

2009 Missouri Department of Conservation Oak Mast Survey Report

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BACKGROUND

Oak mast is a very important source of fall and winter food for many species of wildlife, particularly in the heavily forested portions of the state. Poor mast years have resulted in lowered reproductive success in, and reduced numbers of, wildlife, which can influence hunter success. Mast crop also play an important role in fall and winter wildlife movement. In areas with poor mast crop or during poor mast years, wildlife are more likely to be feeding around agricultural areas and forest edges, rather than the forest interior. Additionally, mast production is essential for oak regeneration.

The oak mast survey is conducted annually within the Missouri Department of Conservation (MDC) oak-hickory forests located in five regions of central and south Missouri (Figure 1). Staff from the MDC Forestry Division carry out the survey to provide an index for the availability of oak mast, giving MDC and the public an indication of what is in store for mast-dependent forest wildlife during fall and winter. The Missouri Forestkeepers Network assisted in the mast survey, augmenting the data collected by MDC. Information on mast production is used by resource managers, the news media, and the public, particularly hunters.

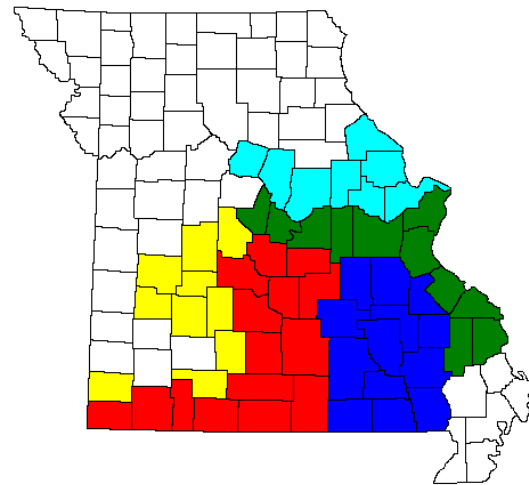


Figure 1. Oak mast regions in Missouri.
● Ozark Border, ● Ozark West, ● Ozark East,
● Union Breaks and ● Lindley Breaks

RESULTS

Statewide

The collaboration between MDC and Missouri Forestkeepers Network in collecting mast data continues to grow. This year a total of 5,105 oak trees were sampled by MDC and 2771 were sampled by Missouri Forestkeepers Network (representing a 50% increase compared to last year). A total of 3,837 trees from the red oak group and 4,039 from the white oak group were assessed.

This year's mast production for all oaks is moderate, and higher than last year's. This year's mast index is 115, an increase of 10% over last year's index (Figure 2). However, overall mast production is 15% lower than the 50-year average. Red oak mast production (index of 121) is approximately three times higher than last year's production (index 44).

White oak mast production (index 108) is 31% lower than last year's production. The high red oak mast production is due to recovery from the 2007 freeze, which caused a substantial decline in mast production last year. The specific cause of decline in white oak mast production is uncertain. Potential factors include: 1) unusually wet and milder temperatures, 2) increased pests and diseases recorded this year, and 3) last year's good mast crop that negatively impacted this year's crop (because trees needed time to build food reserves for future good mast crops).

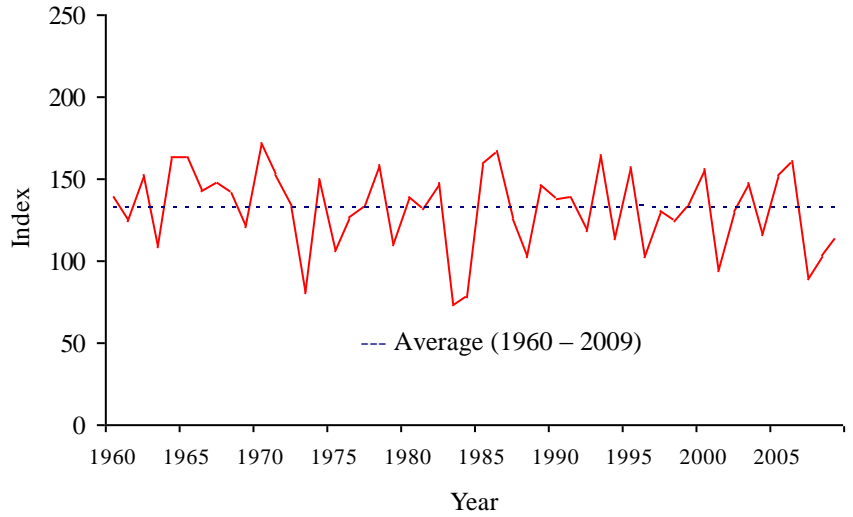


Figure 2. Statewide mast index for all oaks, 1960-2009.

Region

Mast production varies significantly by region with highest production in the Union and Lindley Breaks, and least production in the Ozark East for all oaks (Table 1). The low mast production in Ozark East is partly due to the windstorm (derecho) that passed through the center of the region on May 8, 2009, uprooting, snapping, or damaging thousands of acres of trees. Red oak mast production is highest in the Ozark Border and lowest in the Ozark East. White oak mast production is highest in the Union and Lindley Breaks, and also lowest in the Ozark East. All regions have better red oak mast production compared to last year. All regions, except Lindley Breaks, have lower white oak production than last year.

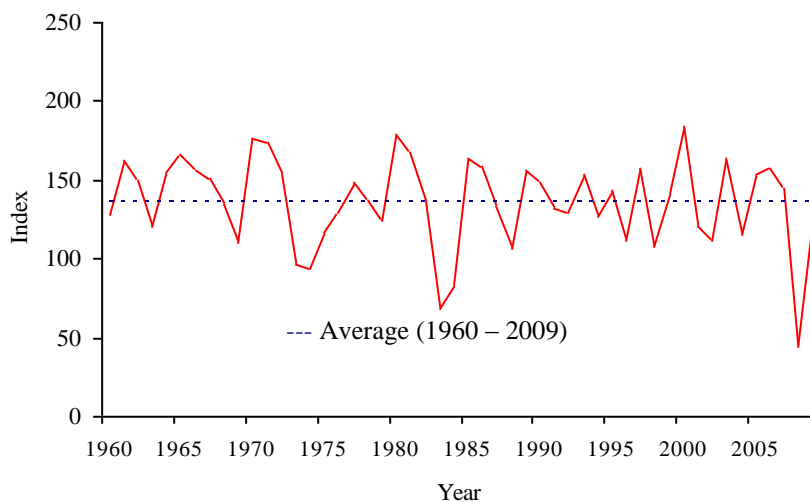


Figure 3. Statewide mast index for red oaks, 1960-2009.

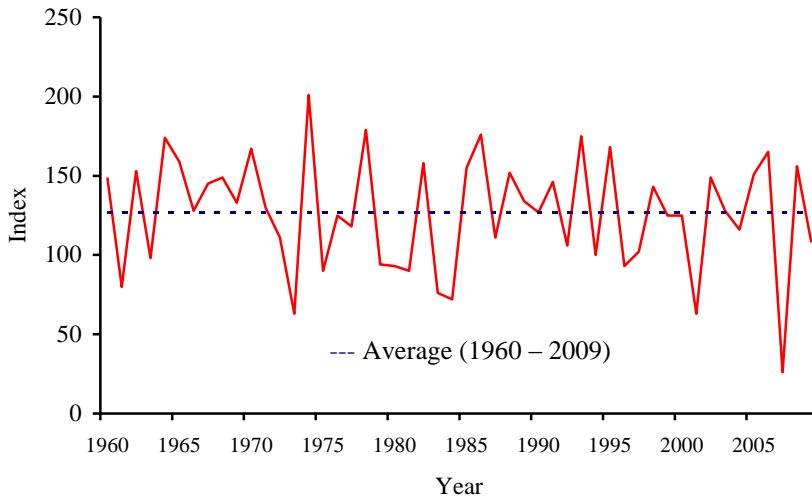


Figure 4. Statewide mast index for white oaks, 1960-2009.

Table 1. Regional indices by species group, 2004-2009.

Year	Ozark Border		Ozark West		Ozark East		Lindley Breaks		Union Breaks	
	Red oak	White oak	Red oak	White oak	Red oak	White oak	Red oak	White oak	Red oak	White oak
2004	135	109	106	124	116	117	122	91	123	131
2005	143	127	142	126	165	180	173	179	158	157
2006	174	196	163	169	156	175	117	129	146	134
2007	146	14	162	32	123	24	200	38	110	29
2008	46	136	68	189	30	165	9	121	28	174
2009	108	85	157	107	55	62	132	147	140	144
μ	145	138	142	135	131	121	136	108	137	130

μ = Average for 1960-2009

CONCLUDING REMARKS

This year's oak mast crop is moderate with red oak mast production being substantially higher than last year's, and white oak production being lower than last year's. Mast production is highest in Union and Lindley Breaks, and lowest in Ozark East region for all oaks.