



2008 Alligator Management Report



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Photograph courtesy of Jonathan Gill. American Alligator eating a Cattle Egret at Grassy Lake, Hempstead County, Arkansas May, 2008.

EXECUTIVE SUMMARY

This report presents information on the status of the Alligator Management Program 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) number of nuisance Alligator occurrences in 2008; (3) the 2008 Alligator harvest data; (4) the methods used in determining harvest levels; and (5) 2009 post-harvest population survey data.

A total of 1,261 CITES tags were issued in 2008, 19 tags were issued to successful Alligator hunters. A total of 53 (86.8%) nuisance Alligator complaints occurred in Alligator Management Zones (AMZs) 1 and 3, the only zones open to the Alligator sport hunt. A total of 19 Alligators were harvested out of 28 issued permits during the 2008 Alligator sport hunt, a 67.8% hunter success rate. Seven (7) Alligators were harvested in AMZ 1, all were males and had the largest mean total length of 9.4 ft. Twelve Alligators were harvested in AMZ 3, 10 males and the only two females taken in the 2008 harvest. The sex ratio of harvested Alligators was 8.5:1 (M:F) (17 to 2).

Harvest quotas were based on Alligator density, and density values were generated using the standard metric “number of Alligators observed per mile of survey route” or APM, as determined via replicated spotlight surveys. A total of 32 post-harvest spotlight survey routes were sampled in May and June 2009. The pooled mean density values were lower (6.6 APM) in 2009 than in 2008 (8.5 APM). This observed decrease in density can be attributed to high water levels which cause animals to disperse and hence, reduce observability. Even though the overall post-harvest APM density value is less this year four (of 16) survey locations exhibited a positive change in APM values and one site showed no change at all. Also, 17 out of 19 harvested Alligators were considered to be sexually mature i.e., ≥ 6 ft in total length. This was consistent with the 2007 hunt when only two animals were taken of ≤ 6 ft TL.

At first glance the decreased overall mean APM density values would suggest a downturn in overall population numbers. However, this decrease in number can be directly attributed to the effects of extensive flooding and high water levels during the 2009 survey period. High water levels cause individuals to disperse and in turn reduce survey count values. There are several areas that retain high APM values in spite of the general downward trend.

The following is a summary of relevant Alligator management information and data for 2008. This is presented to the U. S. Fish and Wildlife Service to fulfill CITES compliance requirements by providing evidence that recent harvest has not been detrimental to the wild Alligator population.

Alligator Management Zones – In 2007, the Arkansas Game and Fish Commission (AGFC) established a series of Alligator Management Zones (AMZs) (see AGFC 2007 Alligator Management Report); these zones could effectively be considered population management units. The three AMZs (1-3) across the southern tier of the state contain AMZs 1 and 3 where sport hunting is allowed, and AMZ 2 is used as a control for comparing the number of nuisance occurrences and population survey data with AMZs 1 and 3.

CITES Tags – A total of 1,261 CITES tags were issued in 2008 (Table 1). The majority of tags (n = 1,242) were issued to the sole Alligator farmer in Arkansas, the remaining 21 were issued to successful Alligator hunters. The Arkansas Game and Fish Commission (AGFC) does not allow the collection of wild Alligator eggs or hatchlings for commercial purposes. All farmed Alligator stocks in Arkansas are obtained as juveniles from legally permitted Alligator farmers in Florida or Louisiana.

Nuisance Occurrences – A total of 61 nuisance Alligator occurrences were recorded in 21 counties within Alligator Management Zones 1–3 (Table 2; Fig. 1). Both AMZ 1 and 3 had almost the same number of nuisance complaints in 2008 as were reported in 2007. This consistency in frequency of occurrences is exhibited in AMZ 1 and 3 with the most and AMZ 2 the fewest number of reports, which is closed to Alligator hunting.

Miller County had the greatest number (n = 17) of nuisance reports in AMZ 1, and only one Alligator was harvested in this county. Hempstead County had the second greatest number (n = 8) of nuisance reports in AMZ 1, but only two Alligators were harvested in 2008 (Tables 2 and 6). In AMZ 3 Drew County had the greatest number (n = 4) of nuisance reports, yet only three Alligators were harvested from Drew County. Arkansas, Ashley, and Chicot counties were tied with three nuisance reports per county in AMZ 3. Arkansas County had the greatest number (n = 7) of harvested Alligators (Tables 2 and 6) in AMZ 3 and also the state.

Two nuisance Alligators were dispatched by agency personnel in 2008, one each in AMZs 3 and 4. Table 3 presents the total number of nuisance complaints by year from 2000 – 2008. With the exception of 2000, which was prior to the inception of systematic record keeping, the mean annual number of nuisance Alligator reports is 52. In 2008, the number of nuisance reports was 61.

Alligator Harvest – Arkansas’ second Alligator sport hunt was held during the last two weekends in September in AMZ’s 1 and 3 (Fig. 1). A total of 19 Alligators were harvested out of 28 issued permits, yielding a 67.8% success rate. Alligators were harvested from five counties in AMZ 1 and from four counties in AMZ 3 (Table 2).

Harvest Demographics – The 2008 harvest sex ratio was 8.5:1 (M:F) (Table 4), which was significantly different than the 2007 harvest sex ratio of 1.3:1. With the exception of two small males (4.2 and 5.2 ft TL) all harvested Alligators were within reproductive size class of ≥ 6 ft in TL. The mean total length (TL) of males was only 0.4 ft greater than harvested females, one quarter the difference between sexes than in 2007 (1.7 ft). The mean TL of all males was 0.3 ft less than in 2007, even though more males were harvested in 2008 ($n = 17$). The mean TL for males varied by 1.4 ft between AMZs, and was larger in AMZ 1 (Table 5), as in 2007. No females were harvested in AMZ 1 and only two in AMZ 3 with a mean TL of 8.2 ft. While males comprised 89% of the 2008 harvest (57% in 2007) the mean TL was slightly less than the 2007 harvest. In 2008, the mean TL of harvested males in AMZ 1 was greater (9.4 ft) than in AMZ 3 (8.0 ft), which was the case in 2007.

Post-Harvest Population Survey – A total of 32 (AMZ 1 $n=15$; AMZ 2 $n=9$; and AMZ 3 $n=8$) spotlight survey routes were completed in May and June of 2009 (spatial data of survey routes and harvest locations are available if needed). Replicate surveys were conducted within a 10-14 day interval between surveys to obtain the metric “number of individual Alligators observed per mile of survey route” or APM. Two parameters were used in determining Alligator population density: (1) the mean (average) APM for each of the replicated survey routes was used to calculate the density; and (2) a 25% observability rate was assumed when calculating total number of individuals at each locality. Several localities where Alligators were harvested

in 2008 were on private lands that had not previously been surveyed and a few new survey routes were added in 2009, based on potential surveyability and harvestability i.e., large size of wetland and observable population numbers.

Of the 16 2009 post-harvest survey routes (Table 7), six localities in AMZs 1 and 3 produced 10 harvested Alligators in 2008. Four Alligators were harvested in the Arkansas River Complex and two from Millwood Lake. Factors that would influence data when comparing 2008 with 2009 would be: extensive high water throughout the survey period and region; addition of new survey routes; elimination of old survey routes; harvest of Alligators on private lands (i.e., no pre- or post-harvest population survey data) in 2008; and aquatic vegetation growth (affecting observation rate).

The most significant factor influencing the post-harvest surveys in 2009 would be the high water levels on lakes and wetlands which resulted in a lower observability due to dispersal of animals. This is readily evident in Table 7 where 11 out of 16 survey localities exhibited a negative change in APM metric (range -0.05 - -14.3). The Red Lake and Lost Lakes localities exhibited the greatest negative changes due to the large number of juveniles not encountered during the 2009 survey. Four localities had modest APM increases and one locality had no change. Of those localities ($n = 6$), where an Alligator was harvested 66.7% had decreased APMs with a mean decrease of 1.4 APM. For those localities ($n = 2$) with harvest that showed an increased APM value, the mean increase was 1.2 APM. The pooled mean density value for all 2009 surveys was 6.6 APM, compared to a mean of 8.5 APM for the 2008 survey data, a decrease of 1.9 APM in overall population density values.

Harvest Estimation and Proposed Harvest – The recommendations for the proposed 2009 Alligator harvest are based on the data generated from the post-harvest population survey. The following parameters were used in determining the 2009 harvest rate: (1) only observations of Alligators ≥ 4 ft TL were used in calculating the harvest rate and (2) a conservative harvest target of 2% of the estimated Alligator population was applied for each locality.

The Alligator Management Team will recommend that 11 harvest tags be issued in AMZ 1: seven (7) will be issued to the public through a random computer draw process i.e., two (2) for public land harvest and five (5) for private land at-large harvest; and four (4) tags will be issued to private landowners with surveyed populations. A total of 17 harvest tags will be issued in

AMZ 3: 13 tags will be issued to the public through a random computer draw process i.e., nine (9) will be issued for public land harvest and four (4) for private land at-large harvest; and four (4) tags will be issued to private landowners with surveyed populations. All other AMZs will remain closed to the harvest of Alligators. Two public land localities, Lake Erling and Sulphur River WMA (Mercer Bayou), in AMZ 1 will not be open for harvest in 2009, based on decreases in the density values in the 2009 population survey. Three new private land locations will be opened for harvest in AMZ 1 and one in AMZ 3 in 2009.

While the proposed 2009 harvest recommendations remain conservative, the Arkansas Game and Fish Commission administration has asked the Alligator Management Team to explore additional opportunities for the taking of Alligators on private lands. Possibly due to favorable reproductive or habitat conditions and/or immigration, some private lands may contain high Alligator densities, which has led private landowners to raise safety concerns for persons and property. The Alligator Management Team Co-chairs will begin discussions with the USFWS during the upcoming year to address this issue.

Table 1. Number of CITES tags issued in 2008. Harvested Alligators were those taken in the wild during the official Alligator sport hunt. Farmed Alligators originated from either captive propagated stocks or regulated wild egg harvest in other states.

Application	<i>N</i>
Harvested	19
Farmed	1,242
Total	1,261

Table 2. Number of nuisance occurrences by Alligator Management Zone (AMZ) and county in 2008. The 2008 Alligator sport hunt was permitted only in AMZ's 1 and 3.

AMZ 1		AMZ 2		AMZ 3	
County	<i>N</i>	County	<i>N</i>	County	<i>N</i>
Hempstead	8	Clark	1	Arkansas	3
Howard	1	Columbia	1	Ashley	3
Lafayette	1	Grant	2	Bradley	2
Little River	7	Lonoke	1	Chicot	3
Miller	17	Pike	1	Desha	1
		Prairie	1	Drew	4
		Union	1	Jefferson	1
				Lincoln	1
				Phillips	1
Total	34		8		19

Table 3. Comparison of nuisance Alligator complaints by year.

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

Table 4. Comparison of total length (feet) by sex in all harvested Alligators in 2008.

Sex	<i>N</i>	Range	Mean (\bar{x})
Male	17	4.2 – 11.9	8.6
Female	2	7.8 – 8.7	8.2

Table 5. Comparison of total length (feet) by AMZ and sex for harvested Alligators in 2008.

AMZ 1				AMZ 3			
Sex	<i>N</i>	Range	Mean (\bar{x})	Sex	<i>N</i>	Range	Mean (\bar{x})
Male	7	6.6 – 11.7	9.4	Male	10	4.2 – 11.9	8.0
Female	–	—	—	Female	2	7.8 – 8.7	8.2

Table 6. Data for 2008 Alligator harvest. (TAPT = Temporary Alligator Possession Tag)

Date	TAPT #	CITES #	AMZ	County	Capture method	Dispatch method	Sex	TL (in)
9/20/2008	102-1	0800218	1	Sevier	Harpoon	Shotgun	M	79
9/20/2008	102-3	0800219	1	Little River	Harpoon	Shotgun	M	120
9/26/2008	102-2	0800220	1	Lafayette	Snare	Shotgun	M	138
9/26/2008	106-1	0800221	1	Little River	Harpoon	Shotgun	M	114
9/26/2008	108-1	0800222	1	Miller	Snare	Shotgun	M	140
9/28/2008	103-1	0800223	1	Hempstead	Snare	Shotgun	M	99
9/28/2008	101-1	0800224	1	Hempstead	Harpoon	Shotgun	M	99
9/28/2008	302-1	0800201	3	Arkansas	Harpoon	Shotgun	M	109
9/21/2008	304-8	0800202	3	Arkansas	Snare	Shotgun	M	50
9/21/2008	304-2	0800203	3	Arkansas	Snare	Shotgun	M	143
9/20/2008	304-3	0800204	3	Arkansas	Snare	Shotgun	M	84
9/27/2008	303-2	0800205	3	Arkansas	Harpoon	Shotgun	M	110
9/22/2008	304-1	0800207	3	Arkansas	Harpoon	Shotgun	F	104
9/19/2008	304-4	0800208	3	Desha	Snare	Shotgun	M	71
9/20/2008	304-6	0800211	3	Arkansas	Snare	Shotgun	M	105
9/20/2008	306-1	0800212	3	Drew	Snare	Shotgun	F	93
9/27/2008	304-12	0800213	3	Drew	Snare	Shotgun	M	63
9/19/2008	300-1	0800214	3	Drew	Snare	Shotgun	M	116
9/21/2008	303-4	0800215	3	Ashley	Snare	Shotgun	M	110

Table 7. Pre- and post-harvest comparison of Alligator density, based on the metric Alligators per mile (APM). *= 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	`09 Harvest	Pre-APM*	`08 APM	`09 APM	Δ APM
	Holly Mound	No	n/a	1.6	2.5	+0.9
	Bois d'Arc Lake	Yes	1.8	4.0	1.8	-2.2
	Lake Erling	No	1.4	0.4	0.2	-0.2
	Lost Lakes	No	n/a	15.4	3.9	-11.5
	Yellow Creek/Cypress Bayou	Yes	1.3	2.8	1.5	-1.3
1	Grassy Lake	No	30.8	43.5	42.4	-1.1
	Red Lake	No	6.7	34.0	19.7	-14.3
	Mercer Bayou	No	0.6	0.1	0.1	0.0
	Millwood Lake	Yes	0.6	2.7	1.6	-1.1
	Beard's Lake	No	1.7	2.7	2.3	-0.4
	Long Lake	No	0.4	0.5	1.2	+0.7
2	Bragg Lake	No	1.0	0.9	0.4	-0.5
	White Oak Lake	No	0.2	0.1	0.05	-0.05
	Arkansas River Complex	Yes	4.0	11.0	10.2	-0.8
3	Tillar Duck Club	Yes	5.0	6.6	8.8	+2.2
	McClendon Farm	Yes	3.1	9.4	9.7	+0.3

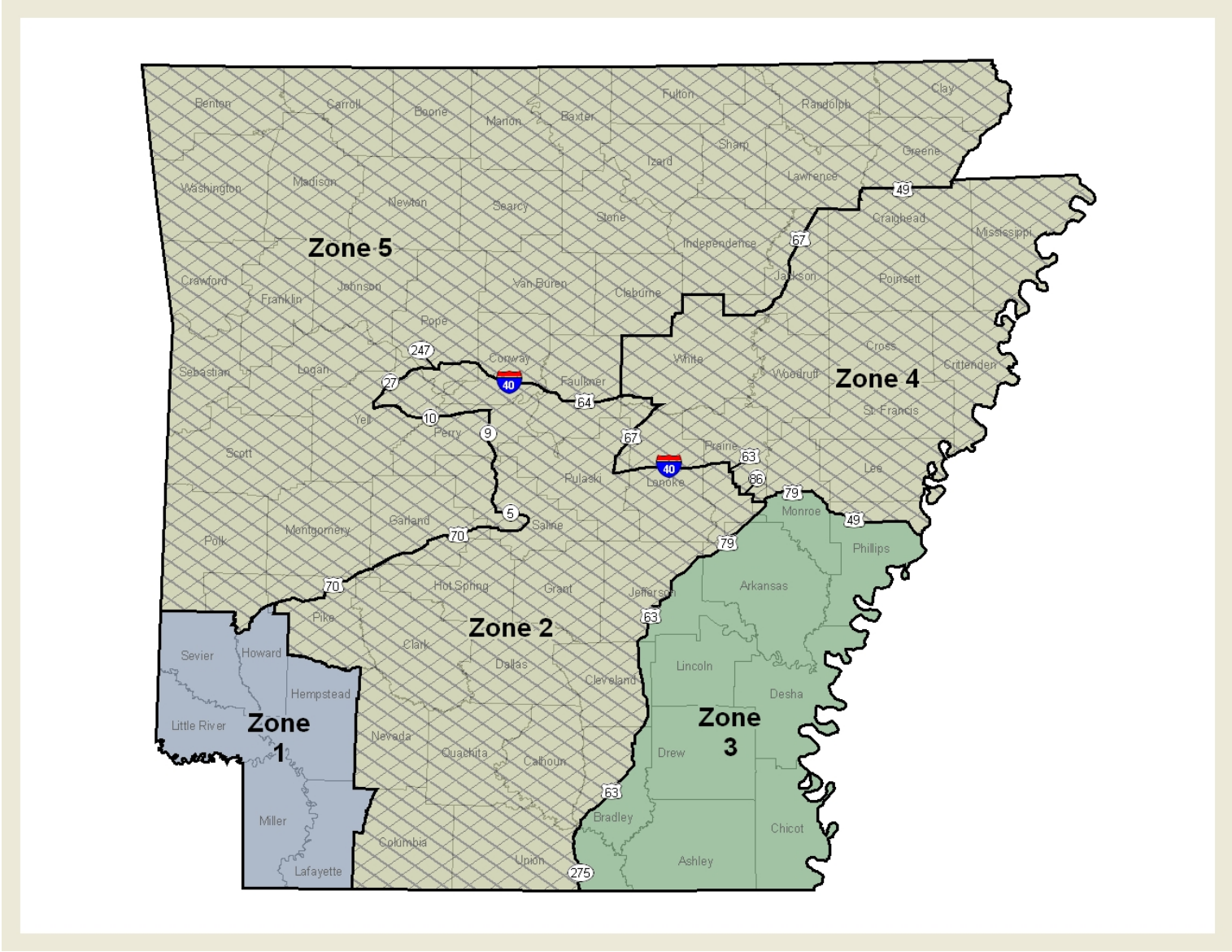


Fig. 1. Map of Alligator Management Zones (AMZs), showing highlighted zones 1 and 3 where the Alligator sport hunt is permitted.