

Western Maryland Mast Survey Summary 2009

Procedure

The annual mast survey is a 3-step process that involves assessing the amount of hard and soft mast in specific study areas. A Quantitative approach is used where individual acorns on specific study trees are counted and averaged. On these same trees a Subjective approach is used as well where surveyors scan the crown of the tree and estimate the percentage of the crown that contains acorns. Lastly, a Qualitative approach is employed throughout the region where surveyors make a general assessment of both hard and soft mast producing trees, shrubs, and herbaceous plants in the study area.

Results

Quantitative Assessment

The results of the 2009 Western Maryland Mast Survey are as follows. We quantify acorn abundance as an average number of acorns per branch for the black oak group and the white oak group and then express that number as a unit average for both groups.

MARYLAND'S ANNUAL MAST CROP EVALUATION FINDINGS

	2005	2006	2007	2008	2009
GARRETT					
Black Oak	8.9	28.12	8.4	0	18.45
White Oak	0	1.4	0	0	6.12
Unit Average	4.45	14.76	4.2	0	12.3
ALLEGANY					
Black Oak	47.6	1.5	5.9	2.75	3.15
White Oak	6.9	1.05	1.8	0.97	0.62
Unit Average	6.81	1.28	3.84	1.86	1.89
WASHINGTON					
Black Oak	27.02	18.2	10.6	6.3	1.3
White Oak	0.1	11.08	0	0	0.2
Unit Average	13.56	14.64	5.3	3.15	0.75
FREDERICK					
Black Oak	2.88	9.2	22.6	7.45	1.27
White Oak	2.05	3.65	4.1	0.32	0.8
Unit Average	2.46	6.42	13.4	3.8	1.03

note: Numbers are reported as average no. of acorns per branch.

To more easily see the range of annual variations, annual mast yields are classified with the following numbering system.

- I – Mast Failure
- II – Poor and spotty
- III – Average
- IV – Abundant
- V – Bumper Crop

The following table shows the Quantitative data for the last 5 years.

	2005	2006	2007	2008	2009
Garrett County					
<i>Black Oak</i>	I	III	I	I	II
<i>White Oak</i>	I	I	I	I	II
<i>Unit Average</i>	I	III	I	I	II
Allegheny County					
<i>Black Oak</i>	II	I	I	I	I
<i>White Oak</i>	I	I	I	I	I
<i>Unit Average</i>	I	I	I	I	I
Washington County					
<i>Black Oak</i>	III	III	II	I	I
<i>White Oak</i>	I	II	I	I	I
<i>Unit Average</i>	II	III	I	I	I
Frederick County					
<i>Black Oak</i>	I	I	III	I	I
<i>White Oak</i>	I	I	I	I	I
<i>Unit Average</i>	I	I	II	I	I

Subjective Assessment

In 2007, the data collection methods of the Subjective Assessment were modified. A percentage of crown cover containing acorns was used as the unit of measure, as opposed to the ‘presence/absence’ method that was previously used to derive estimates. This modification has allowed Maryland’s data collection efforts to be consistent with other states in the southeastern U.S. As a result, resource managers from the southeast region can share and compare mast production trends and look at mast on a regional level across the east. Our Subjective Assessment results from study plots in western Maryland are as follows:

	2007		2008		2009	
	White Oak Group	Black Oak Group	White Oak Group	Black Oak Group	White Oak Group	Black Oak Group
Garrett County	0	6.6%	0	0	5.75%	17%
Allegany County	2.2%	7.5%	.125%	2.8%	.125%	1.75%
Washington County	2.5%	26.5%	0	15.2%	.25%	.625%
Frederick County	12.4%	40.2%	.5%	7.1%	2.25%	5.5%

Qualitative Assessment

Though oak trees are the primary focus of the annual mast survey, observers are asked to make a general assessment of both hard and soft mast producing trees, shrubs, and herbaceous plants in the study area. There are five rankings of mast production for this portion of the survey; *None, Light, Moderate, Heavy, Species Not Present*. Species surveyed are:

Beech	Blueberry/	Greenbrier	Walnut
Black Cherry	Huckleberry	Hawthorne	Other
Black Gum	Crab Apple	Hickories	
Blackberry/	Dogwood	Oaks	
Raspberry	Grape	Spicebush	

Highlights of the Quantitative Assessment are as follows:

Garrett County reports soft mast species such as grape as *light* and hard mast species like hickory to be *moderate*.

Allegany County reports the soft mast species of grape and apple as being *heavy* with hard mast hickory and walnut as *moderate*.

Washington County reports all soft mast species as *moderate* with walnut as *moderate* and hickory as *heavy*.

Frederick County reports *moderate* abundance of grape, *heavy* crab apple production as well as heavy production of both hickory and walnut species.

In 2009, the Quantitative portion of the mast survey was expanded to include other tracts of public land of particular interest to hunters and wildlife watchers; Wildlife Management Areas (WMAs) and State Forests. The results are as follows:

Dan's Mountain WMA – soft mast species are abundant with *heavy* production of both grape and crab apple and *moderate* cherry and berry species. Hard mast production was *light* in the oaks but *heavy* in hickory and walnut.

Green Ridge State Forest – soft mast species including grape, cherry, and berry species all show *moderate* production with hard mast categories of oak and walnut as *light* and hickory as *moderate*.

Sideling Hill WMA – also ranked *moderate* for soft mast production, *light* for oak species, and *heavy* for hickory.

Potomac-Garrett State Forest - soft mast species received a production ranking of *moderate* with hard mast species of oak and hickory ranking as *light*.

Savage River State Forest – all berry, cherry, and apple species showed *light* to *moderate* production as did hard mast oak. Hickory production appears to be *moderate*.

Note: The traditional mast survey plots are conducted on public hunting areas as well. The Garrett County study area is on the Savage River State Forest, Allegany County is Warrior Mountain WMA, Washington County is the Indian Springs WMA and the Frederick County site is located on the Frederick City Watershed.

Conclusions

As the most prolific mast producing tree in the forests of Western Maryland, the oak species are the major focus of mast analyses. Both Washington and Frederick Counties have continued a poor production trend, each receiving a ranking of Mast Failure. Allegany County sites were also ranked as Mast Failure, a trend now into its fifth year. In 2009, acorn production in Garrett County improved receiving an overall ranking of II, considered Poor and Spotty, but a step above Mast Failure nonetheless.

Defoliation caused by Gypsy Moth caterpillars was not a major problem in 2009 though it was significant in both 2007 and 2008. These events can be devastating to mast production and often fatal to the trees affected. Observers in all four counties reported mortality to several traditional survey trees requiring their replacement. Defoliation events can have impacts lasting for years and it is likely the poor acorn production of 2009 is a product of stress from prior years. A late season frost during the 3rd week of May, 2009 could have negatively influenced oak flower production as well.

Poor mast years can have a direct impact on wildlife species such as black bears, white-tailed deer, wild turkeys, and gray squirrels that depend on annual acorn production as a primary food source. Though population declines can result, more often these species will shift their focus to other food sources including both soft mast and agricultural crops. This long-term survey provides important data relative to mast production, but it is localized at the areas of the study plots and may not necessarily reflect county-wide mast production. Though tree species react generally to environmental factors (weather, predation, disease) there are always localized variations to be found.