

2018 WEST VIRGINIA MAST SURVEY AND HUNTING OUTLOOK



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

2018 West Virginia Mast Survey

Ethan Barton, Colin Carpenter, Holly Morris, Eric Richmond and Chris Ryan

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 produced by trees and shrubs of importance to wildlife populations. Information on the quantity of wildlife food is provided to our cooperators, hunters, and various media outlets.

Mast surveys were completed at 247 locations covering all regions of West Virginia in 2018. Professionals from a multitude of natural resources disciplines- including wildlife managers, foresters, wildlife biologists, retired managers and biologists, Natural Resources Police Officers, Natural Resources Commissioners, and a few other cooperators- devoted their time to collect data. Without the efforts of these individuals, completion of this survey would not be possible. We would like to extend our sincerest gratitude to everyone who participated in data collection for this year's mast survey.

The mast survey is a relative estimation of mast produced by 18 different tree and shrub species. A sample of the mast survey form is included in the Appendix. Cooperators are assigned counties and areas familiar to them to collect mast survey information, and the same areas are generally surveyed each year to ensure consistency in the survey across years. Mast crop production is subjectively evaluated as abundant, common, or scarce by species the observer encounters in the survey area. The surveyor also documents species that are not encountered, and additional mast-producing species of local importance that do not appear on the survey form. The mast index is calculated for each species via the following formula:

$$\text{Mast Index} = \left[\left(\frac{\text{Abundant Observations}}{\text{Total Observations}} \right) + \left(\frac{\text{Common Observations} \times 0.5}{\text{Total Observations}} \right) \right] \times 100$$

The mast index is calculated by species for each ecological region and elevation (high or low, relative to the local terrain of the survey area). 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 West Virginia ecoregions should refer to Figure 1 to determine the region in which they hunt.

Many wildlife species are highly dependent upon mast crops produced by trees and shrubs, and dynamic factors in the animal's life history- such as survival and fecundity- are affected by mast availability. Caloric value available in mast is far more important to the survival of many wildlife species than the caloric value in agricultural crops, herbaceous plants, and supplemental feed. Seeds and fruits from trees and shrubs are necessary not only for overwinter survival, but also for ensuring animals are in good physical condition for reproduction in following months. Wildlife biologists and managers are able to predict

hunting prospects and population dynamics for black bear, squirrels, white-tailed deer, wild boar, wild turkey, and other game species by using mast quantity and quality information gathered during the annual mast survey.

Compared to the 2017 survey (Table 1), the mast index for all species combined was down approximately 22%. Beech, walnut, oak, and hickory nut crops were all less abundant in 2018 than in 2017. Beech and walnut production were down more than 20%, while hickory production was down 13%. However, walnut and hickory production were respectively 31% and 37% above the 47-year average and should provide ample hard mast for squirrels. Oak mast production was down significantly from 2017, with red oak, black oak, and scarlet oak declining more than 64%. Performance of these species was also significantly below the 47-year long-term survey average, with the red oak/black oak group 70% below average and scarlet oak 64% below the average. Acorn production in the usually-reliable scrub oak was down more than 41% as compared to August 2017 and 31% below the long-term average. Chestnut oak production was down 30% from 2017 but remained 10% above the long-term average. White oak acorn production was nearly identical to the abundant crop produced in 2017 and was 42% above the long-term average. Even with abundant white oak acorn production, total oak mast production was nearly 24% below the long-term average. This should increase success of hunters pursuing white-tailed deer in many areas as they will need to cover more area while foraging to meet their nutritional needs, thereby making an encounter and harvest opportunity more likely for hunters afield.

All soft mast producing species, except yellow-poplar, were below their 2017 performance levels. Apple production was down more than 30% statewide, likely due to deleterious effects of abnormally wet conditions upon overall fruit and tree health during the spring and summer months of 2018. Crabapple, hawthorn, black cherry, and sassafras were all more than 20% below production levels observed during August 2017, and black cherry and sassafras production were more than 20% below the 47-year survey average. Blackberry production was slightly below the long-term average and 12% below the amount observed in 2017. However, dogwood, grape, and greenbrier crop production was similar to levels observed last year, and fruit production in all of these species was above the long-term average. This should provide some benefit for game birds such as ruffed grouse and wild turkeys, both of which use soft mast extensively when it is available. Hunters should take note of this information and know that they will have to cover additional territory to find grouse and turkeys, as these animals will be dispersed across the landscape and not concentrated around a particular food source.

When considering all mast-producing species, the 2018 mast index was 22% below last year and approximately 5% below the 47-year survey average (Fig. 2). Production of hickories, walnuts, and oaks were nearly 13% below the long-term average, and this

difference was driven primarily by the sharp decline in the acorn crop. Total hard mast crop production was 29% below 2017 levels and 5% below the long-term average.

Hunters should always pay attention to mast crop production in their area (Table 3). Survey year 2018 revealed a crop that was generally less in quantity than that of 2017 across almost all ecoregions of the state. Ecoregion 3- the southern counties of West Virginia- experienced a mast crop that was slightly more abundant than in 2017, although it remained more than 30% below the long-term survey average. Red oak production in that region was much lower in 2018. Deviation from the long-term average across other ecoregions ranged from 20-51%, with the largest difference in the state's eastern panhandle (region 1) and central highlands (region 2). Comparisons to the long-term average provide a more tempered index to mast crop production than do annual comparisons, wherein relatively small variations in the production of a particular species can largely influence percent change indicated by the comparison and therefore may not provide a representative index to true mast abundance. Considering long-term comparisons, the mast crop of survey year 2018 appears to be a rather mixed one, and local scarcity of wildlife food resources is likely when there are a lack of white oak trees.

When the mast survey began in 1971, our main purpose was to use it as a method to forecast annual squirrel populations and hunting prospects. However, annual mast production conditions affect overwinter survival and reproductive success of many other wildlife species in subsequent months or years.

We recommend hunters review regional trends in mast production as reflected in Tables 3 and 4 to learn the wildlife food conditions in the region of the state they hunt. There are always regional and local differences in mast production, but results recorded in the mast survey should provide hunters a representative regional picture of true conditions "on the ground."

2018 Mast Survey Highlights

- All Species Combined mast index is approximately 5% below the long-term average statewide.
- All Hard Mast Species mast index is below the long-term average by a similar margin statewide.
- While White Oak acorn production levels are very similar to last year, production among other oak species is significantly below that experienced last year. White Oak is still significantly higher than the long-term average and should supply a good food source.

- Hickory, walnut, and beech production levels are well below those of last year.
- Soft mast production levels were generally well below those experienced last year and below the long-term average.
- Apple production was more than 30% down from last year and 8% down compared to the 47-year survey average.

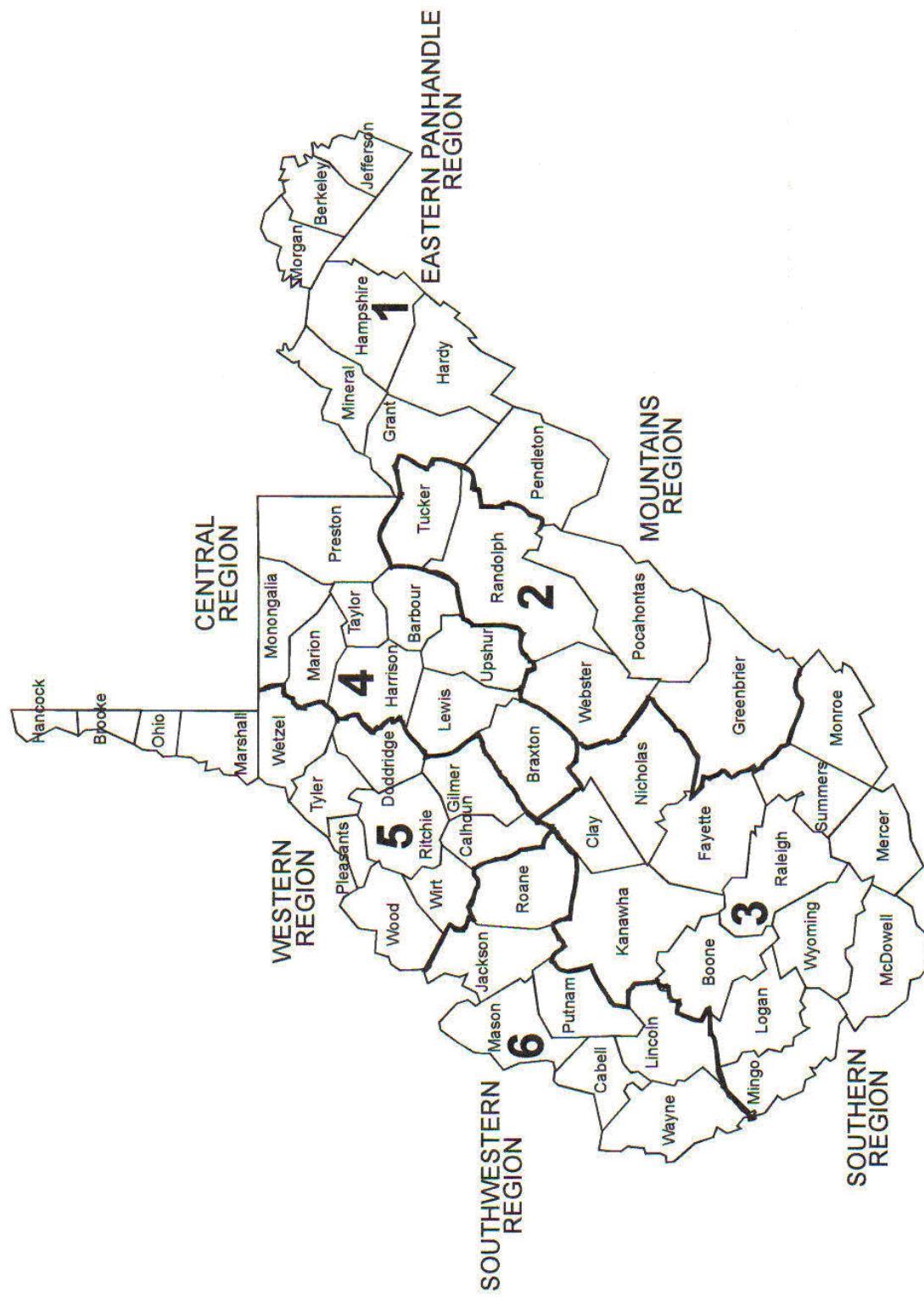


Figure 1. Ecological regions of West Virginia's mast survey.

Table 1. 2018 statewide index compared to 2017 mast index.

Species	2017	2018	Percent Difference
Beech	47	38	-20
Walnut	66	50	-23
Hickory	76	66	-13
White Oak	52	53	3
Chestnut Oak	52	36	-30
Black/Red Oak	45	12	-72
Scarlet Oak	33	12	-64
Black Cherry	52	36	-31
Grape	46	45	-1
Scrub Oak	42	25	-41
Yellow Poplar	49	57	15
Hawthorn	68	39	-43
CrabApple	70	48	-31
Dogwood	59	56	-5
Blackberry	55	48	-12
Greenbrier	42	41	-4
Sassafras	35	28	-21
Apple	78	53	-32
All Species	54	42	-22

Table 2. 2018 statewide index compared to 47-year average mast index.

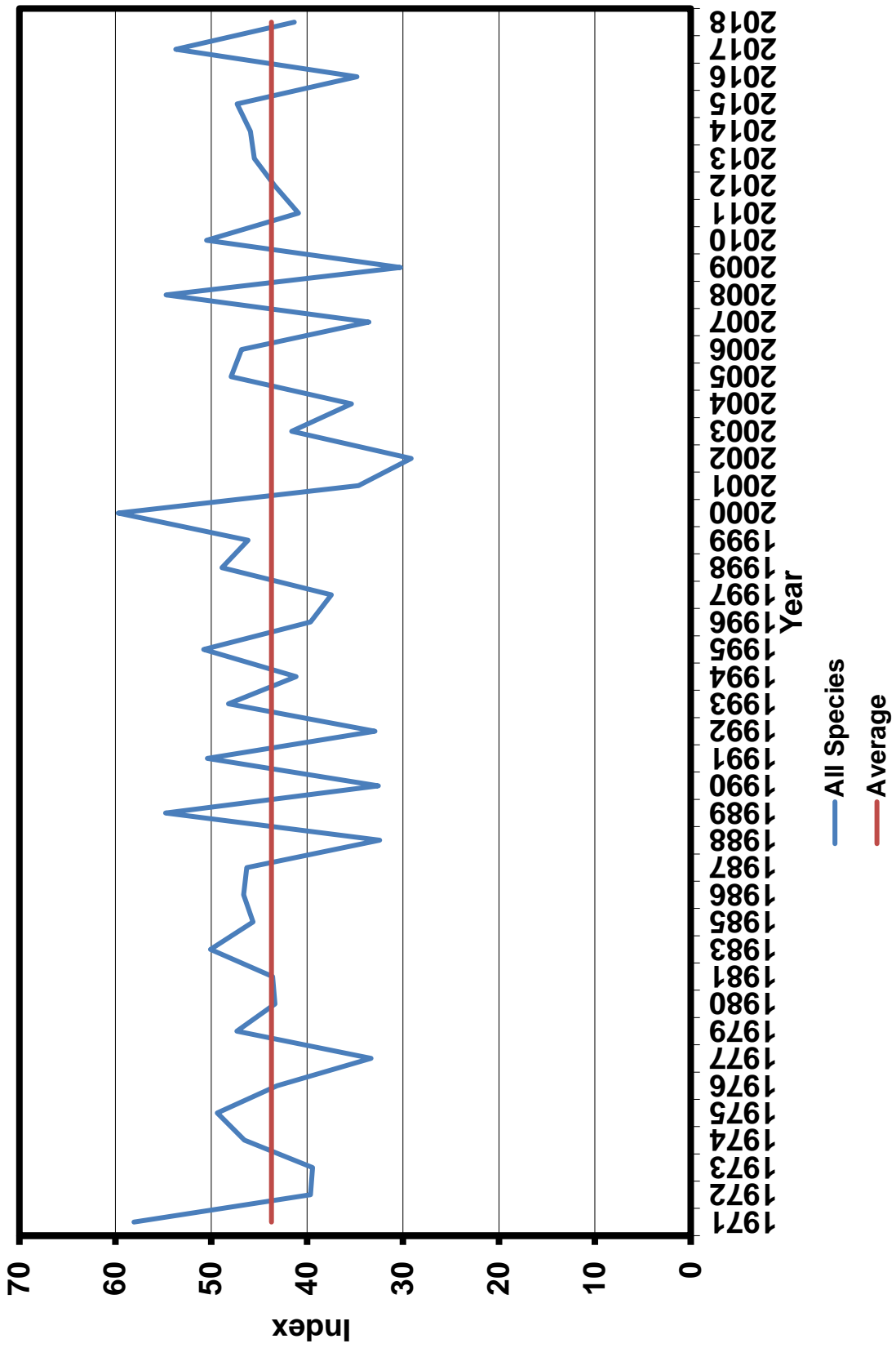
Species	Avg Index	2018	Percent Difference
Beech	39	38	-3
Walnut	38	50	31
Hickory	48	66	37
White Oak	38	53	42
Chestnut Oak	33	36	10
Black/Red Oak	42	12	-70
Scarlet Oak	33	12	-64
Black Cherry	46	36	-22
Grape	42	45	9
Scrub Oak	36	25	-31
Yellow Poplar	46	57	23
Hawthorn	49	39	-19
CrabApple	54	48	-11
Dogwood	49	56	14
Blackberry	51	48	-5
Greenbrier	40	41	3
Sassafras	36	28	-22
Apple	57	53	-8
Other	68	42	-38

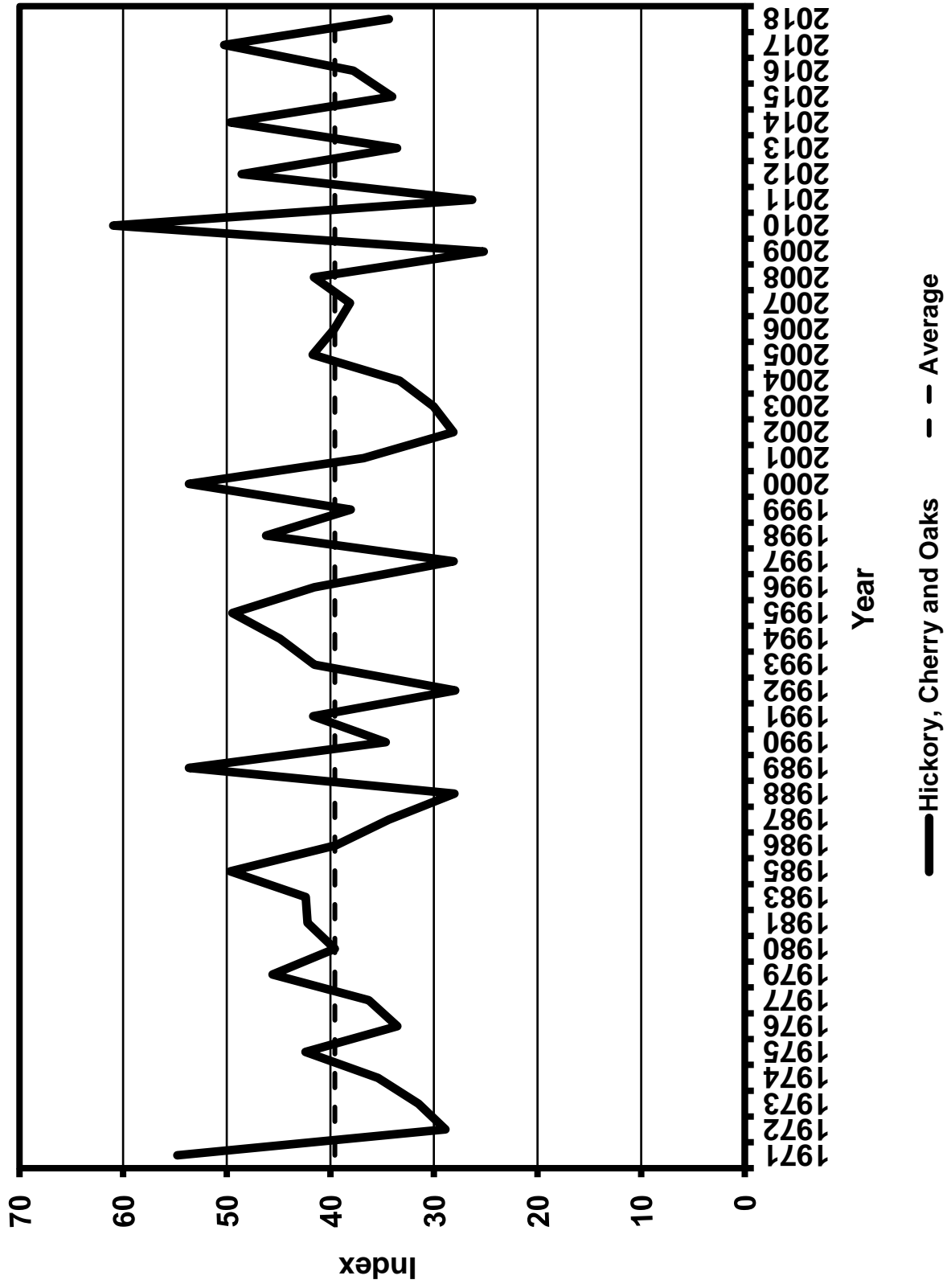
Table 3. Percent difference in mast index by species between 2017 and 2018 by ecological region.

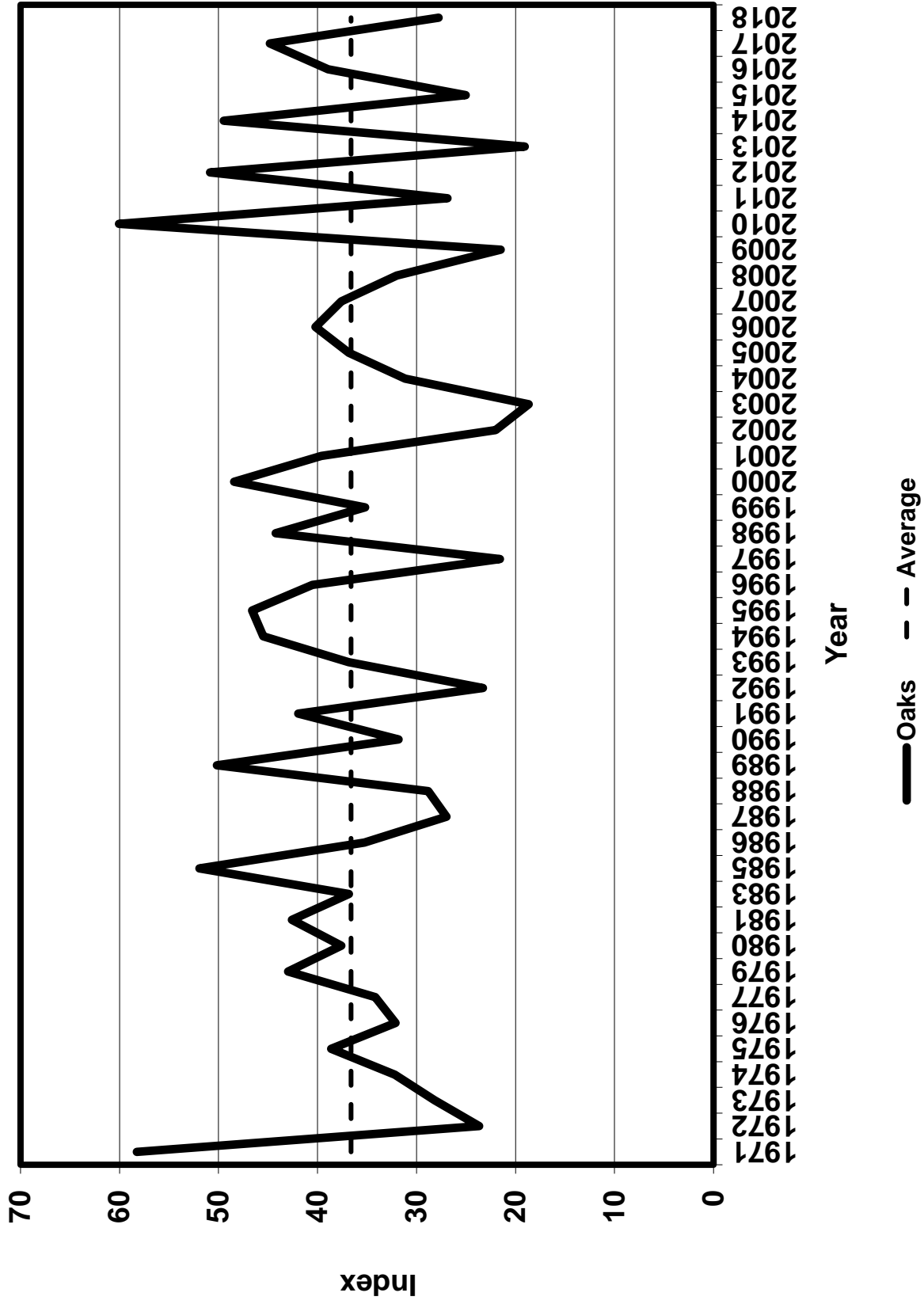
Species	Ecological Region					
	1	2	3	4	5	6
Beech	-90	-50	6	-37	-24	92
Walnut	-57	-53	12	-8	-16	-4
Hickory	-25	-28	22	-33	-14	7
White Oak	-60	50	16	74	58	-76
Chestnut Oak	-72	-23	5	13	61	-73
Black/Red Oak	-75	-95	-87	-56	-22	-79
Scarlet Oak	-36	-82	-88	-59	-13	-78
Black Cherry	-65	-8	-23	-42	-32	1
Grape	-48	-37	52	-5	0	70
Scrub Oak	-38	-36	NA	50	N/A	NA
Yellow Poplar	35	-3	73	10	-13	-12
Hawthorn	-79	-65	9	-23	-49	200
CrabApple	-6	-42	63	-48	-43	-65
Dogwood	45	-21	-11	-28	2	12
Blackberry	3	-26	4	-19	-8	-21
Greenbrier	34	-60	10	13	-25	10
Sassafras	-40	-70	-3	-26	-1	-13
Apple	-43	-15	-4	-36	-54	-29
All Species	-41	-37	2	-18	-16	-16

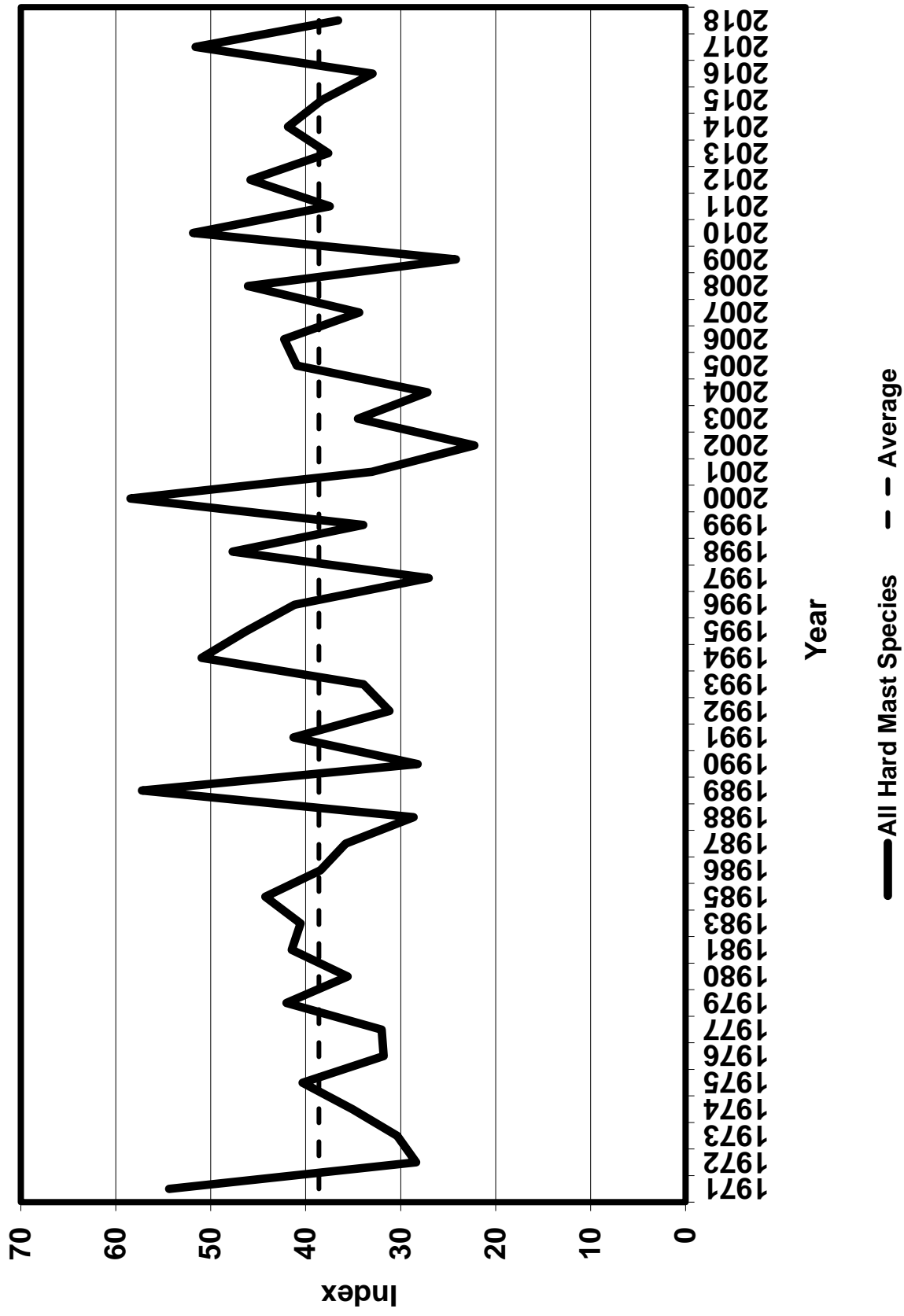
Table 4. Percent Change in 2018 mast index by species from average of years (1971-2017) by ecological region.

	Ecological Region					
Species	1	2	3	4	5	6
Beech	-76	-43	21	-22	14	31
Walnut	-9	-9	43	51	48	52
Hickory	47	16	62	11	33	52
White Oak	-10	107	61	78	57	-72
Chestnut Oak	-32	72	-4	38	50	-57
Black/Red Oak	-73	-95	-86	-62	-25	-72
Scarlet Oak	-61	-79	-88	-52	-29	-61
Black Cherry	-67	-18	-42	-22	-1	28
Grape	-51	-16	19	19	29	60
Scrub Oak	-52	2	NA	33	NA	NA
Yellow Poplar	31	29	40	5	9	13
Hawthorn	-69	-45	44	-10	-26	62
CrabApple	3	-9	55	-35	-34	-53
Dogwood	40	-10	-7	1	39	34
Blackberry	15	-10	-12	-7	7	-11
Greenbrier	0	-61	2	50	8	-2
Sassafras	-66	-58	-1	-5	-11	14
Apple	-30	25	-1	-9	-32	4
Other	-51	-50	-34	-33	-35	-20









HUNTING OUTLOOK

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Black Bear

Bear hunting opportunities have increased again in 2018. Once again, hunters will have the opportunity to hunt bears during 3 different early firearms seasons with or without dogs in 24 counties spanning 30 days. Bear archery season is open for 3 months. Thirteen counties will be open for concurrent bear hunting on private land during the October firearms antlerless deer season. There will be 51 counties open to concurrent deer and bear hunting during the buck firearms season with no permits required, and every county in the state is open for a December bear firearms season (with or without dogs allowed depending on county). Hunters will also have the opportunity to hunt bears for 4 days in January during the Mountaineer Heritage Season. **In 2018, we are predicting a bear harvest that is similar to the harvest of 2017.**

Archery hunting success rates depend greatly on mast conditions. Harvests decrease in years of mast abundance and increase in years of mast scarcity. White oak is the only oak species that produced well enough in 2018 to influence archery harvests. In areas with abundant white oak, archers will have more difficulty patterning bears. However, the bear archery harvest should be similar to 2017.

Hunters who hunt with dogs have the most opportunity that they have ever had in West Virginia. Hunters in Logan, McDowell, Mingo and Wyoming counties will be able to hunt bears with or without dogs from September 1 – 16. Mountain county hunters will be able to hunt bears with or without dogs from September 22 – 28. Finally, hunters in Boone, Fayette, Kanawha and Raleigh counties will be able to hunt bears with or without dogs from October 6 – 12. Hunters who use dogs also have the traditional December season in all or parts of 24 counties. In addition, hunters will be allowed to harvest a second bear as long as one of the bears comes from Boone, Fayette, Kanawha, Logan, McDowell, Mingo, Nicholas, Preston, Raleigh, or Wyoming counties.

Once again, firearms hunters who do not use dogs will have expanded opportunities. Hunters in 13 counties will be allowed to harvest a bear during the early antlerless season on private land with no permit needed. In 51 counties, hunters will be allowed to harvest a bear during the buck-firearms season without applying for a permit prior to the season.

The bear harvest in the traditional December firearms season should be lower in 2018. As white oak mast dwindles in the traditional mountain counties, many bruins will have entered their dens.

White-tailed Deer

The total white-tailed deer harvest should be higher in 2018 than it was in 2017. There are a number of changes to the deer hunting seasons this year. Hunters need to examine the 2018-2019 Hunting and Trapping Regulations for more specific information. The muzzleloader season was moved back so that there is a week between the beginning of that season and the end of buck season. In addition, the December antlerless season was moved back to December 6-9. White oak mast will have the deer spread across landscape but the lack of other oak species will make it easier for hunters this year than last season.

We are predicting a **similar archery** in 2018. During the first part of archery season white oak will have the deer spread out but it isn't enough mast to make the harvest go down. Hunters should be able to pattern deer.

The **buck harvest should be higher in 2018.** Field reports are showing a very healthy deer population and many good bucks. There is enough oak mast to put the animals in good shape going into the season and there should be many happy hunters this year.

Antlerless harvests should be similar in 2018. Antlerless hunting opportunities have are very similar to 2017 with the exception of moving a few dates. Many management units are near their objective but populations still remain strong to give hunters a chance to fill their freezer for winter.

The **muzzleloader harvest should be higher in 2018.** The muzzleloader harvest is influenced by participation and weather. The muzzleloader season was moved back to its original time frame which is week later than last year. This should make hunters happy and allow them a chance to have their traditional season.

A **new Mountaineer Heritage season** will start in 2019. The season will run from January 10-13. This a unique opportunity for hunters to go later in the season. It will most likely be influenced by weather. Please consult the regulations for more information.

Gray and Fox Squirrels

Hunters should expect higher harvests for the 2018-2019 season. The factor influencing squirrel numbers more than any other is mast conditions from the previous year. The reason is that food conditions from the previous year have a major impact on overwinter survival and the number of litters produced by squirrels. Squirrels normally produce a summer litter, but the spring litter is very dependent on overwinter food availability. In 2017, hard mast production produced conditions favorable toward great overwintering and litter production. In addition, the good hickory and white oak production of 2018 will have bushy-tails readily available and spread across the landscape.

Cottontail Rabbits

Hunters should experience higher harvests in 2018-2019. We have experienced very good growing conditions throughout July, August and September. This will support good bunny cover heading into winter and will allow for some of the highest populations in recent history. Like many other wildlife species, rabbit populations are directly linked to cover, specifically early successional cover and young forests. West Virginia is a very forested state and needs more young habitat to ensure good bunny hunting.

Wild Boar

Wild boar numbers are a direct result of the previous year's mast conditions and 2017 mast conditions were excellent. The 2015 harvest was up following the good 2014 mast year and this trend should continue during this year's season. The spotty and scattered mast conditions within the boar's range will make the boar harder to hunt, but the opportunity to hunt in February when snow may be present should increase the harvest. **Hunters should expect a higher harvest than last year.**

Ruffed Grouse

Grouse populations are strongly influenced by mast conditions, brood production, and quality and quantity of habitat. Grouse require young forest growth and dense understory cover for optimum brood production and adult survival. The decline of timber management in the state since the 1990s and the maturation of young forest stands that were created by previous, extensive timber management actions has likely driven a decline in grouse abundance and production within the last decade. The decreasing availability of young forest cover in West Virginia has had a pronounced effect on grouse populations and populations of many other young forest obligate species, including Appalachian cottontail, golden-winged warbler, and others. Healthy forests should feature a diversity of cover types within stands and should exhibit multi-tiered vegetative structure, but most forests in West Virginia are currently closed-canopy, mid- to late-successional, and feature little cover diversity. While an increase in timber management on public lands- state forests, Wildlife Management Areas, and National Forest lands- may provide some habitat for young forest obligate and young forest associated species, increased timber management on private lands across the state presents the only real hope for buoying flagging populations of these species including the ruffed grouse. Additionally, excessively wet weather conditions across much of the state during the 2018 spring brood season seems to have contributed to exceptionally poor brood production among grouse, and early indices for the state's grouse population seem to reflect a continuing downward trend. **Hunters should expect lower hourly flushing rates and lower grouse harvest statewide during the 2018 hunting season.**

Raccoon

Hunters should expect higher raccoon harvests and better hunt quality than last year. Raccoon population dynamic processes are very similar to those of many big game species, whereby hard mast conditions strongly influence overwinter survival and subsequent-year reproduction. Abundant hard and soft mast production- particularly among oak, apple, cherry, and hickory- in 2017 resulted in excellent overwinter survival and good to excellent reproduction in spring 2018, which should result in higher harvests and better hunting prospects for West Virginia hunters who pursue these animals. Populations may decline slightly following this year's regionally sparse mast production and therefore may result in poorer hunting prospects next year, but opportunities this year should be exceptionally good statewide. A substantial decline in the value of raccoon pelts at market over the last five to ten years has driven a decline in raccoon hunting participation that mirrors overall decreases in furbearer hunting and trapping nationwide, and this reduction in participation may translate to more raccoons available for harvest by those who hunt this species.

Wild Turkey

Fall turkey harvests are heavily influenced by brood production in that year and the available mast. Turkey brood production was down significantly in 2017 and the fall harvest suffered. However, brood production in 2018 was up 83%.

Every county will again have some length of fall turkey season in 2018. Last year was the second year for an expanded season. The traditional counties will continue to have a 4-week season. Non-traditional counties will have either a one or two - week season. Hunters should check the 2018-2019 Hunting Regulations on page 41 to find out the regulations on their specific county. **The Wild Turkey harvest should increase over last year because of much better reproduction.**

Table 1. 2018 quick check chart of predicted statewide wildlife harvests.

Species	Higher	Similar	Lower
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. 2018 quick check chart of deer harvest forecast by region and season.

Region	Season				
	Bow	Buck	Antlerless	Muzzleloader	Total Kill
1	Similar	Higher	Similar	Higher	Higher
2	Similar	Higher	Similar	Higher	Higher
3	Higher	Higher	Similar	Higher	Higher
4	Similar	Higher	Similar	Higher	Similar
5	Similar	Higher	Similar	Higher	Similar
6	Higher	Higher	Similar	Higher	Higher
Statewide	Similar	Higher	Similar	Higher	Higher

APPENDIX

2018 HUNTING PROSPECTS

PLEASE CHECK BELOW WHETHER YOU THINK HUNTING WILL BE THE SAME, BETTER OR POORER THAN 2017 FOR EACH GAME SPECIES LISTED. LIST THE COUNTY YOU ARE RATING. USE A SEPARATE SHEET FOR EACH COUNTY. IF YOU DO NOT KNOW, OR IF THE GAME SPECIES IS NOT PRESENT IN YOUR WORK AREA, DO NOT CHECK ANYTHING. USE CAPITAL LETTERS AS ILLUSTRATED BELOW.

COUNTY RATED: _____

DATE: _____
Month day year

GAME SPECIES	BETTER	SAME	POORER
SQUIRRELS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RABBITS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GROUSE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RACCOON	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DEER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TURKEY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QUAIL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BEAR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OTHERS (LIST)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REMARKS: _____

NAME OF PERSON REPORTING: _____

DIVISION: _____

ADDRESS: _____

City

State

Zip

Important! The form should be completed IN CAPITAL LETTERS using a BLACK or DARK BLUE ballpoint/fountain pen. Characters and marks used should be similar in the style to the following:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 1 2 3 4 5 6 7 8 9 0 ☒ ☑

REPORT OF MAST CONDITIONS
2018
(See opposite side for instructions)

LOCATION: _____ ELEVATION: ☐ *High* ☐ *Low*
COUNTY: _____ DATE: _____
Month Day Year

ELEVATION: _____ ASPECT: _____

AVAILABLE MAST, FRUIT, ETC.

SPECIES	Abundant	Common	Scarce	Species Not Seen
BEECH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WALNUTS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HICKORIES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WHITE OAK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CHESTNUT OAK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BLACK/RED OAK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SCARLET OAK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BLACK CHERRY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GRAPES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SCRUB OAK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
YELLOW-POPLAR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HAWTHORNE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRABAPPLE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DOGWOOD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BLACKBERRY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GREENBRIER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SASSAFRAS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APPLE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REMARKS: _____

NAME OF PERSON REPORTING: _____

DIVISION: _____

ADDRESS: _____

City

State

Zip

INSTRUCTIONS FOR REPORTING MAST CONDITIONS

PLEASE PRINT CLEARLY USING A BLUE OR BLACK INK. USE CAPITAL LETTERS AS ILLUSTRATED BELOW

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: Enter the date (month/day/year) 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 in the box under the proper column opposite the species concerned. Do not write in any wording such as poor, very poor, not so good, etc. Place a X in the box under the "species not seen" column if you did not see the tree or shrub species, or if the species does not occur in the area you conducted the survey.

Please return the forms by August 31, 2018 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, 2018

Important! The form should be completed IN CAPITAL LETTERS using a BLACK or DARK BLUE ballpoint/fountain pen. Characters and marks used should be similar in the style to the following:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 1 2 3 4 5 6 7 8 9 0 ☒ ☑



Federal Aid Project
funded by your purchase of
hunting equipment

Mast Survey

Wildlife Resources

*West Virginia Division of
Natural Resources*

324 Fourth Avenue
South Charleston, WV 25303

(304) 558-2771
Fax: (304) 558-3147

Bulletin 18-04



It is the policy of the Division of Natural Resources to provide its facilities, services, programs, and employment opportunities to all persons without regard to sex, race, age, religion, national origin or ancestry, disability, or other protected group status.

09/18

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