the same effect as a price increase. For insights into pricing for other licenses, please see the November 2019 report released as part of this project: *Sales Revenue Forecasts for Selected Fishing and Hunting Licenses in West Virginia*.

### Non-Residents

8. While non-resident price increases could boost WVDNR's revenues, decreases in non-resident anglers and hunters would have some unknown level of impact on tourism-related businesses. We suggest careful consideration of the potential impact on guides, hunting lease revenue, tackle shops, hotels, restaurants and other commerce when new prices are considered that could decrease the number of visitors to West Virginia.
9. Although non-resident hunters would prefer the fiscal year license (July 1 – June 30) there is not enough interest from residents and non-resident anglers to justify the change.

## Appendix: Screener Questions and Demographics

### Resident Annual License Buyers

Q1: Did you fish, hunt, or trap in WV in the past 12 months?		%
Fish		86.8%
Hunt		68.6%
Trap		6.1%
None of these		4.3%
<i>N=</i>		<i>1,921</i>

Q2: How many days did you fish in West Virginia in the past 12 months?		%
1 to 5		19.9%
6 to 10		17.6%
11 to 20		19.2%
21 to 50		27.3%
51 to 100		11.1%
Over 100		4.8%
<i>Median</i>		<i>20</i>
<i>N=</i>		<i>1,357</i>

Q3: Which type of fish did you fish for in the past 12 months?		%
Black Bass (Largemouth, Smallmouth, Spotted)		64.4%
White Bass, Striped Bass, Hybrid Striped Bass		21.1%
Trout		60.0%
Musky, Tiger Musky, Northern Pike		11.7%
Sauger, Saugeye		5.4%
Walleye		12.4%
Catfish		48.4%

Perch	11.8%
Bluegill, Sunfish	47.1%
Crappie	30.0%
Anything	43.4%
	<i>N= 1,594</i>

Q4: How many days did you hunt in West Virginia in the past 12 months?	%
1 to 5	21.8%
6 to 10	17.6%
11 to 20	25.2%
21 to 50	28.1%
51 to 100	5.8%
Over 100	1.5%
	<i>Median 15</i>
	<i>N= 1,192</i>

Q5: Which type of game did you hunt for in the past 12 months?	%
Bear	17.4%
Deer	96.6%
Turkey	44.1%
Wild boar	0.8%
Dove	3.8%
Squirrel, Rabbit	56.0%
Grouse, Pheasant	8.0%
Waterfowl (Geese, Ducks)	3.7%
Furbearers (Coyote, Fox, Raccoon, Bobcat, etc )	19.2%
Other	1.6%
	<i>N= 1,380</i>

Q5a: Which type of weapon did you use to hunt deer in the past 12 months?	%
Firearm	94.5%
Bow	50.3%
Crossbow	32.7%
Muzzleloader	30.2%
	<i>N= 1,328</i>

Q6: Do you plan to fish, hunt, or trap in WV in the next 12 months?	%
Fish	94.6%
Hunt	73.5%
Trap	9.1%
None of these	1.3%
	<i>N= 1,840</i>

Q7: Which type of fish do you plan to fish for in the next 12 months?	%
Black Bass (Largemouth, Smallmouth, Spotted)	59.1%
White Bass, Striped Bass, Hybrid Striped Bass	21.7%
Trout	58.1%
Musky, Tiger Musky, Northern Pike	13.1%
Sauger, Saugeye	6.4%
Walleye	15.5%
Catfish	45.0%
Perch	12.2%
Bluegill, Sunfish	40.7%
Crappie	29.2%
Anything	47.9%
	<i>N= 1,728</i>

<b>Q8: Which type of game do you plan to hunt for in the next 12 months?</b>	<b>%</b>
Bear	27.5%
Deer	98.0%
Turkey	64.7%
Wild boar	2.9%
Dove	6.4%
Squirrel, Rabbit	64.6%
Grouse, Pheasant	13.2%
Waterfowl (Geese, Ducks)	6.9%
Furbearers (Coyote, Fox, Raccoon, Bobcat, etc )	29.0%
Other	1.8%
	<i>N= 1,468</i>

<b>Q8a: Which type of weapons do you plan to use to hunt deer in the next 12 months?</b>	<b>%</b>
Firearm	95.8%
Bow	56.4%
Crossbow	38.2%
Muzzleloader	37.0%
	<i>N= 1,433</i>

<b>Q9: Which of these licenses and stamps are you likely to purchase in the next 12 months?</b>	<b>%</b>
Five-Day Fishing (L)	1.0%
Fishing (B)	32.6%
Hunting & Trapping (A)	7.7%
Sportsman Hunting/Trapping/Fishing (X)	64.7%
Trout Fishing Stamp (O)	60.8%
Antlerless Deer Hunting Stamp (N)	33.8%
Additional Archery Deer Hunting Stamp (RB)	19.0%

Additional Firearm Deer Hunting Stamp (RG)	20.9%
Additional Muzzleloader Deer Hunting Stamp (RM)	5.1%
Resident Big Game Stamp (BG)	6.8%
Bear Damage Stamp (DS)	17.0%
Small Arms Hunting Stamp (A-1)	5.1%
Lifetime license – Fishing (B-L)	1.8%
Lifetime license – Trout Fishing (O-L)	1.4%
Lifetime license – Hunting and Trapping (A-L)	1.2%
Lifetime license – Combination Hunting, Trapping and Fishing (AB-L)	1.8%
Lifetime license - Handgun License (A-1-L)	0.6%
Lifetime license – Senior Hunting/Trapping/Fishing (XS)	0.7%
Other	1.4%
None of these	1.5%
<i>N= 1,806</i>	

Age of respondents	Weighted	Unweighted
Under 18	0.0%	0.0%
18 to 24	16.0%	10.5%
25 to 34	20.6%	20.4%
35 to 44	21.5%	26.2%
45 to 54	22.3%	23.0%
55 to 64	19.6%	19.9%
65 and older	0.0%	0.0%
<i>N=</i>		<i>1,921</i>

Gender of Respondents	Weighted	Unweighted
Male	75.3%	83.1%
Female	24.7%	16.9%

**Resident Lifetime License Holders:**

Q1: Did you fish, hunt, or trap in WV in the past 12 months?	%
Fish	83.8%
Hunt	94.5%
Trap	12.7%
None of these	0.9%
<i>N= 1,004</i>	

Q2: How many days did you fish in West Virginia in the past 12 months?	%
1 to 5	17.7%
6 to 10	17.9%
11 to 20	24.4%
21 to 50	27.6%
51 to 100	9.1%
Over 100	3.4%
<i>Median 20</i>	
<i>N= 687</i>	

Q3: Which type of fish did you fish for in the past 12 months?	%
Black Bass (Largemouth, Smallmouth, Spotted)	63.8%
White Bass, Striped Bass, Hybrid Striped Bass	15.2%
Trout	76.9%
Musky, Tiger Musky, Northern Pike	15.8%
Sauger, Saugeye	7.3%
Walleye	19.3%
Catfish	44.7%
Perch	13.4%



Bluegill, Sunfish	43.7%
Crappie	35.3%
Anything	30.6%
	<i>N=</i> 893

Q4: How many days did you hunt in West Virginia in the past 12 months?	%
1 to 5	11.3%
6 to 10	13.9%
11 to 20	27.2%
21 to 50	38.4%
51 to 100	6.9%
Over 100	2.3%
	<i>Median</i> 20
	<i>N=</i> 784

Q5: Which type of game did you hunt for in the past 12 months?	%
Bear	30.4%
Deer	97.9%
Turkey	61.8%
Wild boar	0.9%
Dove	3.1%
Squirrel, Rabbit	55.6%
Grouse, Pheasant	14.4%
Waterfowl (Geese, Ducks)	3.0%
Furbearers (Coyote, Fox, Raccoon, Bobcat, etc )	23.1%
Other	2.3%
	<i>N=</i> 915

Q5a: Which type of weapon did you use to hunt deer in the past 12 months?	%
Firearm	96.0%
Bow	39.2%

Crossbow	46.4%
Muzzleloader	47.8%
	<i>N= 893</i>

<b>Q6: Do you plan to fish, hunt, or trap in WV in the next 12 months?</b>	<b>%</b>
Fish	91.0%
Hunt	96.2%
Trap	15.2%
None of these	0.4%
	<i>N= 989</i>

<b>Q7: Which type of fish do you plan to fish for in the next 12 months?</b>	<b>%</b>
Black Bass (Largemouth, Smallmouth, Spotted)	63.4%
White Bass, Striped Bass, Hybrid Striped Bass	12.3%
Trout	76.8%
Musky, Tiger Musky, Northern Pike	12.1%
Sauger, Saugeye	6.4%
Walleye	14.5%
Catfish	43.3%
Perch	9.1%
Bluegill, Sunfish	45.6%
Crappie	32.5%
Anything	25.7%
	<i>N= 808</i>

<b>Q8: Which type of game do you plan to hunt for in the next 12 months?</b>	<b>%</b>
Bear	40.8%
Deer	98.3%
Turkey	75.2%
Wild boar	3.4%

Dove	7.1%
Squirrel, Rabbit	65.7%
Grouse, Pheasant	21.1%
Waterfowl (Geese, Ducks)	7.1%
Furbearers (Coyote, Fox, Raccoon, Bobcat, etc )	30.6%
Other	2.4%
	<i>N=</i> 943

<b>Q8a: Which type of weapons do you plan to use to hunt deer in the next 12 months?</b>	<b>%</b>
Firearm	97.0%
Bow	43.3%
Crossbow	53.0%
Muzzleloader	56.2%
	<i>N=</i> 926

<b>Q9: Which of these licenses and stamps are you likely to purchase in the next 12 months?</b>	<b>%</b>
Five-Day Fishing (L)	0.5%
Fishing (B)	3.5%
Hunting & Trapping (A)	0.8%
Sportsman Hunting/Trapping/Fishing (X)	10.6%
Trout Fishing Stamp (O)	37.8%
Antlerless Deer Hunting Stamp (N)	48.9%
Additional Archery Deer Hunting Stamp (RB)	31.7%
Additional Firearm Deer Hunting Stamp (RG)	35.1%
Additional Muzzleloader Deer Hunting Stamp (RM)	8.4%
Resident Big Game Stamp (BG)	1.6%
Bear Damage Stamp (DS)	32.3%
Small Arms Hunting Stamp (A-1)	7.8%

Lifetime license – Fishing (B-L)	0.2%
Lifetime license – Trout Fishing (O-L)	1.3%
Lifetime license – Hunting and Trapping (A-L)	0.7%
Lifetime license – Combination Hunting, Trapping and Fishing (AB-L)	4.9%
Lifetime license - Handgun License (A-1-L)	1.3%
Lifetime license – Senior Hunting/Trapping/Fishing (XS)	7.4%
Other	2.6%
None of these	13.5%
	<i>N= 974</i>

Age of respondents	Weighted	Unweighted
Under 18	0.0%	0.0%
18 to 24	5.9%	5.1%
25 to 34	6.9%	6.9%
35 to 44	12.4%	12.0%
45 to 54	20.2%	20.9%
55 to 64	25.3%	21.3%
65 and older	29.3%	33.9%
	<i>N=</i>	<i>1,004</i>

Gender of Respondents	Weighted	Unweighted
Male	97.1%	97.8%
Female	2.9%	2.2%
	<i>N=</i>	<i>1,004</i>

### Non-Resident License Holders:

Q1: Did you fish, hunt, or trap in WV in the past 12 months?	%
Fish	48.8%
Hunt	54.3%
Trap	0.9%
None of these	11.5%
	<i>N=</i> 1,717

Q2: How many days did you fish in West Virginia in the past 12 months?	%
1 to 5	54.7%
6 to 10	21.0%
11 to 20	12.8%
21 to 50	8.9%
51 to 100	2.0%
Over 100	0.7%
	<i>Median</i> 5
	<i>N=</i> 590

Q3: Which type of fish did you fish for in the past 12 months?	%
Black Bass (Largemouth, Smallmouth, Spotted)	44.5%
White Bass, Striped Bass, Hybrid Striped Bass	8.5%
Trout	63.0%
Musky, Tiger Musky, Northern Pike	6.8%
Sauger, Saugeye	1.8%
Walleye	5.4%
Catfish	16.6%
Perch	8.4%
Bluegill, Sunfish	25.6%
Crappie	14.3%
Anything	24.9%

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N= 732

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**Q4: How many days did you hunt in West Virginia in the past 12 months?** %

1 to 5	39.4%
6 to 10	30.4%
11 to 20	18.3%
21 to 50	10.9%
51 to 100	1.0%
Over 100	0.0%

Median 7

N= 862

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**Q5: Which type of game did you hunt for in the past 12 months?** %

Bear	8.9%
Deer	89.4%
Turkey	25.3%
Dove	0.8%
Squirrel, Rabbit	19.2%
Grouse, Pheasant	6.2%
Waterfowl (Geese, Ducks)	0.9%
Furbearers (Coyote, Fox, Raccoon, Bobcat, etc )	6.4%
Other	1.4%

N= 1,037

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**Q5a: Which type of weapon did you use to hunt deer in the past 12 months?** %

Firearm	92.3%
Bow	29.8%
Crossbow	19.8%
Muzzleloader	11.7%

N= 928

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<b>Q6: Do you plan to fish, hunt, or trap in WV in the next 12 months?</b>		<b>%</b>
Fish		57.3%
Hunt		61.4%
Trap		1.7%
None of these		5.9%
<i>N</i> =		1,674

<b>Q7: Which type of fish do you plan to fish for in the next 12 months?</b>		<b>%</b>
Black Bass (Largemouth, Smallmouth, Spotted)		44.3%
White Bass, Striped Bass, Hybrid Striped Bass		9.1%
Trout		65.1%
Musky, Tiger Musky, Northern Pike		9.8%
Sauger, Saugeye		2.5%
Walleye		7.8%
Catfish		15.9%
Perch		9.1%
Bluegill, Sunfish		21.0%
Crappie		15.5%
Anything		32.4%
<i>N</i> =		896

<b>Q8: Which type of game do you plan to hunt for in the next 12 months?</b>		<b>%</b>
Bear		14.9%
Deer		90.5%
Turkey		44.8%
Dove		2.5%
Squirrel, Rabbit		26.2%
Grouse, Pheasant		10.1%
Waterfowl (Geese, Ducks)		3.0%
Furbearers (Coyote, Fox, Raccoon, Bobcat, etc )		12.2%

Other	1.4%
	<i>N=</i> 1,135

<b>Q8a: Which type of weapons do you plan to use to hunt deer in the next 12 months?</b>	<b>%</b>
Firearm	94.3%
Bow	40.4%
Crossbow	28.9%
Muzzleloader	20.6%
	<i>N=</i> 1,023

<b>Q9: Which of these licenses and stamps are you likely to purchase in the next 12 months?</b>	<b>%</b>
One-Day Fishing (LL)	15.9%
Fishing (F)	45.8%
Trout Fishing Stamp (OO)	39.6%
Statewide Hunting & Trapping (E)	44.0%
Bear Hunting (EE)	8.9%
Small Game Hunting (H)	11.4%
Antlerless Deer Hunting Stamp (NN)	30.9%
Additional Archery Deer Hunting Stamp (RRB)	14.9%
Additional Firearm Deer Hunting Stamp (RRG)	22.2%
Additional Muzzleloader Deer Hunting Stamp (RRM)	4.3%
Archery Deer Hunting Stamp (UU)	27.3%
Muzzleloader Deer Hunting Stamp (VV)	9.7%
Turkey Hunting Stamp (WW)	24.6%
Bear Damage Stamp (DS)	4.8%
Small Arms Hunting Stamp (A-1)	3.8%
Other	4.0%



None of these 5.1%

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N= 1,647

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Age of respondents	Weighted	Unweighted
Under 18	0.0%	0.0%
18 to 24	9.4%	3.8%
25 to 34	17.8%	10.5%
35 to 44	18.2%	12.9%
45 to 54	21.7%	22.6%
55 to 64	20.8%	26.4%
65 and older	12.0%	23.8%
	N=	1,718

Gender of Respondents	Weighted	Unweighted
Male	90.2%	95.2%
Female	9.8%	4.8%
	N=	1,718