



# **2009 Alligator Management Report**



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Photograph courtesy of Lisa K. Irwin. Basking subadult American Alligator at Grassy Lake, Hempstead County, Arkansas August, 2009.

## EXECUTIVE SUMMARY

This report presents information on the status of the Arkansas Game and Fish Commission's Alligator Management Program for 2009, in fulfillment of U.S. Fish and Wildlife Service requirements for CITES compliance. This report contains data and/or information on: (1) the number of CITES tags issued and their application; (2) nuisance Alligator occurrences; (3) Alligator harvest data; (4) methods used in determining harvest levels; and (5) post-harvest population survey data.

Twelve (12) CITES tags were issued to successful Alligator hunters in 2009, a reduction of 1000+ tags from previous years when an Alligator farm was in operation. Nuisance complaints almost doubled in 2009 with a total of 108 reports, of which 87% occurred in Alligator Management Zones (AMZs) 1 and 3, comparable to 86.8% in 2008. AMZs 1 and 3 are the only management zones open to the Alligator sport hunt. A total of 12 Alligators were harvested, out of 30 available permits, during the Alligator sport hunt. This represents a 40% hunter success rate and a reduction from the 2008 harvest with a 67.8% success rate. The harvest sex ratio was 1.4:1 (M:F), a significant change from the 2008 harvest which was 8.5:1. Three subadults (4-6 ft size class) were harvested while all others were sexually mature,  $\geq 6$  ft in total length (TL). A modest reduction in mean TL was noted in males (-0.3 ft) and females (-1.2 ft). Males continue to be harvested in greater numbers, comprising 58% of the total harvest. Harvested males (for all harvest years) have consistently been larger in AMZ 1 than those from AMZ 3, with a mean TL of 9.3 ft compared to 8.1 ft.

Harvest quotas are based on population density values, which are generated using the standard metric "number of Alligators observed per mile of survey route" (APM) and the data for this calculation are obtained using replicated spotlight surveys. A total of 36 post-harvest spotlight survey routes were sampled in May and June 2010. With the exception of two sites, all of the 2010 surveys, with pre- and post-harvest data, exhibited a positive increase in APM. The 2010 pooled mean APM was greater (9.4 APM) than in 2007 (6.6 APM) and 2008 (6.2 APM). The increase in APM values could be interpreted as an increase in overall population numbers. However, these numbers could be within the range of normal population fluctuation cycles. Though there are no empirical data to unequivocally support this interpretation one way or the other without a larger data set.

Based on the increased number of nuisance complaints and density values at this time the Alligator Management Team proposes doubling the number of private land-at-large permits for the 2010 sport hunt. Post-harvest population survey data will be closely monitored in the future to ensure that this increase in harvest permits does not negatively impact core populations.

The following is a summary of relevant Alligator management information and data for the 2009 calendar year. This is presented to the U. S. Fish and Wildlife Service to fulfill CITES compliance requirements by providing evidence that management activities have not been detrimental to Arkansas' wild Alligator population.

**Alligator Management Zones** – The Arkansas Game and Fish Commission (AGFC) established a series of population management units (AMZs) in 2007 (Fig. 1). While AMZs 1 and 3 are open to the Alligator sport hunt, AMZ 2 is closed and is used as a control for comparing trends in the number of nuisance occurrences and population density.

**CITES Tags** – A total of 12 CITES tags were issued in 2009 (Table 1). These tags were issued to successful Alligator hunters. Previous reports showed large numbers (1000+) of tags issued to a single permitted Alligator farmer. However, that operation is no longer active, hence the reduction in tag use in 2009. The AGFC does not allow the collection of wild Alligator eggs or hatchlings for commercial purposes, and all farmed Alligator stocks were previously obtained as juveniles from legally permitted Alligator farmers in Florida or Louisiana.

**Nuisance Occurrences** – A total of 108 nuisance Alligator occurrences were recorded in 18 counties within AMZs 1–3 (Table 2). The number of nuisance occurrences in 2009 almost doubled uniformly throughout all AMZs and AMZs 1 and 3 accounted for 87% of all nuisance occurrences. The ranked distribution in terms of number of occurrences remained constant among AMZs in descending order AMZ 1, 3, and 2. The mean annual number of nuisance Alligator reports, excluding 2000 – 2001 data, increased in 2009 from 55 to 62 (Table 3).

*AMZ 1:* Miller County had the greatest number ( $n = 18$ ) of nuisance reports among AMZs and counties and only one Alligator was harvested in this county (Tables 2 and 4). Lafayette County had the second greatest number ( $n = 16$ ) and no animals were harvested in this county.

*AMZ 3:* Arkansas County had the greatest number ( $n = 9$ ) of nuisance reports and six individuals were harvested, the largest harvest among all counties. Drew County had the second greatest number ( $n = 8$ ) of nuisance reports and only one individual was harvested in this county.

**Alligator Harvest** – Arkansas’ third Alligator sport hunt was held during the last two weekends in September in AMZ’s 1 and 3. A total of 12 Alligators were harvested out of 30 issued permits, yielding a 40% hunter success rate. Alligators were harvested from three counties in AMZ 1 and three counties in AMZ 3 (Table 4). AMZ 3 received the greatest hunting pressure, as in 2008, with the harvest of eight (8) Alligators.

**Harvest Demographics** – The 2009 harvest sex ratio was 1.4:1 (M:F) (Table 5), which was significantly lower than the 2008 harvest sex ratio of 8.5:1. Three subadult [4–≤6 ft total length (TL)] individuals (two females and one male) were harvested in AMZ 3, individuals ≥6 ft TL are generally considered as sexually mature. The mean TL of all males (n = 7) was 0.3 ft less than in 2008, even though significantly more males were harvested in 2008 (n = 17). The mean TL for males differed by 1.5 ft between AMZs, and were larger in AMZ 1 (Table 6) as in 2007 and 2008. The mean TL of all females (n = 5) was 1.2 ft less than in 2008. Males comprised 58% of the harvest (89% in 2008 and 57% in 2007). Harvested males in AMZ 1 have consistently been larger than those in AMZ 3; mean TL for 2007 – 2009: AMZ 1 (9.3 ft) and AMZ 3 (8.1 ft).

**Post-Harvest Population Survey** – A total of 36 (AMZ 1, n=14; AMZ 2, n=10; and AMZ 3, n=12) spotlight survey routes were completed in May and June of 2010 (survey methods are described in the 2007 – 2008 annual reports). Several localities where Alligators were harvested in 2009 were on private lands that had only recently (within the past 2-3 years) been surveyed. A few additional survey routes on private lands were added in the 2010 post-harvest survey, as more landowners are requesting AGFC surveys on their property. These additional routes were added based on the ability to apply accepted survey methods and reported occurrences, i.e., size and accessibility of wetland and observable population numbers.

The 2010 post-harvest survey routes (n = 16; Table 7) with historic data allow for long-term trend assessment. Five of these localities received harvests in 2009. As noted in Table 7 the Arkansas River Complex is composed of four wetlands in close proximity to each other and five out of the seven Alligators harvested in AMZ 3 were taken from or near these localities. Water levels during the 2010 survey period were at normal levels which allowed for improved detection, unlike 2009 which had consistently high water levels, thus reducing observability due to dispersal of animals into inaccessible areas.

With the exception of two sites, all of the 2010 surveys (Table 7) exhibited a positive increase in the APM metric (range +0.2 – 21.8). This is in contrast to the 2009 post-harvest surveys which were negatively influenced by high water levels thus greatly reducing APM values. The dramatic increase in the APM at Bois d’Arc Lake was influenced by the large number of juveniles ( $\leq 2$  ft TL) observed at that locality. The significant decrease in APM at the Hampton Farm locality was less clear cut in terms of size class distribution, i.e., sample exhibited a near normal distribution. However, the 2010 post-harvest APM at Hampton Farm was greater than the pre-harvest and 2008 APM values. The pooled mean APM value for all 2010 post-harvest surveys was 9.4, compared to a mean of 6.6 and 6.2 for 2008 and 2009, respectively.

*Harvest Estimation and Proposed 2010 Harvest* – The recommendations for the proposed 2010 Alligator harvest are based on the data generated from the post-harvest population survey. The following parameters were used in determining the 2010 harvest rate: (1) only observations of Alligators  $\geq 4$  ft TL were used in calculating the harvest rate and (2) a harvest goal of 2% of the estimated Alligator population was applied for each locality.

The Alligator Management Team will recommend that 20 harvest tags be issued in AMZ 1: sixteen (16) will be issued to the public through a randomized computer drawing, six (6) for specific public lands harvest and ten (10) for private land-at-large harvest; and four (4) tags will be issued directly to private landowners with surveyed populations. A total of 27 harvest tags will be issued in AMZ 3: twenty (20) tags will be issued to the public through a randomized computer drawing, twelve (12) for specific public lands harvest and eight (8) for private land-at-large harvest; and seven (7) tags will be issued directly to private landowners with surveyed populations. All other AMZs will remain closed to the harvest of Alligators.

The proposed changes for the 2010 harvest rates reflect a change in the approach in managing Alligator populations on unsurveyed private lands. Two consecutive years of extensive spring/ summer flooding has resulted in the movement of Alligators onto private lands in close proximity to established populations. This is indicated by the significant increase in the number of nuisance Alligator complaints (n=108), compared to the annual average of 55 (2002–2008 data). The proposed increase in harvest permits is supported by the addition of new survey localities on private lands which contain harvestable population densities. Therefore, the AGFC

Alligator Management Team has proposed doubling the number of private land-at-large permits as shown above. Subsequent annual post-harvest population survey data will be closely monitored for any indications of negative impacts on core populations and future harvest rates will be adjusted accordingly to ensure sustainable harvests.

Table 1. Number of CITES tags issued in 2009. Harvested Alligators were those taken in the wild during the Alligator sport hunt. There were no active Alligator farmers in 2009.

Application	<i>N</i>
Harvested	12
Farmed	0
Total	12

Table 2. Number of nuisance occurrences by Alligator Management Zone (AMZ) and county in 2009.

AMZ 1		AMZ 2		AMZ 3	
County	<i>N</i>	County	<i>N</i>	County	<i>N</i>
Hempstead	13	Clark	5	Arkansas	9
Howard	5	Lonoke	3	Ashley	1
Lafayette	16	Ouachita	2	Chicot	7
Little River	6	Pike	1	Desha	6
Miller	18	Saline	1	Drew	8
Sevier	1	Union	2	Jefferson	4
Total	59		14		35

Table 3. Comparison of nuisance Alligator complaints by year. Note: data for 2000 and 2001 are incomplete.

Year	Complaints
2000	11
2001	32
2002	64
2003	58
2004	50
2005	47
2006	36
2007	71
2008	61
2009	108

Table 4. Data for 2009 Alligator harvest. (TAPT = Temporary Alligator Possession Tag)

TAPT #	CITES #	AMZ	County	Capture method	Dispatch method	Sex	TL (in)
101-1	0900013	1	Hempstead	Snare	Shotgun	F	112
110-1	0900011	1	Hempstead	Snare	Shotgun	M	83
102-3	0900012	1	Lafayette	Harpoon	Shotgun	M	84
111-1	0900030	1	Miller	Snare	Shotgun	M	155
302-1	0900020	3	Arkansas	Snare	Shotgun	F	99
303-4	0900017	3	Arkansas	Harpoon	Shotgun	F	95
304-1	0900005	3	Arkansas	Snare	Knife	F	55
304-2	0900016	3	Arkansas	Snare	Shotgun	M	103
304-7	0900015	3	Arkansas	Harpoon	Shotgun	M	76.5
304-8	0900001	3	Arkansas	Harpoon	Shotgun	M	131
304-5	0900014	3	Desha	Harpoon	Shotgun	M	69
300-1	0900009	3	Drew	Harpoon	Shotgun	F	59

Table 5. Comparison of total length (feet) by sex in harvested Alligators in 2009.

Sex	<i>N</i>	Range	Mean ( $\bar{x}$ )
Male	7	5.8 – 12.9	8.3
Female	5	4.6 – 9.3	7.0

Table 6. Comparison of total length (feet) by AMZ and sex for harvested Alligators in 2009.

AMZ 1				AMZ 3			
Sex	<i>N</i>	Range	Mean ( $\bar{x}$ )	Sex	<i>N</i>	Range	Mean ( $\bar{x}$ )
Male	3	6.6 – 11.7	9.4	Male	4	5.8 – 10.9	7.9
Female	1	9.3	9.3	Female	4	4.6 – 8.3	6.4



Table 7. Pre- and post-harvest comparison of Alligator density, based on the metric Alligators observed per survey mile (APM).  $\Delta$  APM is the change in density between the 2009 and 2010 surveys. \* = Pre-harvest data cited in: Irwin, K. 2006. Alligator population survey 2003-2004: Final Report. Arkansas Game and Fish Commission, Little Rock. 47 pp. n/a = data not available.

AMZ	Location	2009 Harvest	Pre-harvest APM*	2008 APM	2009 APM	2010 APM	$\Delta$ APM
	Holly Mound	No	n/a	1.6	2.5	3.3	+0.8
	Bois d'Arc Lake	Yes	1.8	4.0	1.8	23.6	+21.8
	Lake Erling	No	1.4	0.4	0.2	1.5	+1.3
	Lost Lakes	No	n/a	15.4	3.9	8.7	+4.8
1	Yellow Creek/Cypress Bayou	Yes	1.3	2.8	1.5	5.4	+3.9
	Grassy Lake	No	30.8	43.5	42.4	51.3 <sup>1</sup>	+8.9
	Mercer Bayou	No	0.6	0.1	0.1	1.2	+1.1
	Millwood Lake	No	0.6	2.7	1.6	4.8	+3.2
	Beard's Lake	No	1.7	2.7	2.3	4.4	+2.1
	Long Lake	No	0.4	0.5	1.2	1.4	+0.2
2	Bragg Lake	No	1.0	0.9	0.4	0.6	+0.2
	White Oak Lake	No	0.2	0.1	0.05	0.0	-0.05
	Arkansas River Complex <sup>2</sup>	Yes	4.0	11.0	11.7	13.2	+1.5
3	Tillar Duck Club	No	5.0	6.6	8.8	11.1	+2.3
	McClendon Farm	Yes	3.1	9.4	9.7	13.8	+4.1
	Hampton Farm	Yes	5.6	3.3	11.8 <sup>1,3</sup>	6.4	-5.4

1 = Only one survey was completed, i.e., no replicate survey conducted.

2 = The Arkansas River wetland complex consists of four survey routes in close proximity: Moores Bayou, Merisach Lake, Arkansas River Ship Canal, and Arkansas Post Lake.

3 = Survey data was not available in time for inclusion in the 2008 annual report.

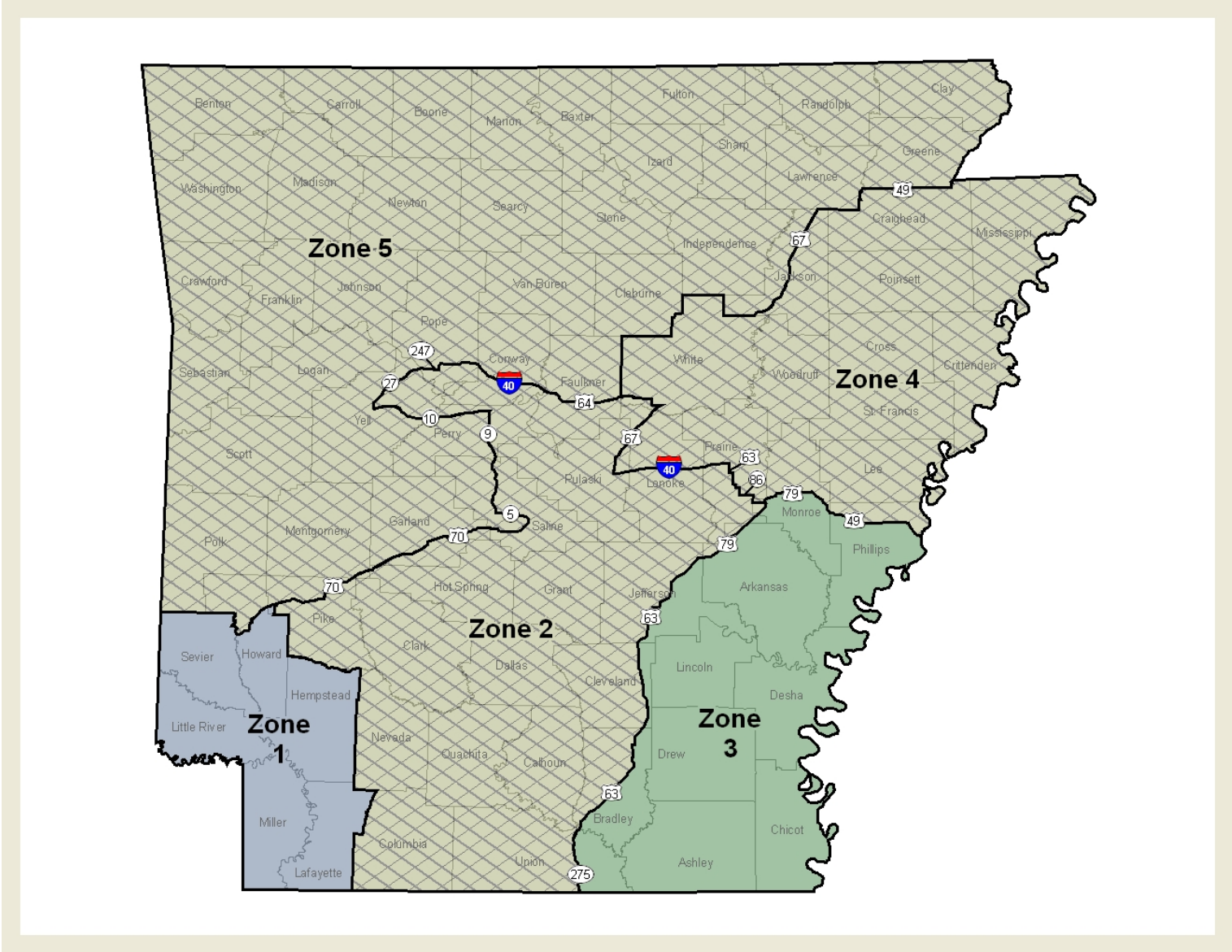


Fig. 1. Current Alligator Management Zones (AMZs); the Alligator sport hunt is permitted in highlighted zones 1 and 3.