



# **2012 Alligator Management Report**



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Photograph courtesy of Mark Barbee. Basking adult American Alligator at Freddie Black Choctaw Island Wildlife Management and Deer Research Area Desha County, Arkansas April 2013.

## EXECUTIVE SUMMARY

This report presents information on the status of the Arkansas Game and Fish Commission's Alligator Management Program for 2012, 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.

Thirty (30) CITES tags were issued to successful Alligator hunters in 2012. The number of nuisance complaints decreased by approximately 30% from 2011 with a total of 52 reports, of which 83% occurred in Alligator Management Zones (AMZs) 1 and 3. AMZs 1 and 3 are the only management zones open to the Alligator sport hunt and a total of 30 Alligators were harvested, out of 44 available permits. This represents a 68% hunter success rate and a significant increase from the 2011 harvest with a 51% success rate. The harvest sex ratio was 3.3:1 (M:F), an increase from the 2011 harvest ratio of 1.9:1. Only two (2) subadults (4-6 ft size class) were harvested in 2012 the same as in 2011. Males continued to be harvested in greater numbers, comprising 77% of the harvest. Harvested males (for all harvest years) have consistently been larger in AMZ 1 than those from AMZ 3, with a mean TL of 9.7 ft. compared to 8.4 ft. However, a new maximum size record was established with the harvest of 13.2 ft male in AMZ 1.

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. Post-harvest spotlight survey routes were sampled in April - June 2013. Approximately 62% of all 2013 surveys exhibited a decrease in the APM metric. The pooled mean APM value for the 2013 post-harvest surveys was 5.7, a decrease of 3.8 APM from 2012 (9.5 APM). This compared closely to the 2011 pooled mean of 6.0 APM. The pooled APM values of long-term survey sites from 2008 -2013 range from 5.7 – 9.5, with the greatest difference observed between the 2011 and 2012 surveys. Arkansas has experienced wide climatic extremes from severe drought to major flooding over the past few years, which has a direct impact on: (1) the Alligator population, e.g., potential reduction of smaller size classes due to increased predation/cannibalism during drought conditions; and (2) survey results i.e., major flooding prevents conducting surveys and/or disperses animals thereby decreasing observability rates resulting in reduced APM values. The Alligator population is considered stable at present, with the caveat that significant population fluctuations are occurring as a result of climate extremes. The Alligator Management Team proposes issuance of 79 Alligator sport hunt permits for 2013. Post-harvest population survey data will be closely monitored in the future to ensure that the number of harvest permits is not negatively impacting core populations.

The following is a summary of relevant Alligator management information and data for the 2012 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 network of Alligator population management zones (AMZs) in 2007 and has retained these zones to date without any changes (Fig. 1). AMZs 1 and 3 remain open to the Alligator sport hunt, while AMZ 2, 4 and 5 are closed to hunting. AMZ 2 being used as a control for comparing trends in the number of nuisance occurrences and population density variation, given its similar latitude as AMZs 1 and 3.

**CITES Tags Use** – A total of 30 CITES tags were issued in 2012 (Table 1). These tags were issued to successful Alligator sport hunters at the time that their Alligator was checked by AGFC personnel. There were no active Alligator Farmer Permittees in 2012, hence no issuance of CITES tags for farmed Alligators. 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 52 nuisance Alligator occurrences were recorded from 20 counties within AMZs 1–3 (Table 2). The number of nuisance occurrences in 2012 fell by 30% from 2011. AMZs 1 and 3 accounted for 83% 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 decreased in 2012 to 64.0 (Table 3).

*AMZ 1:* Lafayette County had the greatest number ( $n = 7$ ) of nuisance reports among AMZs and counties; four (4) Alligators were harvested in this county (Tables 2 and 4). Hempstead, Miller and Sevier County had the second greatest number ( $n = 4$ ) and six (6) animals were harvested in Hempstead County.

AMZ 3: Jefferson County had the greatest number (n = 5) of nuisance reports, yet no Alligators were harvested from this county. Desha County had the second greatest number (n = 4) of nuisance reports and one Alligator was harvested in this county.

**Alligator Harvest** – Arkansas' sixth Alligator sport hunt was held during the last two weekends in September 2012 in AMZ's 1 and 3. A total of 30 Alligators were harvested out of a possible 44 permits, yielding a 68% hunter success rate. AMZ 1 produced the majority of Alligators in 2012, with a harvest of 16 Alligators; Hempstead and Lafayette counties comprised the majority of those taken (Table 4). In AMZ 3 Arkansas County consistently produces the greatest number of harvested Alligators (n=10), this is due to the fact that Arkansas County contains more optimal habitat, in terms of areal extent, within the Arkansas River wetland complex than other areas within AMZ 3. Alligators were harvested from five (5) counties in both AMZ 1 and AMZ 3 (Table 4).

**Harvest Demographics** – The 2012 harvest sex ratio was 3.3:1 (M:F) (Table 5). Only (2) subadults [4–≤6 ft total length (TL)], were harvested in 2012, one from AMZ 1 and the other from AMZ 3 (Table 4). This is the same as from the 2011 harvest of 2 subadults. The mean TL of all males (n = 23) was 0.1 ft. greater than in 2011, though the harvest was significantly lower in 2011 (n = 15) (Table 5). As in 2011, harvested males from AMZ 1 had a higher mean TL than AMZ 3 (Table 6). AMZ 1 also produced a male (13.2 ft TL) that surpassed the 2011 record (13.1 ft TL) also from AMZ 1. The mean TL of all females (n = 7) was 0.3 ft longer than in 2011. Males comprised 77% of the harvest in 2012 (65% in 2011, 67% in 2010, 58% in 2009, 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 – 2012: AMZ 1 (10.3 ft) and AMZ 3 (8.7 ft.).

**2013 Post-Harvest Population Survey** – Spotlight survey routes were completed from April - June of 2013 (survey methods are described in the 2007–2008 annual reports). The 2013 post-harvest survey routes (n = 16; Table 7) when combined with historic data allow for long-term trend assessment. Eight (8) of these localities had harvests in 2012. The Arkansas River Complex and Hampton Farm listed in Table 7 consist of multiple survey routes in close

proximity and are pooled as metapopulations for calculations of the APM metric. These areas consistently produce harvested Alligators.

Approximately 62% of all 2013 surveys (Table 7) exhibited a decrease in the APM metric (range -0.1 to -2.6). This is in contrast to the 2012 post-harvest surveys where approximately 75% of survey routes exhibited increased APMs. These differences between years can be attributed to flooding, drought, decreased visibility due to increased aquatic vegetation and large numbers of juveniles encountered on specific survey routes.

The significant increase in the APM ( $\Delta +6.9$ ) at Bois d'Arc Lake was influenced by the observation of large numbers of juveniles ( $\leq 2$  ft TL) that were observed during the 2013 survey. The increase in APM ( $\Delta +4.9$ ) at Grassy Lake is interesting to note, given the significant decrease in the APM ( $\Delta -15.6$ ) between 2011 and 2012 surveys, since this population has sustained two years of drought conditions. Only one survey was completed, with no replicate, during the 2013 survey period. This site serves as a control site in AMZ 1 as no hunting has occurred on this site since the initiation of the sport hunt. Grassy Lake continues to harbor the highest density population in the entire state ( $n = 305$ ). The decrease in APM ( $\Delta -1.0$ ) within the Arkansas River Complex could be attributed to the slightly higher than normal water levels and increased aquatic vegetation resulting in increased dispersion and decreased detectability.

The pooled mean APM value for all 2013 post-harvest surveys was 5.7, a decrease of 3.8 APM from 2012 (9.5 APM). The 2013 pooled mean compared closely to the 2009 value of 5.8. The pooled mean APM (2008 – 2013) ranges from 5.7 to 9.5 with the greatest difference observed between the 2011 and 2012 surveys.

*Harvest Estimation and Proposed 2013 Harvest* – The recommendations for the proposed 2013 Alligator harvest are based on the data generated from the post-harvest population survey. The following parameters were used in determining the 2013 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 surveyed private land locality while a 4% harvest rate was applied to public land localities.

The proposed harvest rate for 2013 will be a maximum of 79 permits. The Alligator Management Team will recommend that no more than 34 harvest tags be issued in AMZ 1: twenty six (26) will be issued to the public through a randomized computer drawing, six (6) for

specific public lands harvest and twenty (20) for private land-at-large harvest; and eight (8) tags will be issued directly to private landowners with surveyed populations. A maximum of 45 harvest tags will be issued in AMZ 3: thirty eight (38) tags will be issued to the public through a randomized computer drawing, eighteen (18) for specific public lands harvest and twenty (20) for private land-at-large harvest; and no more than seven (7) tags will be issued directly to private landowners with surveyed populations. All other AMZs will remain closed to the harvest of Alligators.

Table 1. Number of CITES tags issued in 2012. “Harvested” applies to Alligators taken during the sport hunt. There were no active Alligator farmers in 2012.

Application	<i>N</i>
Harvested	30
Farmed	0
Total	30

Table 2. Number of nuisance occurrences by Alligator Management Zone (AMZ) and county in 2012.

AMZ 1		AMZ 2		AMZ 3	
County	<i>N</i>	County	<i>N</i>	County	<i>N</i>
Hempstead	4	Calhoun	1	Arkansas	3
Howard	3	Clark	2	Ashley	1
Lafayette	7	Columbia	1	Bradley	1
Little River	2	Union	5	Chicot	3
Miller	4			Desha	4
Sevier	4			Drew	1
				Jefferson	5
				Lincoln	1
Total	24		9		19

Table 3. Number of nuisance Alligator complaints statewide by year, includes data from AMZs 4 and 5. Note: data for 2000 and 2001 are incomplete as data collection was not coordinated at that time.

Year	<i>N</i>	Mean
2000	11	----
2001	32	----
2002	64	64.0
2003	58	61.0
2004	50	57.3
2005	47	54.8
2006	36	51.0
2007	71	54.3
2008	61	55.3
2009	108	61.9
2010	82	64.4
2011	75	65.2
2012	52	64.0

Table 4. Data for 2012 Alligator harvest. (TAPT = Temporary Alligator Possession Tag)

TAPT#	CITES#	AMZ	County	Capture method	Dispatch method	Sex	TL (ft.)
101-1	12-0018	1	HEMPSTEAD	HARPOON	SHOTGUN	MALE	12.1
101-2	12-0015	1	HEMPSTEAD	HARPOON	SHOTGUN	MALE	9.2
102-4	12-0012	1	HEMPSTEAD	HARPOON	SHOTGUN	MALE	10.9
102-7	12-0016	1	HEMPSTEAD	SNARE	SHOTGUN	MALE	13.2
102-9	12-0002	1	HEMPSTEAD	SNARE	SHOTGUN	MALE	10.4
111-2	12-0011	1	HEMPSTEAD	SNARE	SHOTGUN	MALE	10.6
113-1	12-0003	1	HOWARD	SNARE	SHOTGUN	FEMALE	7.7
102-6	12-0024	1	LAFAYETTE	SNARE	SHOTGUN	FEMALE	8.0
102-3	12-0014	1	LAFAYETTE	HARPOON	SHOTGUN	MALE	11.7
106-1	12-0007	1	LAFAYETTE	HARPOON	SHOTGUN	MALE	8.7
106-3	12-0020	1	LAFAYETTE	SNARE	SHOTGUN	MALE	8.3
106-2	12-0001	1	LITTLE RIVER	HARPOON	SHOTGUN	FEMALE	5.6
102-5	12-0019	1	LITTLE RIVER	SNARE	SHOTGUN	MALE	7.9
113-2	12-0017	1	LITTLE RIVER	SNARE	SHOTGUN	MALE	10.2
102-10	12-0006	1	MILLER	HARPOON	SHOTGUN	MALE	12.2
112-2	12-0013	1	MILLER	SNARE	SHOTGUN	MALE	8.7
304-7	12-0040	3	ARKANSAS	HARPOON	SHOTGUN	FEMALE	6.7
304-9	12-0035	3	ARKANSAS	SNARE	SHOTGUN	FEMALE	6.2
305-1	12-0038	3	ARKANSAS	HARPOON	SHOTGUN	FEMALE	9.0
302-1	12-0043	3	ARKANSAS	HARPOON	SHOTGUN	MALE	7.2
302-2	12-0042	3	ARKANSAS	HARPOON	SHOTGUN	MALE	11.3
303-4	12-0041	3	ARKANSAS	HARPOON	SHOTGUN	MALE	5.5
303-5	12-0029	3	ARKANSAS	HARPOON	SHOTGUN	MALE	7.8
303-7	12-0034	3	ARKANSAS	SNARE	SHOTGUN	MALE	8.3
304-1	12-0037	3	ARKANSAS	HARPOON	SHOTGUN	MALE	7.8
304-5	12-0030	3	ARKANSAS	HARPOON	SHOTGUN	MALE	7.9
303-1	12-0046	3	CHICOT	HARPOON	SHOTGUN	FEMALE	7.6
303-8	12-0039	3	DESHA	HARPOON	SHOTGUN	MALE	12.0
300-1	12-0047	3	DREW	HARPOON	SHOTGUN	MALE	9.8
303-3	12-0036	3	LINCOLN	SNARE	SHOTGUN	MALE	9.7

Table 5. Comparison of total length (feet) by sex for all sport harvested Alligators in 2012.

Sex	<i>N</i>	Range	Mean ( $\bar{x}$ )
Male	23	5.5 – 13.2	9.6
Female	7	5.6 – 9.0	7.3

Table 6. Comparison of total length (feet) by AMZ and sex for sport harvested Alligators in 2012.

AMZ 1				AMZ 3			
Sex	<i>N</i>	Range	Mean ( $\bar{x}$ )	Sex	<i>N</i>	Range	Mean ( $\bar{x}$ )
Male	13	7.9 – 13.2	10.3	Male	10	5.5 – 12.0	8.7
Female	3	5.6 – 8.0	7.1	Female	4	6.2 – 9.0	7.4

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 2012 and 2013 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	2012 Harvest	Pre-harvest APM*	2008 APM	2009 APM	2010 APM	2011 APM	2012 APM	2013 APM	$\Delta$ APM
	Holly Mound	No	n/a	1.6	2.5	3.3	1.2	2	3	1.0
	Bois d'Arc Lake	Yes	1.8	4	1.8	23.6	5.8	3.6	10.5	6.9
	Lake Erling	Yes	1.4	0.4	0.2	1.5	1.3	1	0.9	-0.1
	Lost Lakes	Yes	n/a	15.4	3.9	8.7	6.71	12.2	13.6	1.4
1	Yellow Creek/Cypress Bayou	Yes	1.3	2.8	1.5	5.4	3.5	5	4.1	-0.9
	Grassy Lake	No	30.8	43.5	42.4	51.3 <sup>1</sup>	35.7 <sup>1</sup>	62.9	67.8 <sup>1</sup>	4.9
	Mercer Bayou	No	0.6	0.1	0.1	1.2	1.2	1.8	1.8	0.0
	Millwood Lake	Yes	0.6	2.7	1.6	4.8	2.3	4.5	2	-2.5
	Beard's Lake	No	1.7	2.7	2.3	4.4	4.8	4.9	3.9	-1.0
	Long Lake	No	0.4	0.5	1.2	1.4	3.7	3.3	0.7	-2.6
2	Bragg Lake	No	1	0.9	0.4	0.6	1.1	1.1	1.5	0.4
	White Oak Lake	No	0.2	0.1	0.05	0	0.1	0.6	0.3	-0.3
	Arkansas River Complex <sup>2</sup>	Yes	4	11	11.7	13.2	1.7 <sup>3</sup>	9.1	8.1	-1.0
3	Tillar Duck Club	No	5	6.6	8.8	11.1	9	15	12.6	-2.4
	McClendon Farm	Yes	3.1	9.4	9.7	13.8	12.1	16.3	14.7	-1.6
	Hampton Farm	Yes	5.6	3.3	11.8 <sup>1</sup>	6.4	6.4	8.2	6.3	-1.9

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: Moore's Bayou, Merisach Lake, Arkansas River Ship Canal, and Arkansas Post Lake.

3 = Data based on one survey route with no replicate, all other routes for this location were not surveyable due to major flooding.

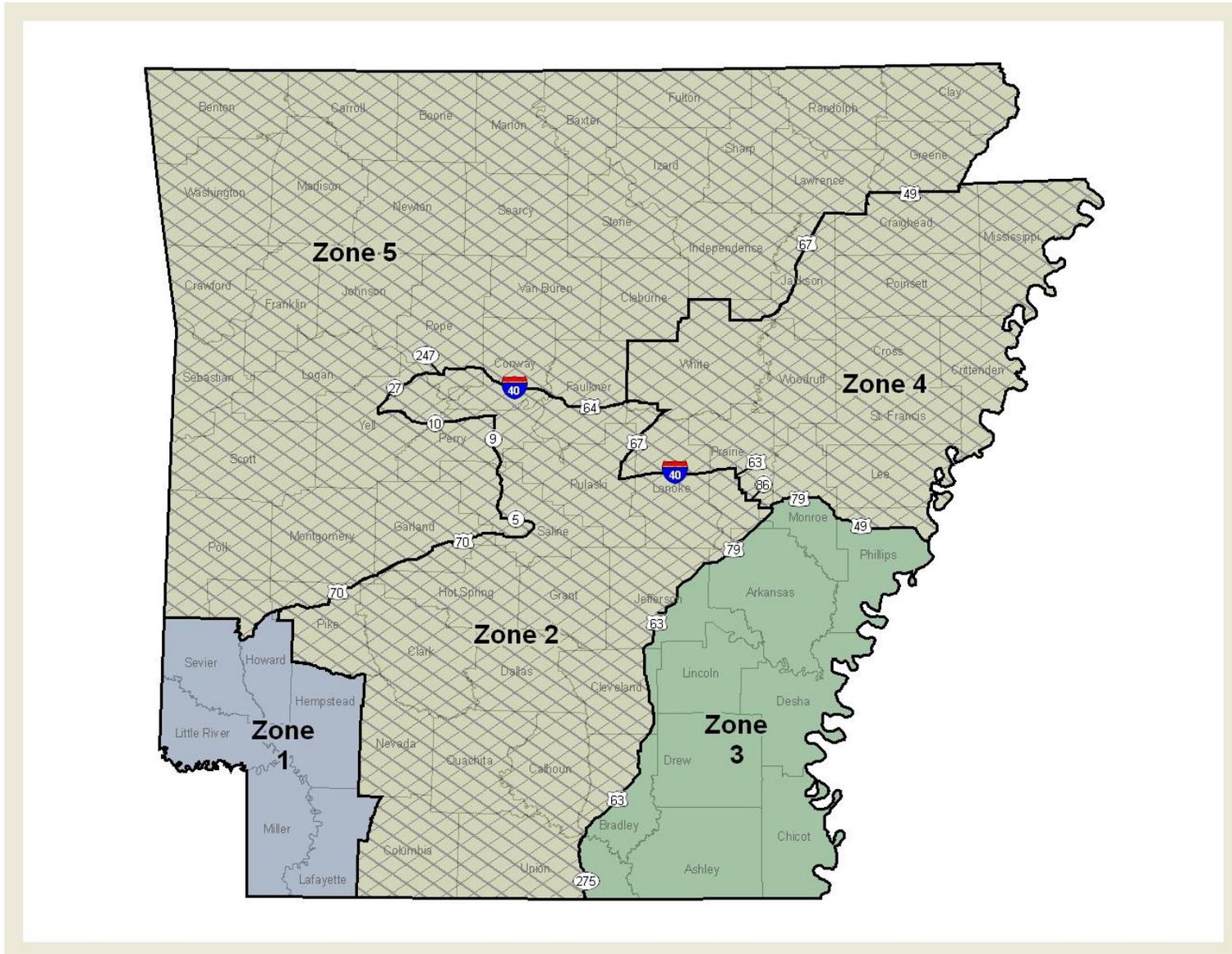


Fig. 1. Current Alligator Management Zones (AMZs); the Alligator sport hunt is permitted in highlighted zones 1 and 3.