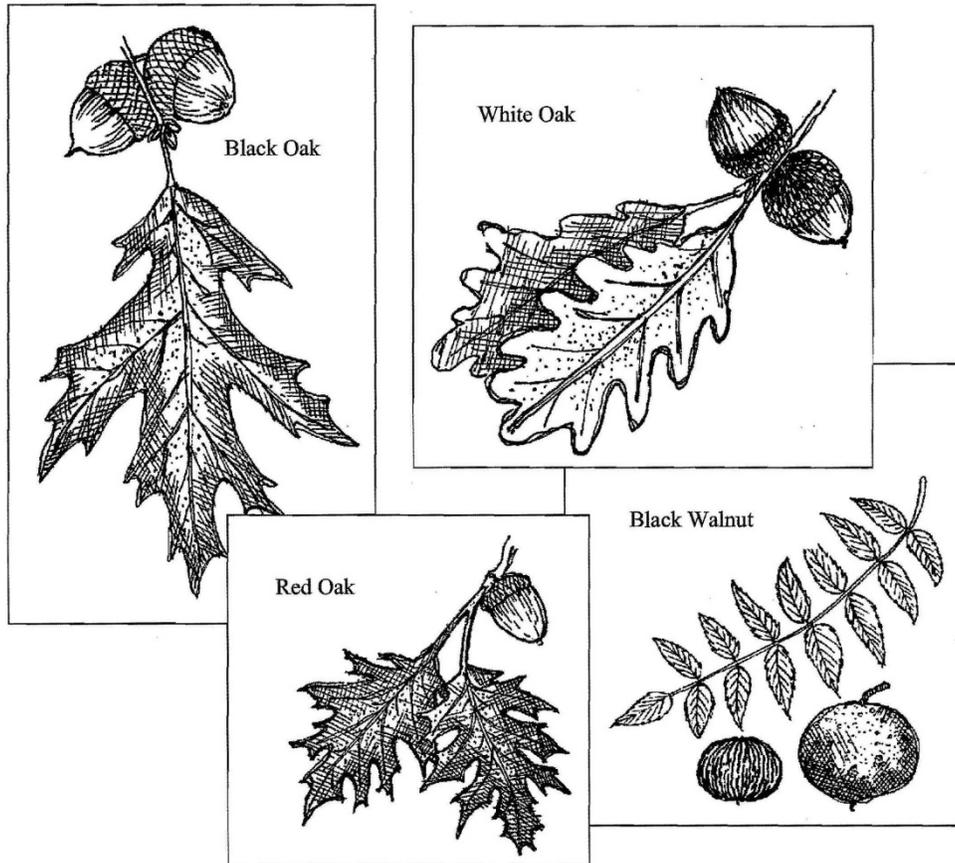


# 2012 WEST VIRGINIA MAST SURVEY AND HUNTING OUTLOOK



## **AUTHORS**

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*Wildlife Resources Bulletin Number 12-3*

**WEST VIRGINIA DIVISION  
OF NATURAL RESOURCES  
WILDLIFE RESOURCES SECTION**



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## 2012 West Virginia Mast Survey

Eric Richmond, Christopher Ryan, Randy Tucker and Michael Peters

The Division of Natural Resources (DNR) in cooperation with the Division of Forestry, annually surveys the State to determine relative abundance of soft and hard mast of important trees and shrubs. Information on the quantity of wildlife food is provided to our cooperators, our hunters and the news media.

Three hundred nine (309) locations covering all regions of West Virginia were surveyed in 2012. Professionals from a variety of disciplines, including wildlife managers, foresters, wildlife biologists, retired wildlife managers and biologists, several conservation officers, one Natural Resources Commissioner and a few other cooperators devoted their time to collect data. Without the efforts from all of these individuals this survey would not be possible. We sincerely thank everyone and extend our special thanks to retired persons and sportsmen that gave their time and effort without any monetary compensation.

The mast survey is a relative estimation of mast produced by 18 different species. A sample of the mast survey form is included in the Appendix. To collect mast survey information, cooperators are assigned counties and areas familiar to them. Mast data is subjectively evaluated as abundant, common or scarce. The surveyor also documents species not seen. The mast index is calculated for each species by the following formula:

$$\text{Mast Index} = \left[ \frac{\text{abundant observations}}{\text{total observations}} \right] + \left[ \frac{\text{common observations} \times 0.5}{\text{total observations}} \right] \times 100$$

The mast index is calculated by species for each ecological region and elevation (high and low). The current year's index is compared to the previous year's index. It is also compared to a long-term average index spanning the life of the survey. Readers not familiar with our regions should refer to Figure 1 to determine the ecological region where they hunt.

Many wildlife species are highly dependent on mast produced by our trees and shrubs. Energy available in mast is more important for survival of many wildlife species than energy available in forage from agriculture crops and herbaceous plants. Seeds and fruits from trees and shrubs are necessary for not only overwinter survival, but also to assure that wildlife is in good physical condition to reproduce. Because of the importance of mast conditions, biologists and wildlife managers are able to forecast black bear, squirrel, white-tailed deer, wild boar and wild turkey population changes and harvests.

Compared to the 2011 survey, the mast this year increased slightly (Table 1). All hard mast species except walnut and beech increase from last year's estimate. Indices

for chestnut oak and white oak increased 360 and 206 percent, respectively. Apple index decreased considerably (28 percent). Because black cherry was a very weak producer last year, cherry's index increased by 378 percent. Walnut abundance decreased 37 percent from 2011 levels. Based on the 2011 index, hickory increased by 18 percent. Several soft mast species were also monitored. Greenbrier essentially remained the same as last year by increasing only one percent. Of the soft mast species, sassafras increased the most from 2011 (69 percent).

One of the distinctive traits regarding this year's mast crop is the spotty or inconsistent areas that had abundant or scarce masts. Some areas may remind many of the bumper mast production of 2010, while other areas remind one of the dismal mast crop of 2009. For example, in some areas, acorn production in 2012 could easily be described as a bumper crop and scarce in other areas. Overall, the black/red oak index increased 60 percent in 2012. The black/red oak index is 29 percent above the 42-year average (Table 2). These oaks require two years for the fruit to mature so the index is a product of last year's germination.

Compared to the 42-year average (Fig. 2), the 2012 mast index for all species combined increased 5 percent above the long term average (index of 43). The largest decrease was observed for beech (29 percent). Except for walnut and beech, hard mast species (hickory, white oak, chestnut oak, black/red oak and scarlet oak) increased above the 42-year average (Table 2).

The statewide index for combined hard mast species (beech, hickory and oaks) and black cherry was 9 percent above the 42-year average (Fig. 3). The abundance of white oak and chestnut oak elevated the oak index considerably. Oak index was 31 percent higher than the oak 42-year average (Fig. 4). While the black/red oak index increased in all regions, oaks appeared to increase the best in Region 2. White oak and chestnut oak were the big hitters this year. White oak hit especially well in Regions 1, 4 and 5. Chestnut oak hit similar to white oaks in regions 1, 2, 4 and 5. Because mast abundance can vary at different locations, caution should be exercised when comparing the abundance values of these indices especially at the regional level. Nevertheless, the presence or absence of acorn production can be an important predictor in harvest. The 2009 mast crop was one of the worst since we began monitoring mast production. In some places, mast production this year may resemble the crop of 2009. Because we compare mast abundance to the previous year, caution should be exercised when interpreting the indices. Several factors can inflate or deflate the percent change in the index. Therefore, comparisons to the 42-year average should give us a tempered result that is more representative to the true mast condition.

Soft mast species (black cherry, grape, yellow poplar, hawthorn, crabapple, blackberry, greenbrier and apple) were below the 42-year average (Table 2). Dogwood and sassafras were above the 42-year average by 26 and 7 percent, respectively.

When the mast survey began in 1970, our main purpose was to use it to forecast squirrel populations and hunting outlook. Current mast conditions impact overwinter survival and reproductive success of many other wildlife species.

It is recommended that hunters review the regional trends in mast as shown in Tables 3 and 4 to learn of food conditions in their region of the State. There are always some regional differences.

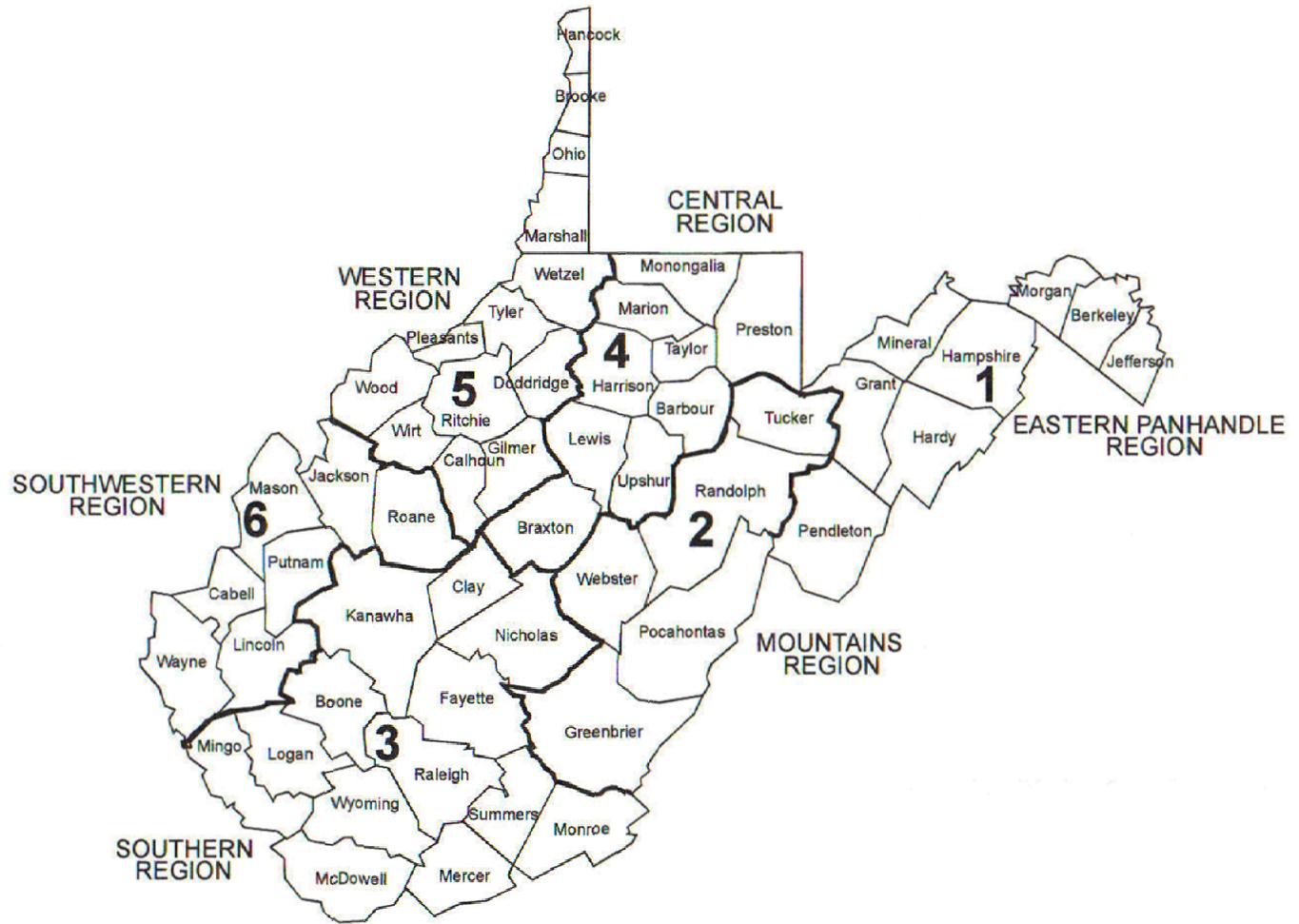


Figure 1. Ecological regions of West Virginia.

Figure 2. Indices of all mast species combined, 1970-2012.

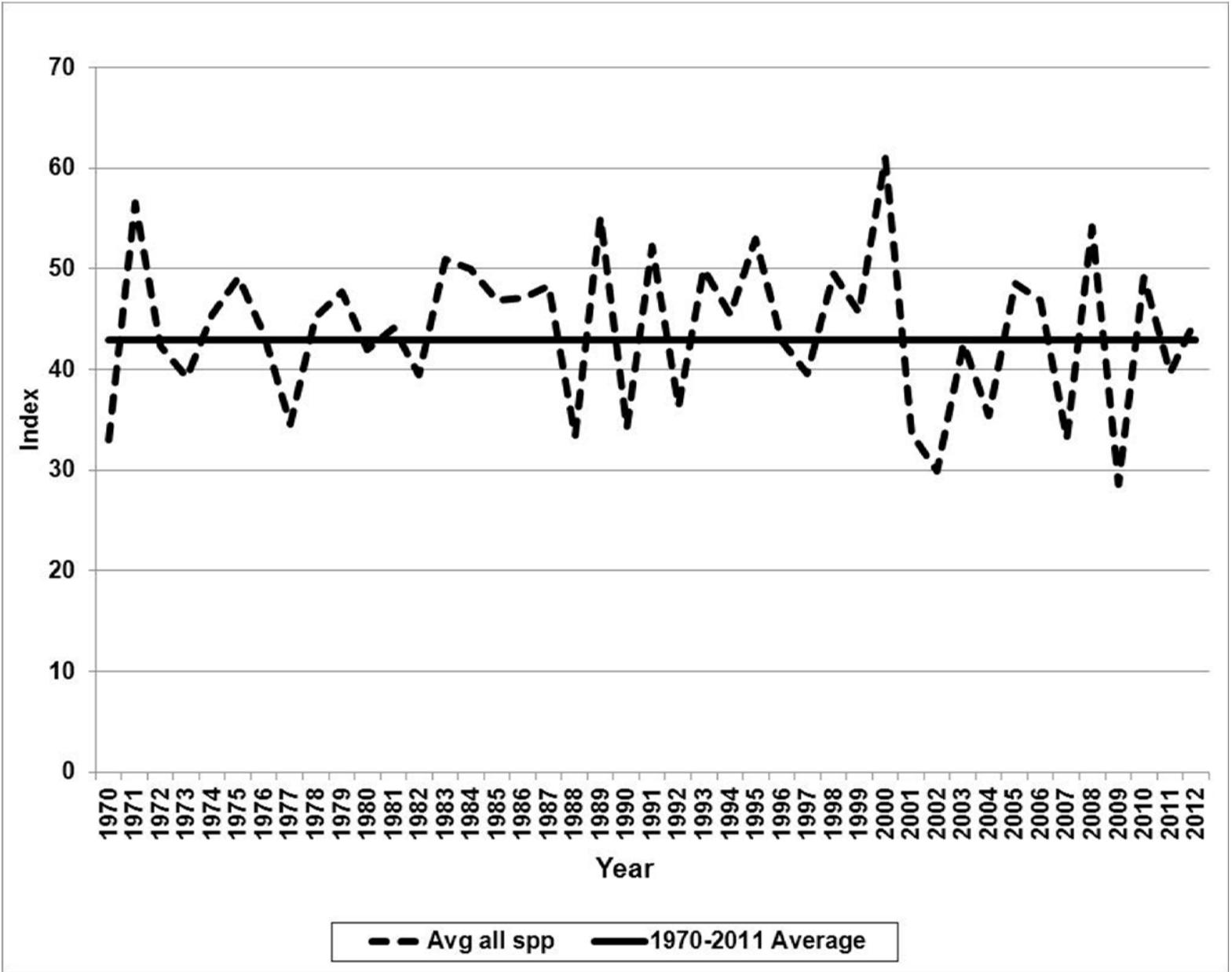


Figure 3. Indices of beech, hickory, oaks and black cherry, 1970-2012.

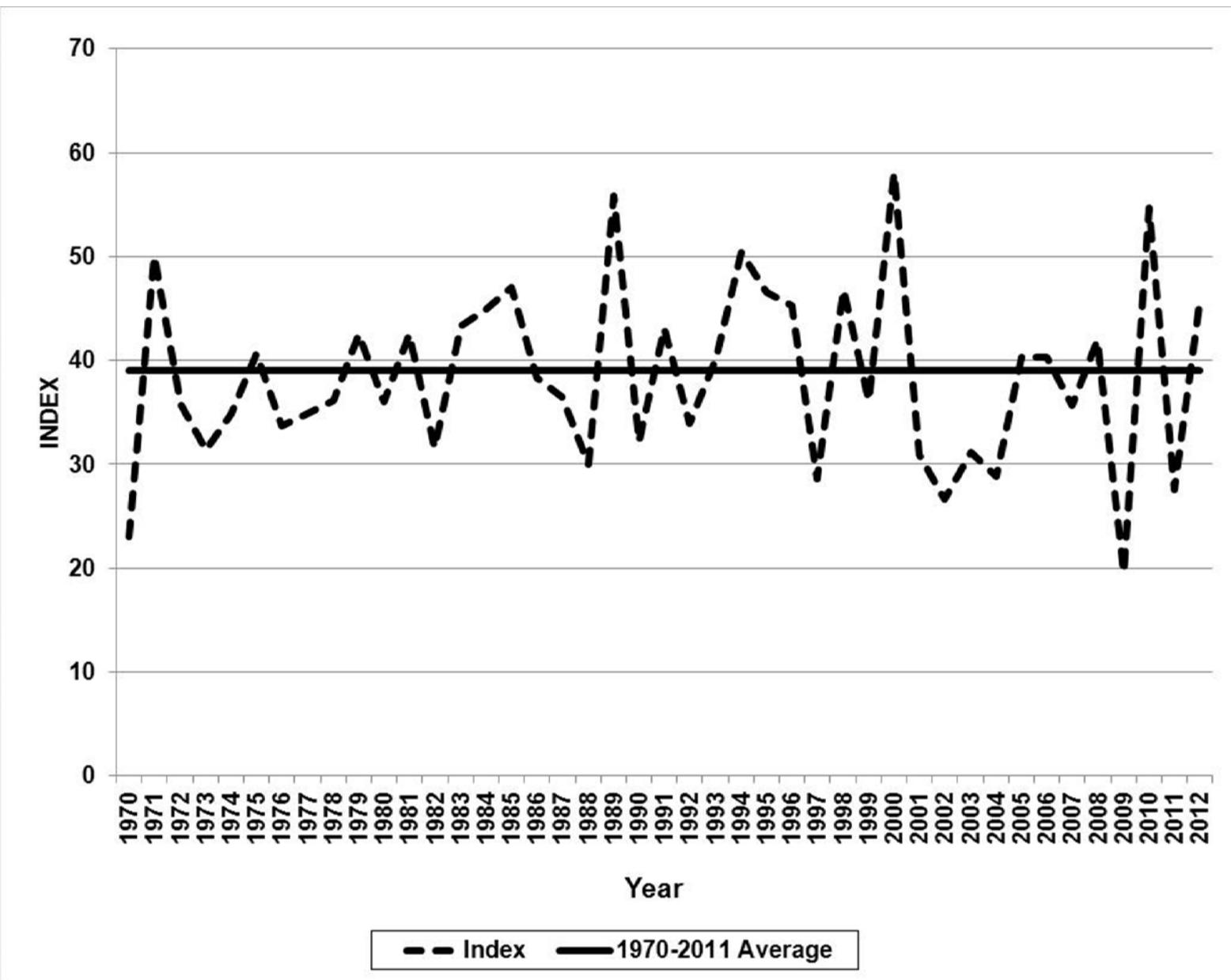


Figure 4. Index of all oaks, 1970-2012.

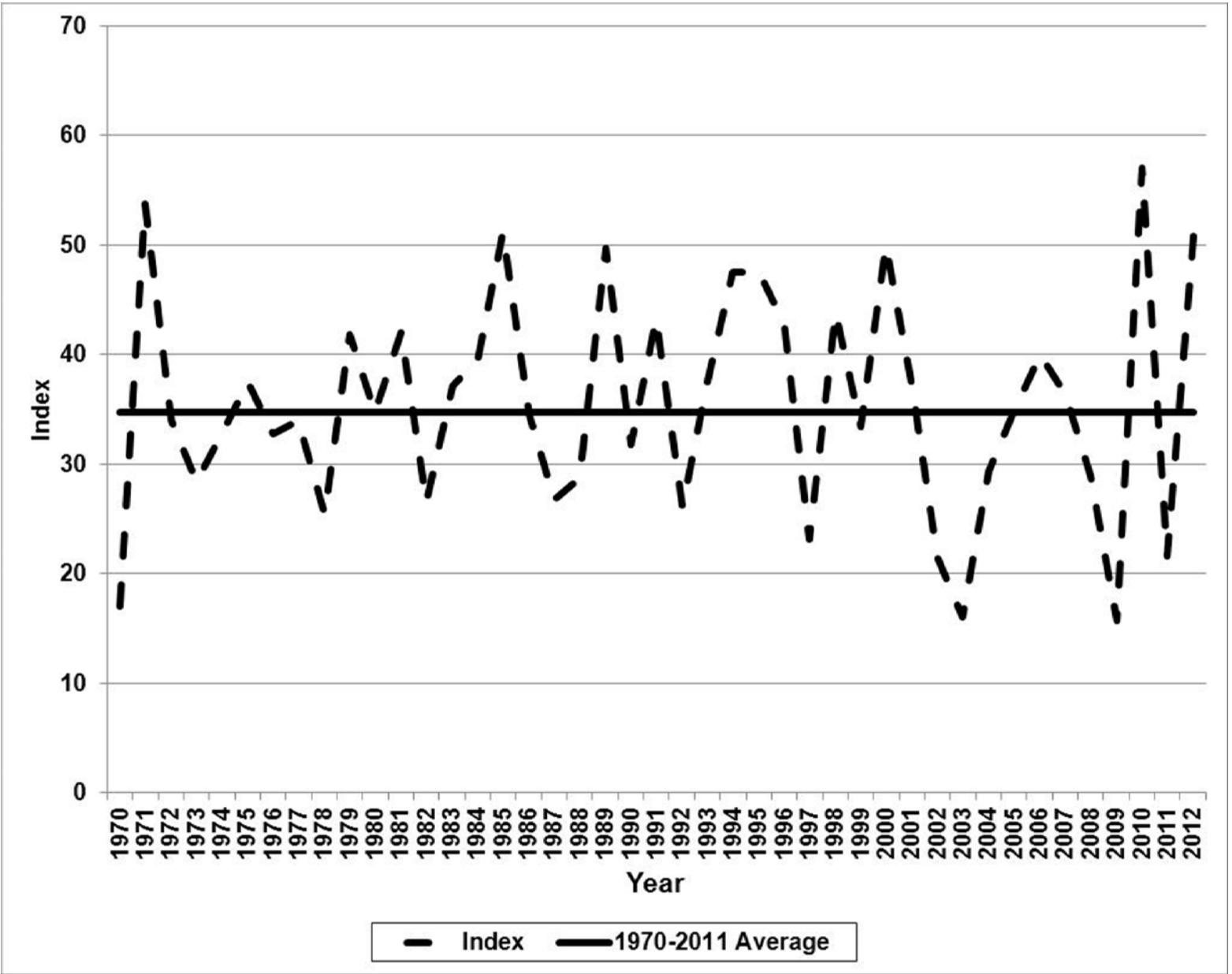


Table 1. 2012 statewide index compared to 2011 mast index.

<b>Species</b>	<b>2011</b>	<b>2012</b>	<b>Percent Difference</b>
Beech	66	27	-60
Walnut	57	36	-37
Hickory	42	50	18
White Oak	18	55	206
Chestnut Oak	14	63	360
Black/red Oak	35	55	60
Scarlet Oak	33	53	60
Black Cherry	8	36	378
Grape	43	38	-12
Scrub Oak	35	28	-20
Yellow Poplar	49	42	-13
Hawthorn	58	44	-25
Crabapple	61	39	-36
Dogwood	53	61	13
Blackberry	50	40	-21
Greenbrier	35	35	1
Sassafras	23	39	69
Apple	57	41	-28
Other	64	74	15
<b>All Species</b>	<b>40</b>	<b>46</b>	<b>14</b>

Table 2. 2012 statewide index compared to 42-year average mast index.

<b>Species</b>	<b>Avg Index</b>	<b>2012</b>	<b>Percent Difference</b>
Beech	38	27	-30
Walnut	37	36	-3
Hickory	47	50	6
White Oak	38	55	45
Chestnut Oak	33	63	89
Black/red Oak	43	55	29
Scarlet Oak	34	53	58
Black Cherry	45	36	-21
Grape	41	38	-6
Scrub Oak	36	28	-23
Yellow Poplar	47	42	-10
Hawthorn	48	44	-9
Crabapple	53	39	-27
Dogwood	48	61	26
Blackberry	51	40	-21
Greenbrier	40	35	-12
Sassafras	36	39	8
Apple	56	41	-27
Other	68	74	8
<b>All Species</b>	<b>43</b>	<b>46</b>	<b>5</b>

Table 3. Percent difference in mast index by species between 2011 and 2012 by ecological region.

Species	Ecological Region					
	1	2	3	4	5	6
Beech	-38	-72	-69	-70	-63	0
Walnut	-42	-62	-27	-49	-23	-6
Hickory	26	17	25	-17	9	69
White Oak	289	112	122	454	300	161
Chestnut Oak	487	765	134	1114	283	145
Black/red Oak	38	316	19	66	41	21
Scarlet Oak	13	874	7	49	52	42
Black Cherry	2193	2622	22	1100	417	160
Grape	-16	-37	-9	-44	17	38
Scrub Oak	-23	-3	-65	N/A	N/A	-100
Yellow Poplar	-22	35	-1	-33	-66	11
Hawthorn	-37	-22	-26	-21	-33	-7
Crabapple	-62	-28	-42	-29	-32	28
Dogwood	90	28	24	-9	-31	30
Blackberry	-6	-39	-27	-25	-62	42
Greenbrier	60	39	-27	-13	-40	49
Sassafras	280	40	38	-34	13	100
Apple	-18	-46	-34	-30	4	56
Other	37	-4	38	-19	14	89
<b>All Species</b>	<b>35</b>	<b>19</b>	<b>0</b>	<b>-2</b>	<b>-2</b>	<b>45</b>

Table 4. Percent Change in 2012 mast index by species from average of years (1970-2011) by ecological region.

Species	Ecological Region					
	1	2	3	4	5	6
Beech	10	-49	-40	-54	-36	31
Walnut	-3	-19	-5	-31	18	27
Hickory	22	30	-10	-22	-6	52
White Oak	136	78	5	26	38	26
Chestnut Oak	179	144	58	65	40	62
Black/red Oak	18	32	38	19	29	39
Scarlet Oak	38	127	49	42	58	70
Black Cherry	-18	27	-70	-31	2	37
Grape	-10	-18	-4	-40	-1	48
Scrub Oak	-29	-8	-85	-100	-100	-100
Yellow Poplar	-16	11	2	-30	-55	6
Hawthorn	8	1	10	-40	-32	7
Crabapple	-36	-11	-24	-32	-39	15
Dogwood	66	31	22	10	9	31
Blackberry	-7	-52	-19	-38	-48	34
Greenbrier	-10	17	-30	-27	-32	24
Sassafras	80	-20	4	-55	-18	41
Apple	-18	-24	-44	-29	-22	-1
Other	4	16	28	-30	5	16
<b>All Species</b>	<b>23</b>	<b>12</b>	<b>-2</b>	<b>-17</b>	<b>-4</b>	<b>34</b>

## 2012 West Virginia Hunting Outlook

Eric Richmond, Christopher Ryan, Randy Tucker and Michael Peters

Predictions of hunting success are based on multiple considerations: current and previous years' mast conditions, nuisance complaints, information from other surveys (i.e., Spring Gobbler Survey, Bowhunter Survey and Raccoon Field Trial Survey), adjustments in regulations (i.e., such as bag limits, permit allocations, additional counties for antlerless season and season length) and observations provided by field personnel of the Wildlife Resources and Law Enforcement Sections of the Division of Natural Resources (DNR), foresters from the Division of Forestry, retired DNR wildlife managers and biologists, and a few volunteer cooperators. Mast often dictates overwinter survival and reproductive success of many wildlife species the following year. Observations of field personnel were recorded on Hunter Prospects forms (see Appendix). The returned Hunter Prospects forms were summarized by the authors and used as an evaluation tool to aid in determining the hunting forecast.

Weather conditions during last winter were mild by comparison to the winter of 2010–2011 regarding snowfall and freezing temperatures. Last year's mast crop provided wildlife with enough energy reserves to survive the mild winter. As a result, winter kills of deer and turkey were expected to be minimal.

This year, several changes in hunting seasons will influence hunter harvest. Season length and number of counties open to fall turkey and black bear hunting have been modified. The statewide archery deer season will open this year on September 29, 2012. The statewide squirrel hunting season will open this year on September 8, 2012. Please refer to the 2012–2013 Hunting and Trapping Regulations Summary for a complete listing of changes.

Table 1 is a quick chart of predicted statewide harvests of major game species for 2012. Harvests of most game species are expected to be either higher or similar to the harvests of 2011. Projected deer kills by season and regions are depicted in Table 2. Fall wild turkey forecasts are shown in Table 3. Mast conditions vary throughout the state, so hunters will need to scout their favorite hunting spots to help ensure success. Hunters are reminded this outlook is designed to forecast general prospects and is not intended to predict hunting conditions at specific locales—preseason scouting will be a wise venture.

## GRAY AND FOX SQUIRRELS

Hickory and oaks have improved mast conditions over last year and the long term average but conditions are spotty. Bushytail hunters would do best to locate white and chestnut oaks that have much improved mast production over last year and avoid beech and walnut that didn't fare well this year.

Slightly below average mast conditions last year and a mild winter should have resulted in average winter survival and reproduction. Slightly above average but spotty mast conditions this year could have squirrels concentrated in some area while dispersed in others. **Bushytail hunters should expect similar harvests as last year.**

## COTTONTAIL RABBITS

A wet winter, dry spring and wet July produced conditions for great cover and increased bunny numbers going into the late summer months. However, cover dried up and withered away in the hot, dry August of 2012. September rains enhanced some grassy cover, but most forbs and other vegetation are through their growth periods. Couple the favorable conditions of early summer with the poor cover produced late and hunters will find **similar conditions and harvests** in 2012 as in 2010 and 2011.

## RACCOON

**Increased harvests are predicted for 2012.** Expect to find 'coons in high numbers where mast is found. Spotty oak and good cherry production will have "ringtails" scattered across the landscape but concentrated in other areas. An outbreak of distemper in the southern portion of the state will impact the harvest in that region, but look for "ole blue" to have plenty of strikes and the trap lines will be hot.

## WHITE-TAILED DEER

This year's forecast should be slightly higher for 2012. All regions should see a similar to higher harvest this year. The increased reproduction of 2011 and the mild winter of 2011–2012 should mean that there are plenty of 1.5 year-old animals for hunters in the woods. The overall mast conditions should be favorable to a variety of deer hunters. Some areas of the state experienced localized outbreaks of Epizootic

Hemorrhagic Disease (EHD) during 2012 and hunters may observe lower number of animals in some areas but it should not impact a county or region wide harvest.

We are predicting a **similar archery harvest** to 2011 because of the better but spotty mast conditions of 2012. Better than average mast conditions, especially when it is white or chestnut oak acorns, typically leads to a decrease in the deer archery seasons; however, because these conditions are very spotty, hunters that are willing to scout should have continued success. In addition, the deer archery season has been extended by one week and the opening date will be September 29, 2012. A combination of these factors should lead to a similar harvest in many regions with some experiencing slight increases.

**The buck harvest should be higher compared to the 2011 harvest.** The incredible reproduction in 2011 because of the over-abundant mast conditions of 2010 and last year's mild winter should mean that there are plenty of 1.5 year-old bucks available to hunters. In addition, Wildlife Resources Section employees of the DNR have been conducting spotlight counts in many counties and have observed many large racked animals for hunters to pursue. Harvests should be higher in every region this year.

**The antlerless harvest should be slightly higher this year.** Some counties will have an increased bag limits this year so hunters should consult the 2012–2013 Hunting and Trapping Regulations Summary for specific dates and bag limits. In addition, hunters in some counties will be required to harvest an antlerless deer before harvesting a second buck; therefore, biologists are hoping to increase the antlerless harvest in these counties. The season structure also changed in 2012 with a split in the traditional antlerless season to now include three days in October and three in mid-December in addition to the concurrent hunting during the buck gun season and the late December season. The October season was designed to harvest antlerless deer before the rut, thereby putting less stress on bucks, and removing animals before all of the food was consumed. This would leave additional resources for the remaining wildlife. Hunters are encouraged to harvest antlerless deer during this new season to help improve the health of the herd.

**Muzzleloader hunters should see a similar harvest to last year.** The traditional muzzleloader season is moved one week earlier than in the past; however, the early, antlerless September season has been eliminated. The spotty mast conditions that should be left in December will help benefit muzzleloaders but it shouldn't have a large impact on the harvest. Muzzleloader hunters are also reminded to purchase their black bear damage stamp for a chance to harvest a bruin. Every county in West Virginia is now open to some kind of bear gun season.

## BLACK BEAR

West Virginia bear hunters are some of the most fortunate in the country. A variety of hunting opportunities, large amounts of public land and a healthy bruin population add up to some great hunting. **In 2012, we are predicting an increase in bear harvest from 2011 but it will be slightly below the record kill of 2010; thus, ranking it number 2 on the all-time list.** Extended firearms have been continued in many counties and the bow season has been extended two weeks to coincide with the opening of deer archery season. Some counties now have a gun season that will run concurrently with buck gun season and there have been slight modifications to the September season where hunters may use hounds.

The more abundant oak mast conditions should make for better gun hunting during the traditional bear season. An ample amount of acorns, especially in Regions 1 and 2, should keep bears out of the den in December barring any major snowstorms. All traditional mountain counties will retain some sort of early season in September where the use of dogs is permitted; however, there were a few minor modifications to the number of hunting days in some counties. Hunters during the early season should notice that the black cherry index is much higher than last year. Hunters using hounds should still be able to find bruins using black cherry patches during the September season. Preston County will be open for a bear gun season during the concurrent buck gun season for the first time in history and we are predicting a record harvest in that county.

The increased oak mast typically should lead to a decreased bear archery harvest. However, because the mast conditions are spotty and the archery season has been extended two weeks, hunters willing to do a little bit of scouting should find plenty of bruins. Therefore, the bear archery harvest should not be as low as “normal” under typical conditions. As with gun hunters in the early season, bowhunters should also not overlook black cherry patches that have produced strong crops in 2012.

Black bear hunters will also notice that the population has continued to grow in many of the non-traditional counties of the western and southern parts of the states. Hunters looking for unique opportunities and less hunting pressure should focus on Wyoming, Logan and McDowell counties where the bag limits are generous and the seasons are long. In addition, the DNR has received numerous additional reports of bears in the counties of Calhoun, Ritchie and Doddridge. Hunters in these counties would be advised to purchase their bear damage stamp before heading afield if they want the opportunity to harvest an animal during the open season.

## WILD TURKEY

Counties with a spring harvest of 0.75 gobblers per square mile or more qualify for a two-week fall season (October 13–20 and October 29–November 3) and includes Brooke, Hancock, Marshall, Mason, Ohio, Preston and Wood counties. Counties with a spring harvest of 0.5 gobblers per square mile up to 0.74 per square mile are eligible for a one-week fall season (October 13–20) and includes Barbour, Cabell, Calhoun, Harrison, Jackson, Marion, Monongalia, Pleasants, Putnam, Summers, Taylor, Tyler, Upshur, Wetzel and Wirt counties. Last year 12 counties were open to the one-week fall season and 7 were open to a two-week fall season. With only three more counties available for fall hunting in 2012, we would expect the harvest in the “non-traditional” counties to be similar to last year. Be advised that some counties that were open last year for the one week season are closed this year and vice versa. Check the 2012–2013 Hunting and Trapping Regulations Summary.

Although mast conditions were slightly below the long term average last year, a mild winter (increased winter survival) with a relatively early mild spring means that many of the first nesting attempts were probably successful with good poult survival. Across ecological regions, with the exception of Region 4, the fall turkey harvest is expected to be similar to last year. Region 4 has 3 additional counties with a one week season from last year, so fall turkey harvest should be up in this region. **Overall the 2012 fall turkey harvest is predicted by surveyors to be similar to the fall 2011 season.**

## RUFFED GROUSE

As with turkeys, a mild winter with an early and mild spring probably resulted in good over winter survival of adult birds and good recruitment of poult “ruffies” this spring. Mast conditions this year are slightly above the long term average but very spotty according to most of our cooperators. Black cherry, dogwood and sassafras mast are greatly improved over last year but the spotty conditions may concentrate these “thunderbirds” into very localized areas. If late season weather conditions are normal, **it is predicted that flushing rates and harvests should be similar to last year across the state.**

## **WILD BOAR**

Last year's bigger harvest was a direct result of increased productivity in 2011 because of the bumper crop of acorns in 2010. Mast conditions in 2011 were not as favorable for reproduction; however, there was a good carry-over of pigs from 2010. Spotty mast in 2012 conditions make scouting essential to harvesting one of these elusive animals. There is mast available, but hunters participating in the October firearms season will have difficulty finding sign during peak leaf fall. Archery and firearm hunters should have comparable success. **A similar harvest of wild boar is expected is expected for the 2012 season.**

Table 1. 2012 quick check chart of predicted statewide wildlife harvests.

<b>Species</b>	<b>Higher</b>	<b>Similar</b>	<b>Lower</b>
Gray and Fox Squirrels		X	
Cottontail Rabbits		X	
Ruffed Grouse		X	
Raccoon	X		
White-tailed Deer	X		
Wild Boar		X	
Wild Turkey		X	
Bear	X		

Table 2. 2012 quick check chart of deer harvest forecast by region and season.

<b>Region</b>	<b>Season</b>				
	<b>Bow</b>	<b>Buck</b>	<b>Antlerless</b>	<b>Muzzleloader</b>	<b>Total Kill</b>
1	Slightly Higher	Higher	Similar	Similar	Slightly Higher
2	Similar	Higher	Similar	Similar	Similar
3	Similar	Higher	Slightly Higher	Slightly Higher	Slightly Higher
4	Similar	Higher	Higher	Similar	Higher
5	Similar	Higher	Higher	Similar	Slightly Higher
6	Similar	Higher	Higher	Slightly Higher	Higher
<b>Statewide</b>	<b>Similar</b>	<b>Higher</b>	<b>Slightly Higher</b>	<b>Similar</b>	<b>Higher</b>

Table 3. 2012 quick check chart of fall wild turkey harvest forecast by region.

<b>Region</b>	<b>Higher</b>	<b>Similar</b>	<b>Lower</b>
1		X	
2		X	
3		X	
4	X		
5		X	
6		X	
<b>Statewide</b>		<b>X</b>	



## **APPENDIX**

**REPORT OF MAST CONDITIONS  
(SEE OPPOSITE SIDE FOR INSTRUCTIONS)**

**H L U**

**LOCATION:** \_\_\_\_\_  
**COUNTY:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_  
**ELEVATION:** \_\_\_\_\_  
**ASPECT:** \_\_\_\_\_

SPECIES	AVAILABLE MAST, FRUIT, ETC.			
	Abundant	Common	Scarce	Species Not Seen
BEECH				
WALNUTS				
HICKORIES				
WHITE OAK				
CHESTNUT OAK				
BLACK/RED OAK				
SCARLET OAK				
BLACK CHERRY				
GRAPES				
SCRUB OAK				
YELLOW-POPLAR				
HAWTHORNE				
CRABAPPLE				
DOGWOOD				
BLACKBERRY				
GREENBRIER				
SASSAFRAS				
APPLE				
OTHERS (LIST)				

**REMARKS:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**NAME OF PERSON REPORTING:** \_\_\_\_\_  
**DIVISION:** \_\_\_\_\_  
**ADDRESS:** \_\_\_\_\_  
 \_\_\_\_\_

## INSTRUCTIONS FOR REPORTING MAST CONDITIONS

**LOCATION:** Give the nearest post office address or some other adequate description. Example: Alpena Post Office, or two miles south of Alpena near head of Roaring Creek. Do not give such descriptions as “on the ridge above George Walker’s Store.”

**COUNTY:** Name the county in which the survey was made.

**DATE:** Give the date on which the survey was made.

**ELEVATION:** Give the approximate elevation. Example: 2,500 feet, 800 feet, etc.

### **AVAILABLE MAST, FRUIT, ETC.**

Please indicate the relative abundance of the mast, fruit, etc. this season by placing an X under the proper column opposite the species concerned. Do not write in any wording such as poor, very poor, not so good, etc. Mark X under column species not seen if you did not see the tree or shrub species, or if it does not occur in the area you conducted the survey.

Please return the forms by August 31 so that compilations can be made immediately thereafter.

Mail completed forms to:

WV Division of Natural Resources  
Mast Survey  
PO Box 67  
Elkins, WV 26241

# RETURN BY August 31, 2012

## 2012 HUNTING PROSPECTS

PLEASE CHECK BELOW WHETHER YOU THINK HUNTING WILL BE THE SAME, BETTER OR POORER THAN 2011 FOR EACH GAME SPECIES LISTED. LIST COUNTY OR COUNTIES YOU ARE RATING. IF YOU DO NOT KNOW, OR THE GAME SPECIES ARE NOT PRESENT IN YOUR WORK AREA, DO NOT CHECK ANYTHING.

COUNTY(IES) RATED: \_\_\_\_\_

GAME SPECIES	(1) BETTER	(2) SAME	(3) POORER
SQUIRRELS			
RABBITS			
GROUSE			
RACCOON			
DEER			
TURKEY			
QUAIL			
BEAR			
OTHERS (LIST)			

REMARKS:

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NAME OF PERSON REPORTING: \_\_\_\_\_

DIVISION: \_\_\_\_\_

ADDRESS: \_\_\_\_\_



# **Mast Survey**

**Wildlife Resources**  
*West Virginia Division of  
Natural Resources*

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South Charleston, WV 25303

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**Bulletin 12-03**



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