

2007 Wild Turkey Gobbling Chronology/ Phenology Survey Summary

Wildlife Management Division



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During and after the 2006 spring turkey season, the Arkansas Game and Fish Commission received an unusually large number of complaints. For example: "Turkeys were gobbled out" by the time season arrived (April 8 for the regular season).

The complaints prompted us to look at data about gobble counts collected in areas closed to hunting during the late 1980s and early 1990s. The data was not collected to show the chronology of gobbling activity throughout spring, although it was collected March 20-April 30 in northern Arkansas. When these data were categorized by weeks of the spring season, they clearly showed two peaks of gobbling activity in northern Arkansas (see Figure 1).

The first peak was about April 1; the second peak was about April 15. These data, along with data from various Mississippi Department of Wildlife, Fisheries and Parks annual wild turkey reports (which show that hunters hear more gobblers and gobbling from about the fourth week in March through the third week in April), was presented at 2008 spring turkey season public meetings across the state.

Meanwhile, the AGFC's Wildlife Management Division Wild Turkey Team met and recommended that gobbling chronology data be collected again statewide, in a more thorough fashion, to address the complaints and to determine if gobbling chronology had changed

over the years. A field request was prepared in January and approved by the WMD. Gobbling chronology data collection started the first week of March 2007. The survey will run three years.

Methods

Gobble counts were run on 19 areas statewide (see Figure 2). Our intention was to run these counts on areas with no hunting, minimal disturbance and good turkey numbers as much as possible so a true picture of gobbling activity could be obtained.

Large areas meeting these criteria are rare in Arkansas. Five areas – Wedington WMA (Ozarks-OZ), Cherokee Village (OZ), Fort Chaffee ranges (Ouachitas-OU), Village Creek State Park (Delta-DEL) and Hot Springs Village (OU) – were identified. Because these types of areas were so rare, we selected many areas where hunting pressure was light (one or two permit youth hunts) or moderate for gobble counts.

Lightly hunted areas: the Damascus Boy Scout property (OZ), Holla Bend NWR (OZ), U of A Pine Tree WMA (DEL), Big Lake WMA (DEL), Choctaw Island WMA (DEL), Dr. Lester Sitzes III Bois D'Arc WMA (Gulf Coastal Plain-GCP) and Rick Evans Grandview Prairie WMA (GCP).

Moderately hunted areas: Camp Robinson WMA (OU), and Felsenthal NWR (GCP).

We also selected five heavily hunted areas to run surveys to see if results differed from other areas: Sylamore WMA (OZ), Mount Magazine WMA (OU), White River NWR (DEL), Poison Springs WMA (GCP) and Moro Big Pine Natural Area WMA (GCP).

Gobble counts were run twice a week for most sites on mornings with no rain and light winds for a 12-week period starting March 1 and ending May 23. Stops on these routes typically were 1 mile apart with 5-minute listening periods. The surveys began 30 minutes before sunrise.

At each stop, gobbler groups, total gobblers heard and total gobbles heard were recorded. Stimulation (owl hooting, for example) was not allowed. Temperature, wind speed, cloud cover and barometric pressure were recorded at the beginning of the survey, and all but barometric pressure was recorded at the end of the survey.

A common tree or shrub was selected and data were collected on bud break, green-up and full-leaf conditions. For our purposes, bud break was defined as the date when 7 of 10 species

were showing green leaves in breaking buds. Green-up was the date when 7 of 10 species had leaves 2 inches or longer (or had reached maximum length for small-leaved species). Full-leaf was the date when 7 of 10 species had reached maximum leaf length.

Data were collected on 17 of the 19 sites. No turkeys were heard at two sites during March; these areas were dropped from the survey in 2007.

Results

Gobbling Chronology – 325 gobble surveys were run during spring 2007.

The magnitude of data collected is too large to report in detail in this summary. Some noteworthy graphs of gobbling chronology at individual sites will be presented, but most of the numbers are averages from several similar sites (same harvest/disturbance level, same region, same zone, etc.) to examine gobbling chronology.

Figure 1
Gobbling chronology for northern Arkansas based on gobble-count data collected in counties or areas closed to hunting during the late 1980s and early 1990s.

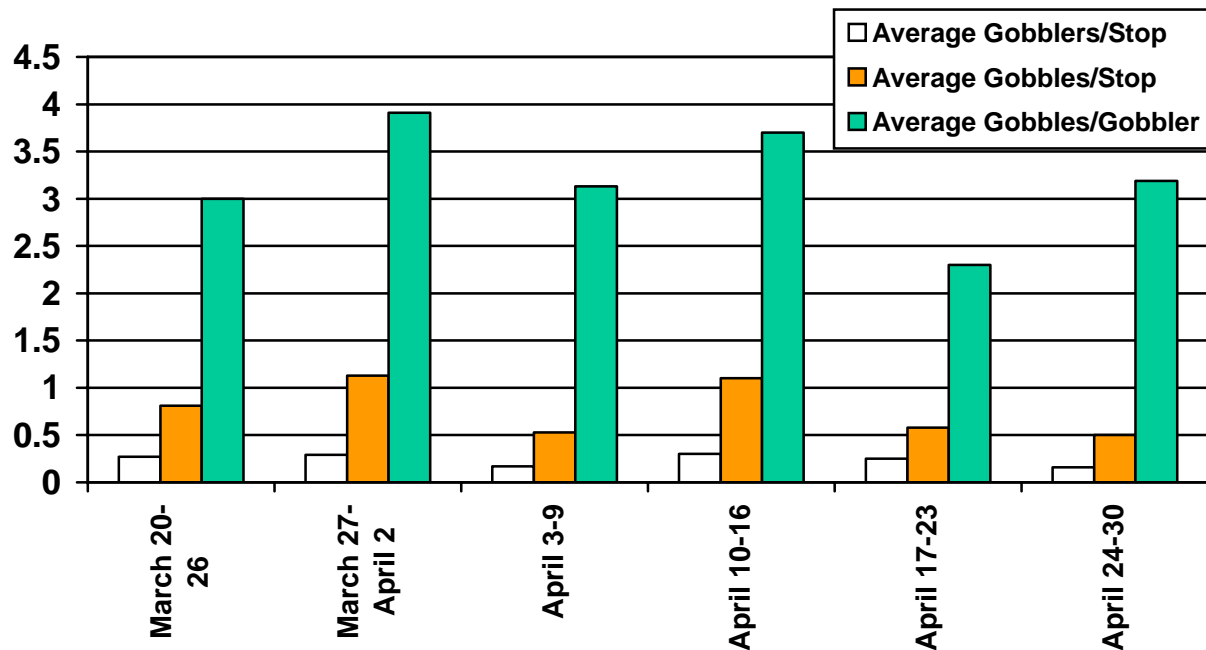


Figure 2

Map of Arkansas showing 2007 gobbler chronology/phenology survey sites. 1 – sites that weren't hunted. 2 – lightly hunted sites. 3 – moderately hunted sites. 4 – heavily hunted sites. N – areas that were dropped from the survey because of no gobbling activity. Locations are identified in the text.

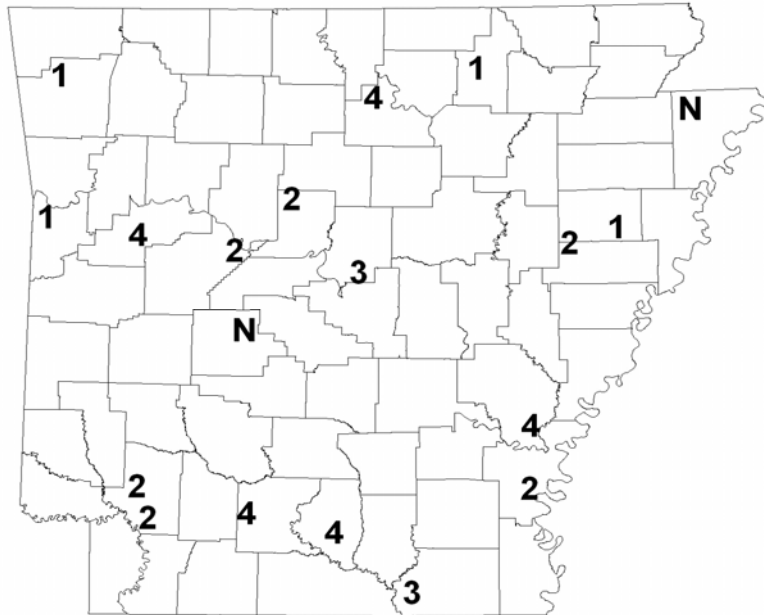
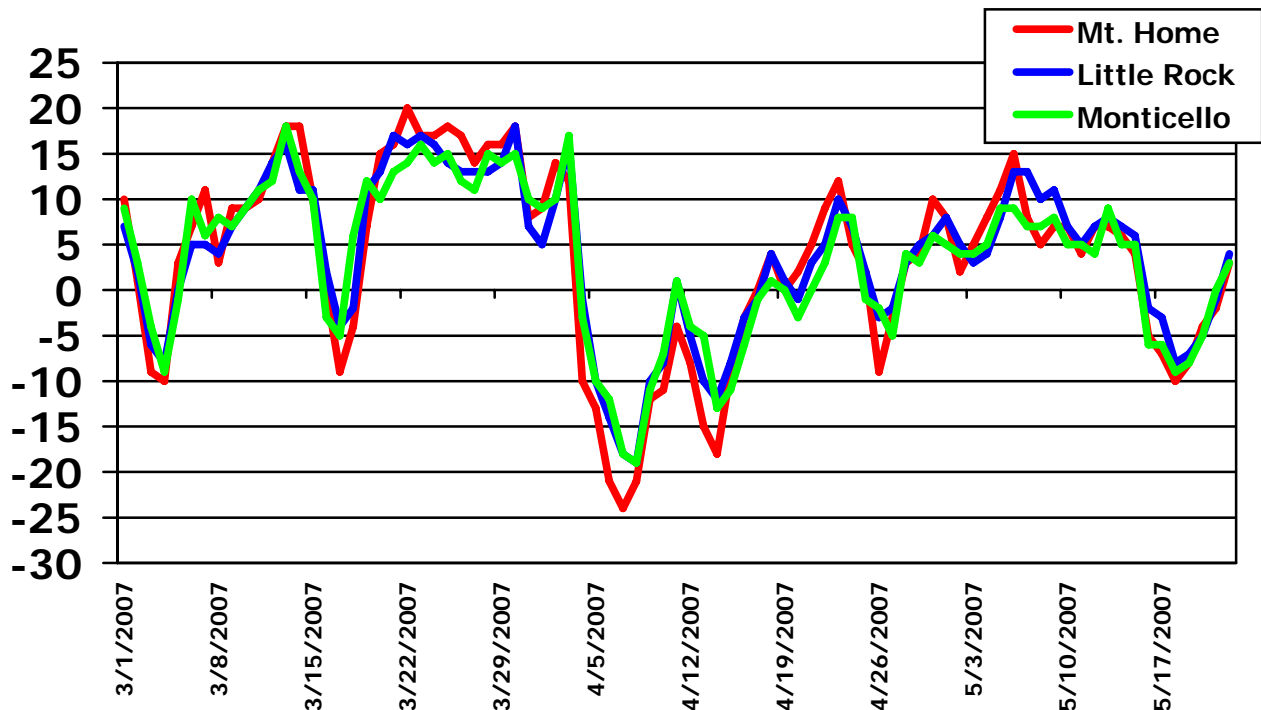


Figure 3
Departure from average temperatures for Mountain Home, Little Rock and Monticello for March 1-May 23, 2007.



Before we present specific gobbling chronology data, here's a word about weather conditions during the survey period.

March 2007 was 10-15 degrees above normal across Arkansas (see Figure 3). This continued into early April, but average temperatures plunged 30-40 degrees to record lows during the second week of April. Temperatures were as low as 15 degrees during the preseason youth hunt April 7-8. Temperatures were about 15 degrees below normal when the regular spring turkey season opened April 14. From mid-April until the end of the survey, temperatures generally were 5-10 degrees above normal.

When data from all 17 sites were combined, we found two distinct peaks of gobbling in 2007 (see Figure 4). The peaks were very similar to those found in the late 1980s and early 1990s in northern Arkansas (see Figure 1).

The first peak occurred about April 1 and the second, almost-identical peak occurred about April 15. Although the dates

were off by two days between studies, it would appear that these two peaks are almost identical across the decades. There has been no shift in chronology of peak gobbling activity.

Very little gobbling occurred before March 22. After April 18, gobbling decreased to half of peak activity, but still well above early March.

Gobbling dropped April 5-11. Average temperatures during that period were about 20 degrees below normal (see Figure 3). We simply do not know whether this dip in gobbling activity was weather-related or whether it corresponded to a similar decline from the 1980s and 1990s. In that examination, we attributed the decline in gobbling activity to a period when gobblers were most likely to be surrounded by hens at the peak of breeding activity.

We found very similar results when we compared gobbling activity in northern and southern

Figure 4
Statewide gobbling chronology results, all harvest and disturbance levels combined, for 17 sites, spring 2007.

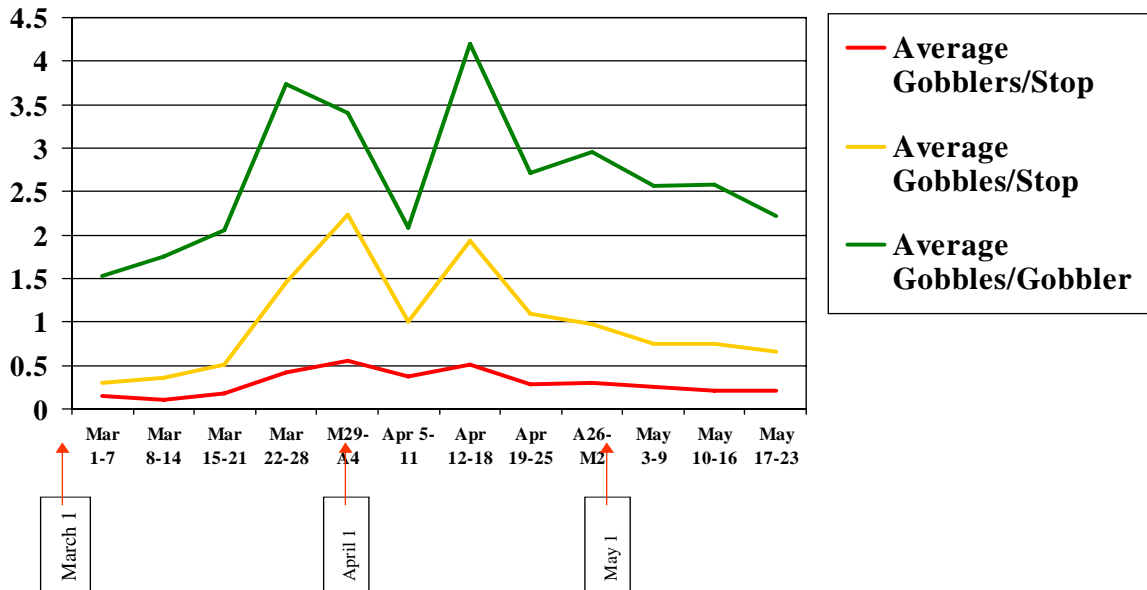


Figure 5
 Northern Arkansas (north of Interstate 40) gobbling chronology results for non, lightly and moderately harvested areas combined for six sites, spring 2007.

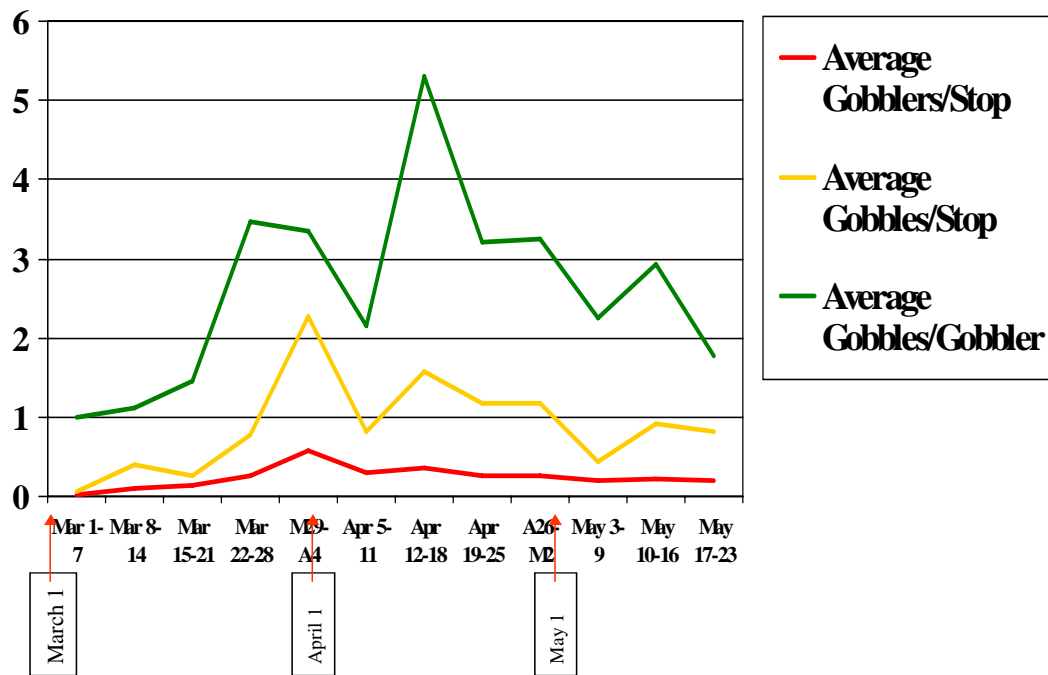
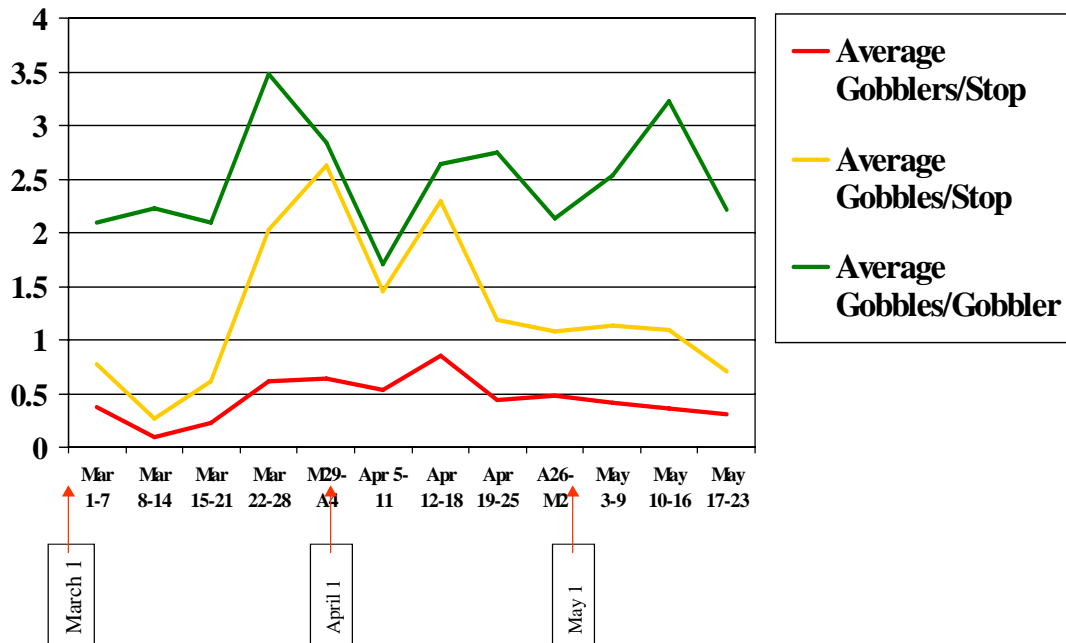


Figure 6. Southern Arkansas (south of Interstate 40) gobbling chronology results for non, lightly and moderately harvested areas combined for six sites, spring 2007.



Arkansas in spring 2007 (see Figures 5 and 6). Both areas showed two peaks of gobbling about April 1 and April 15. More gobblers were heard about April 15 in southern Arkansas, but individual gobbling activity appears to have diminished slightly (see Figure 6). We heard more gobblers about April 1 in northern Arkansas, but individual gobbling activity may have been slightly better in mid-April (see Figure 5).

In the Ozarks, we saw all indices of gobbling activity reach relatively high levels by the third week of March and continue at high, relatively steady levels until the end of April, with resurgence in May.

In the Ouachitas, we didn't see good gobbling activity until the fourth week of March, with gobbling indices reaching high levels by the fifth week. All indices stayed relatively high

until the end of April, with individual gobbling activity (gobbles/gobbler) peaking in late April.

May levels for the number of gobblers/stop and gobbles/stop were good, but about half of April levels.

In the Gulf Coastal Plain, gobbling reached good levels the third or fourth week of March. The number of gobblers and the number of gobbles did not reach peak levels until mid-April. Both of these indices remained at good levels until the survey ended in late May. Individual gobbling activity peaked about the fourth week of March and slowly declined during the rest of the survey.

In the Delta, gobbling activity reached its first peak the fourth week of March and the week of April 1, and again about April 15. Individual gobbling activity peaked about April 15.

Figure 7
Regional results of one index of gobbling chronology (average gobblers/stop) for non, lightly and moderately hunted areas combined, spring 2007.

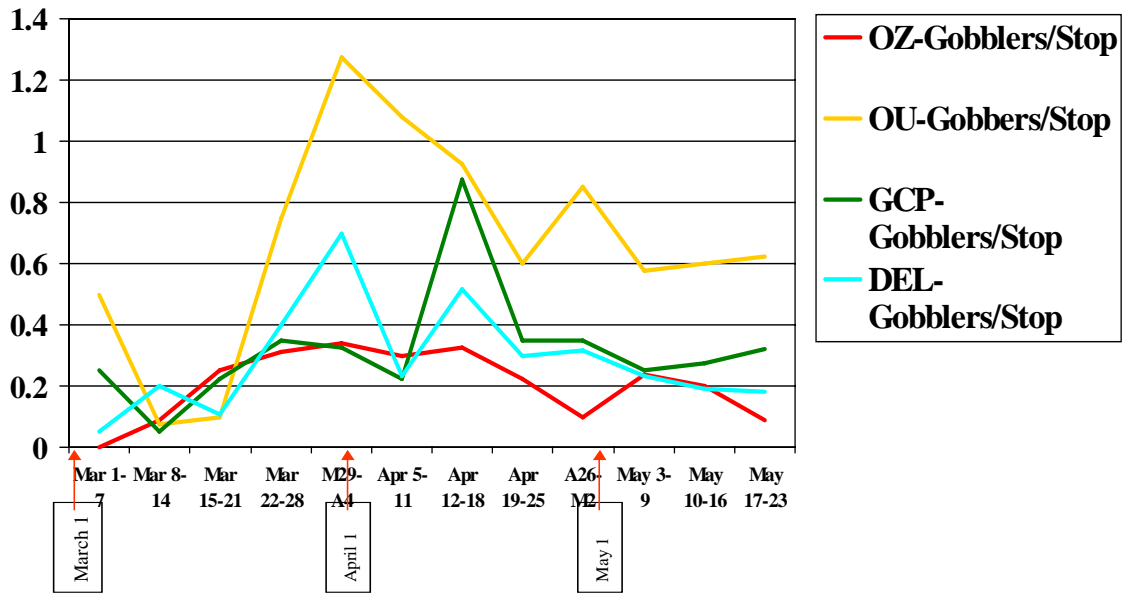


Figure 8
Gobbling chronology for White River NWR, spring 2007.

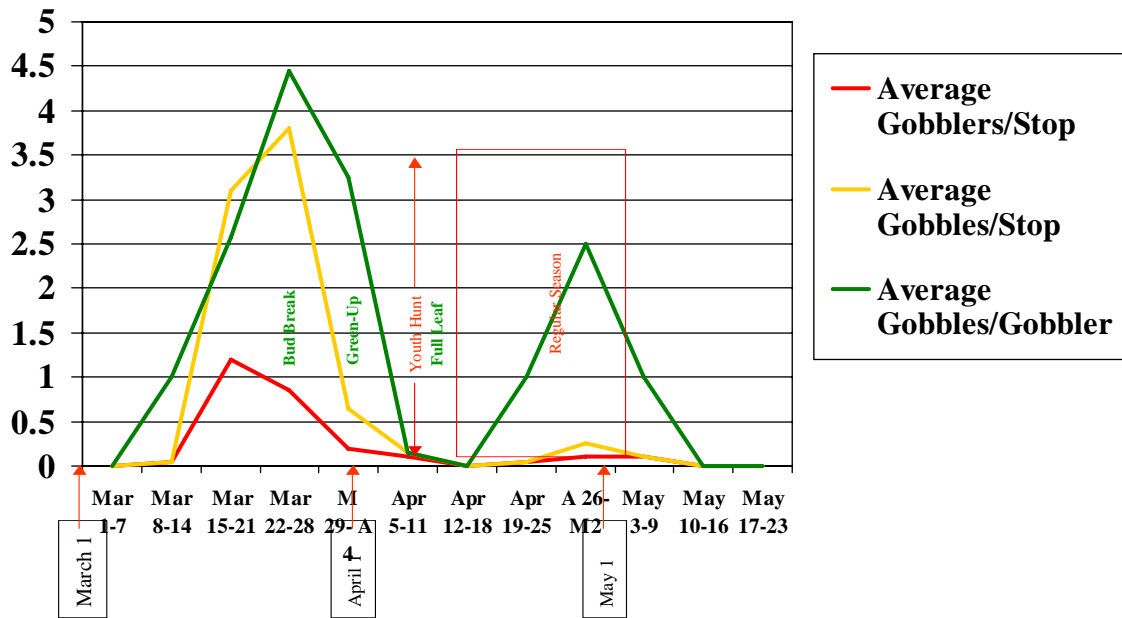
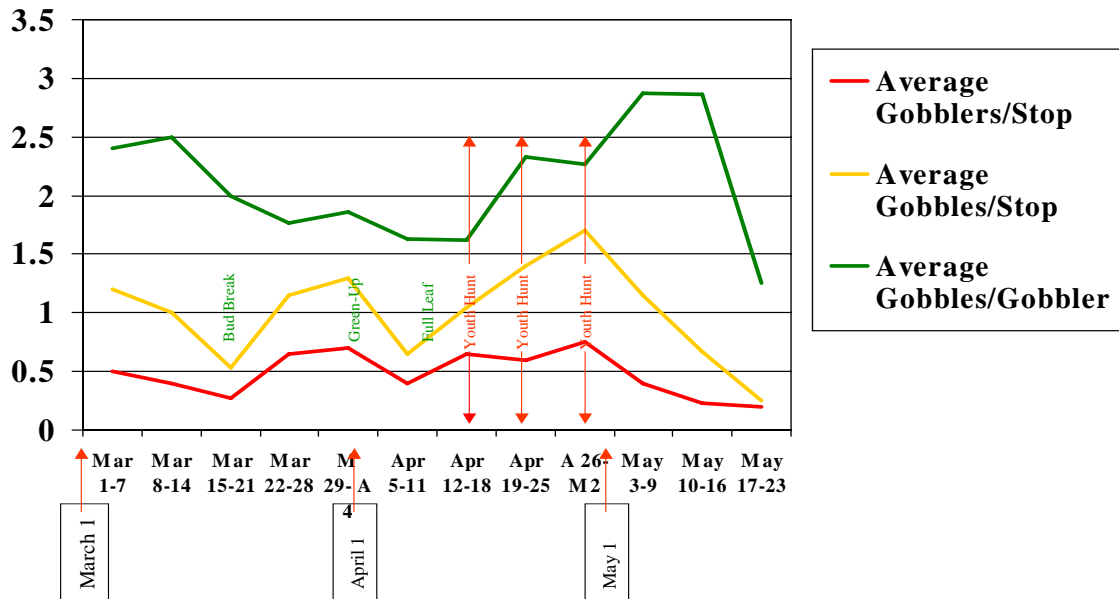


Figure 9

Gobbling chronology for Choctaw Island WMA, spring 2007.



The level of gobbling for each region in Figure 7 is a reflection of the sites that were chosen to run the surveys, and not an overall level of gobbling activity for the state.

Were turkeys “gobbled out” at any locations?

One site – White River National Wildlife Refuge (WRNWR) – appeared to show this trend (see Figure 8). Very little gobbling was heard at Poison Springs WMA after early April.

The reasons for these results are unknown, but we should point out that WRNWR is a heavily hunted area. Scouting and preseason activity, combined with turkey harvest and disturbance starting in March until early May could have been responsible. All heavily hunted areas showed markedly diminished gobbling indices from the time seasons opened until the end of the survey period.

On the other hand, many areas showed better gobbling indices in late April during hunting seasons than they did before the season. Camp Robinson and Choctaw Island WMAs (see Figure 9) are two examples. Turkeys did not appear to be “gobbled out” at Choctaw Island

WMA any time during the spring period (see Figure 9).

Results

Weather: Several weather parameters were measured during data collection in this survey. No detailed analysis of the relationship of these parameters to gobbling activity has been made. After several years of data have been collected, an attempt will be made to examine the data for relationships.

Did the extremely warm temperatures of March and extremely cold temperatures of early April affect gobbling? It’s impossible to say at this point.

However, we can note that there appeared to be little or no difference in trends of March gobbling activity between the data collected in the 1980s and 1990s and that collected in 2007.

Late-season gobbling, when temperatures were closer to normal than at any other time in our survey, was similar to earlier data. Our observations suggest that factors other than temperature are primarily responsible for gobbling activity during spring.

Table 1

Timing of bud break (BB), green-up (GU) and full-leaf (FL) conditions, including frost-kill (FK), rebudding (2BB) and second green-up (2GU), for sites where gobbling chronology and phenology data were collected, 2007.

Week	1	2	3	4	5	6	7	8	9	10	11	12
Dates/ Site	M 1-7	M 8- 14	M 15- 21	M 22- 28	M 29- A 4	A 5- 11	A 12- 18	A 19- 25	A 26- M 2	M 3- 9	M 10- 16	M 17- 23
Felsenthal NWR				BB		GU				FL		
L. Sitzes/B. D'Arc				BB		GU				FL		
Moro Big Pine WMA					BB			GU	FL			
Poison Spr. WMA				BB		GU		FL				
RE/Grandview WMA						BB	GU		FL			
Choctaw WMA			BB		GU	FL						
White R. NWR				BB	GU	FL						
C. Robinson WMA					BB	FK			GU		FL	
Holla Bend NWR				BB	GU	FK			2GU			
Ft. Chaffee Range				BB		FK				2BB	GU	FL
Mt. Magazine WMA				BB		GU/ FK				FL		
U of A Pine Tree			BB			GU	FL					
Village Ck. State Park				BB	GU				FL			
Boy Scout/Damascus				BB		GU/ FK			2GU			FL
Sylamore WMA					BB	FK			2BB/ GU		FL	
Cherokee Village				BB		GU/ FK			2GU			FL
Wedington WMA			BB			FK			2BB		GU	

Results

Plant Phenology: This survey showed that bud break and green-up were uniform across Arkansas in spring 2007. It is unknown whether either of these two events was earlier than normal, since we have no data from other years.

By the fourth week of March, bud break had occurred at almost all our survey sites, and others reached that stage by the fifth week of the survey (see Table 1).

Most sites reached green-up by the sixth week.

Tree and shrub leaf-out phenology suffered a major setback April 7 when heavy frosts hit

much of Arkansas. In at least the northern half, significant frost damage struck young leaves. In the northern third, almost all trees and shrubs had budded and young leaves were killed by frost. Most trees rebudded and full-leaf conditions were strung out over a long period of time.

In central Arkansas, trees and shrubs in low-lying areas suffered a similar fate.

In southern Arkansas, young leaves were damaged but not killed. Some sites reached full-leaf conditions by early April, but others that went through a rebudding process did not reach

full-leaf by the end of the survey in late May (see Table 1).

Our observations suggest that leaf-out had little to do with gobbling activity during the survey.

Discussion

This survey did not suggest that turkeys begin to gobble any earlier in southern Arkansas than they do in the northern part of the state. In fact, many northern Arkansas sites appeared to have better March gobbling than many southern sites.

This would tend to dispel an old saying that turkeys gobble earlier in southern Arkansas than in the northern part of the state. Of course, this could change – only time will tell.

This survey suggested that turkeys do not gobble out before the season or, for that matter, during the season or during most of May). It did show that turkey gobbling declined at a more rapid pace after mid-April on heavily hunted areas. This result is not surprising.

In 2007, the AGFC opened the regular spring turkey season April 14, which would appear to correspond quite well with the second peak of gobbling. That was the latest date that Arkansas has opened the regular season. It was intended to allow as many hens as possible to breed before the season started.

After hens are bred, gobblers are truly “surplus” harvest. Many southeastern states, such as Mississippi, open seasons well before gobbling peaks. Many Midwestern states attempt to open seasons near the second peak of gobbling (Missouri opens about April 20).

The South Carolina Department of Natural Resources has posted an article – “Setting Spring Hunting Seasons by Timing Peak Gobbling, Peak Breeding and Peak Nesting” at www.dnr.sc.gov/wildlife/turkey/springseason06.html. A very similar case could be made for Arkansas’s opening date.

Although we did not take a detailed look at the effects of weather on gobbling activity, our

observations suggested that weather had little influence on gobbling in spring 2007. If there ever was a classic case of how warm March weather could have resulted in earlier or more intense March gobbling, or conversely, how cold April temperatures could have delayed the second peak of gobbling, 2007 was it. Very little or no deviation from trends was seen.

It is important that we select the same tree or shrub for phenology study in 2008 and subsequent years for data collection. Observations in 2007 made it clear that substantial differences existed among bud break, green-up and full-leaf conditions on different (even adjacent) trees of the same species.

AGFC biologists and technicians, NWR staff and contractors worked hard to collect these data. This effort will be needed for the next couple of years. The results of this study are important to the management of wild turkeys in Arkansas.

Thanks to those who rose in the wee hours of the morning, some twice a week, for a 12-week period, to gather and report these data. T.J. Jones with the Boy Scouts, Paul Pollard and Mike Brawner with Village Creek State Park, Roger Eason with U of A Pine Tree WMA, Dale Guthrie and Larry Threet with Felsenthal NWR, and Ben Mense and Carla Mitchell with Holla Bend NWR deserve special thanks for helping.

