



Ohio Department of Natural Resources
DIVISION OF WILDLIFE

2020 Acorn Mast Survey Results

October 2020

The 16th annual mast survey was completed on 38 wildlife areas. An average of 26.7% of white oaks and 69.8% of red oaks bore fruit this year (Table 1). The proportion of white oak trees with acorns decreased on 11 wildlife areas, was unchanged on five and increased on the balance (Table 2). Statewide, the proportion of white oaks bearing acorns was up just over 5% from last year. The proportion of red oaks with acorns increased on 20 of 38 wildlife areas surveyed this year, with the balance (18) of wildlife areas split equally between unchanged and down from 2019 (Table 3). Statewide, the proportion of red oaks bearing nuts this year was up just 5% over last year. This is the second year in a row where red oak production has exceeded the long-term (16-year) average of 56% of trees bearing nuts (Fig. 1). White oak production fell below the long-term average of 37% for the second year in a row. However, as noted, the average was up slightly over last year.

The mast survey procedure was modified during 2007 to provide an indication of acorn relative abundance on survey trees. In addition to determining presence or absence of acorns, observers estimated the percentage of each tree's crown that was covered with acorns. Average acorn crown coverage of white oaks was just 5.8% this year, up slightly from last year (4.2%), but still well below the long-term average of 9.4% (Table 4 and Fig. 1). Average crown coverage of red oaks increased for the second year in a row. Statewide, among red oaks with acorns, crown cover averaged 32% (Table 5 and Fig. 1), well ahead of the long-term average of 20% (Fig. 1). Red oaks displayed a pronounced increasing north-to-south latitudinal trend in the percentage of acorn producing trees (Fig. 2). For white oaks, there was a slight decreasing latitudinal trend from north to south.

Acorns are an important food source for many forest wildlife species. Numerous studies have linked the abundance of mast crops to body condition, winter survival, and reproductive success of white-tailed deer, wild turkey, black bears, gray squirrels, and ruffed grouse. Furthermore, hunters could use this information to key in on areas to improve hunting success. In those areas where acorns are an important part of the deer's diet, mast availability can affect deer movements and ultimately hunter success. In poor mast years, where deer are forced to use other food sources, travel distances between feeding and bedding areas may be longer and more predictable, making deer more vulnerable to harvest. This year's mast crop may translate to relatively high hunter success rates in those areas where oaks dominate.

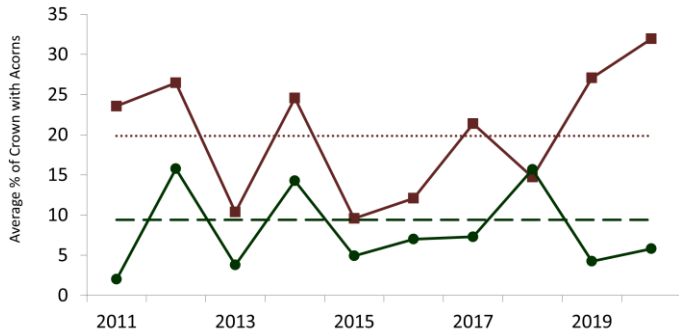
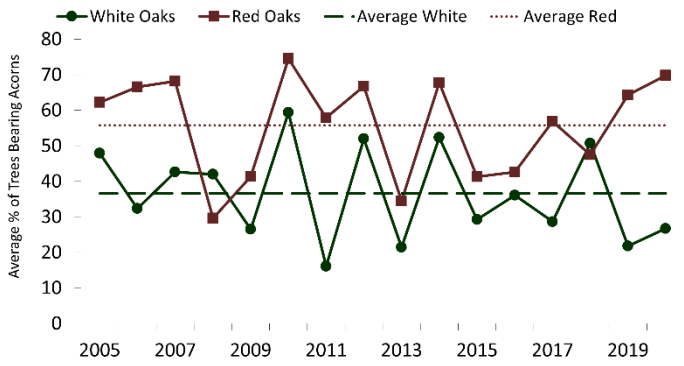


Figure 1. Average percentage of oak trees bearing acorns, 2005 to present (A) and average percentage of crown with acorns, 2011 to present (B) based on mast surveys from 38 wildlife areas.

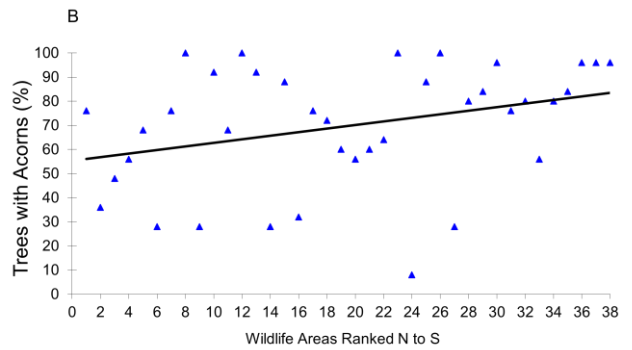
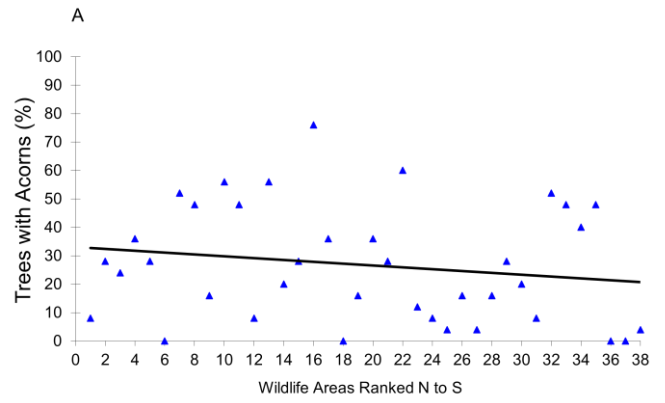


Figure 2. Percentage of white (A) and red oak (B) trees with acorns on the 2020 mast survey by Wildlife Area, ranked north to south. Trend lines represent latitudinal gradient.

Table 1. Percentage of white and red oak trees with acorns on 38 wildlife areas during the 2020 mast survey.

Area	District	% Trees with Acorns		N to S Ranking
		White Oaks	Red Oaks	
Lake La Su An	2	8	76	1
Dorset	3	28	36	2
New Lyme	3	24	48	3
Mosquito Creek	3	36	56	4
Oxbow Lake	2	28	68	5
Milan	2	0	28	6
Grand River	3	52	76	7
Camp Belden	3	48	100	8
Berlin Lake	3	16	28	9
Killdeer Plains	2	56	92	10
Killbuck Marsh	3	48	68	11
Highlandtown	3	8	100	12
Big Island	1	56	92	13
Beach City	3	20	28	14
Brush Creek	3	28	88	15
Kokosing	1	76	32	16
Delaware	1	36	76	17
Woodbury	4	0	72	18
Egypt Valley	4	16	60	19
Salt Fork	4	36	56	20
Monroe lake	4	28	60	21
Woodland Trails	5	60	64	22
Ales Run	4	12	100	23
Deer Creek	1	8	8	24
Wolf Creek	4	4	88	25
Trimble	4	16	100	26
Pleasant Valley	4	4	28	27
Ross Lake	4	16	80	28
Waterloo	4	28	84	29
Acadia Cliffs	4	20	96	30
Fallsville	5	8	76	31
Fox Lake	4	52	80	32
Wellston	4	48	56	33
East Fork	5	40	80	34
Tranquility	5	48	84	35
Cooper Hollow	4	0	96	36
Tycoon Lake	4	0	96	37
Crown City	4	4	96	38
Totals	38	26.7	69.8	Mean
		20.4	25.2	Stdev
		76.2	36.2	CV
		3.3	4.1	SE
		20.3	61.8	L 95
		33.2	77.8	U 95

Table 2. Percentage of white oak trees with acorns on 38 wildlife areas, 2010 to present.

Wildlife Area	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	%Change
Crown City	80	0	48	12	24	68	36	60	4	68	4	64
Tycoon Lake	72	0	48	0	32	20	16	12	4	40	0	40
Cooper Hollow	76	8	52	8	56	20	40	12	20	36	0	36
Beach City	20	28	16	8	24	36	64		84	36	20	16
Delaware	60	24	40	28	92	32	40	60	60	52	36	16
Milan	48	60	36	36	96	40	52	12	48	12	0	12
Oxbow Lake	12	20	40	20	24	28	40	32	56	40	28	12
Waterloo	96	8	60	12	100	4	32	8	60	40	28	12
Woodland Trails	48	28	84	64	88	80	8	52	56	64	60	4
Deer Creek	48	8	4	0	16	0	0	0	12	12	8	4
Wolf Creek	92	0	64	4	60	8	40	16	76	8	4	4
Lake La Su An	44	36	32	32	28	4	32	44	84	8	8	0
Killbuck Marsh	48	0	20		40	44	32	36	44	48	48	0
Woodbury	24	20	44	12	64	24	32	0	56	0	0	0
Alas Run	100	4	88	12	64	16	52	24	84	12	12	0
Pleasant Valley	64	20	32	0	4	8	4	0	8	4	4	0
Highlandtown	68	12	4	8	40	16	44	36	68	4	8	4
Egypt Valley	92	12	72	36	44	24	32	40	52	12	16	4
Fallsville	20	32	48	8	16	16	24	8	16	4	8	4
East Fork	32	12	60	24	48	36	24	24	36	36	40	4
Monroe lake	88	16	84	44	20	48	36	60	52	24	28	4
Mosquito Creek	76	12	88	12	76	56	20	24	60	28	36	8
New Lyme	84	16	64	24	64	48	28	20	40	16	24	8
Berlin Lake	28	16	40	24	20	44	36	24	40	8	16	8
Trimble	80	4	84	24	92	20	36	28	64	8	16	8
Acadia Cliffs	84	0	68	0	52	8	60	20	60	12	20	8
Dorset	76	24	72	16	72	56	28	40	52	20	28	8
Brush Creek	48	20	68	60	68	28	72	44	92	20	28	8
Salt Fork	92	20	92	40	60	24	40	64	56	24	36	12
Grand River	56	36	8	20	28	52	40	36	52	36	52	16
Ross Lake	28	0	32	0	36	4	44	4	24	0	16	16
Big Island	96	56	80	100	88	64	44	84	64	32	56	24
Fox Lake	80	0	52	8	72	24	16	4	28	12	52	40
Killdeer Plains	60	20	68	56	96	40	64	68	88	16	56	40
Wellston	68	0	60	0	72	8	36	0	40	4	48	44
Tranquility	12	24	48	12	8	12	40	4	52	4	48	44
Camp Belden	0	8	48		60	28	20	0	64	0	48	48
Kokosing	56	8	28	8	44	24	68	60	72	28	76	48

Table 3. Percentage of red oak trees with acorns on 38 wildlife areas, 2010-present.

Wildlife Area	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	%Change
Kokosing	8	32	12	24	0	60	48	24	36	92	32	60
Beach City	16	32	36	8	4	8	40	40	0	84	28	56
Milan	20	52	52	52	48	92	28	32	8	56	28	28
Wellston	0	72	52	68	16	68	20	52	56	76	56	20
Delaware	68	40	52	60	60	96	56	64	64	92	76	16
Fallsville	32	80	88	16	76	24	68	52	56	92	76	16
Grand River	92	92	48	24	36	44	52	24	60	88	76	12
Big Island	100	96	100	88	100	84	100	56	100	100	92	8
East Fork	32	76	84	92	56	84	12	60	48	84	80	4
Dorset	100	96	24	80	16	76	68	68	40	36	36	0
Mosquito Creek	92	96	16	88	16	88	72	40	36	56	56	0
Killbuck Marsh	4	52	28	72	0	60	36	48	48	68	68	0
Salt Fork	28	84	12	92	28	52	40	20	80	56	56	0
Woodland Trails	56	68	84	52	36	92	92	0	56	64	64	0
Deer Creek	48	72	44	4	0	28	0	8	12	8	8	0
Acadia Cliffs	4	88	88	96	8	92	28	52	52	96	96	0
Fox Lake	16	84	84	84	32	92	44	36	84	80	80	0
Crown City	4	92	84	60	20	80	4	40	96	96	96	0
New Lyme	36	80	16	72	28	72	60	40	32	44	48	4
Alas Run	60	96	88	100	52	80	60	60	56	96	100	4
Oxbow Lake	56	52	48	60	64	40	44	52	40	60	68	8
Camp Belden	100	100	8	88	0	100	36	16	28	92	100	8
Tranquility	60	68	96	52	28	56	36	36	76	76	84	8
Cooper Hollow	12	88	92	96	32	96	0	44	88	88	96	8
Tycoon Lake	8	88	64	84	32	88	0	16	76	88	96	8
Berlin Lake	32	32	20	32	32	16	24	24	24	20	28	8
Pleasant Valley	40	40	72	28	0	36	0	8	20	20	28	8
Woodbury	28	76	80	64	12	68	48	48	52	56	72	16
Killdeer Plains	88	80	84	96	96	80	76	68	88	76	92	16
Monroe lake	32	92	44	88	28	16	48	52	68	44	60	16
Trimble	20	96	88	92	32	100	48	72	80	80	100	20
Egypt Valley	24	84	28	68	32	56	32	44	48	36	60	24
Wolf Creek	4	88	84	80	36	96	36	36	64	64	88	24
Waterloo	48	84	84	88	44	100	36	56	44	60	84	24
Ross Lake	12	52	52	68	32	64	12	80	64	40	80	40
Highlandtown	52	68	64	80	24	60	64	64	56	44	100	56
Lake La Su An	96	100	44	60	48	80	60	8	84	16	76	60
Brush Creek	44	64	56	80	36	52	40	80	84	20	88	68

