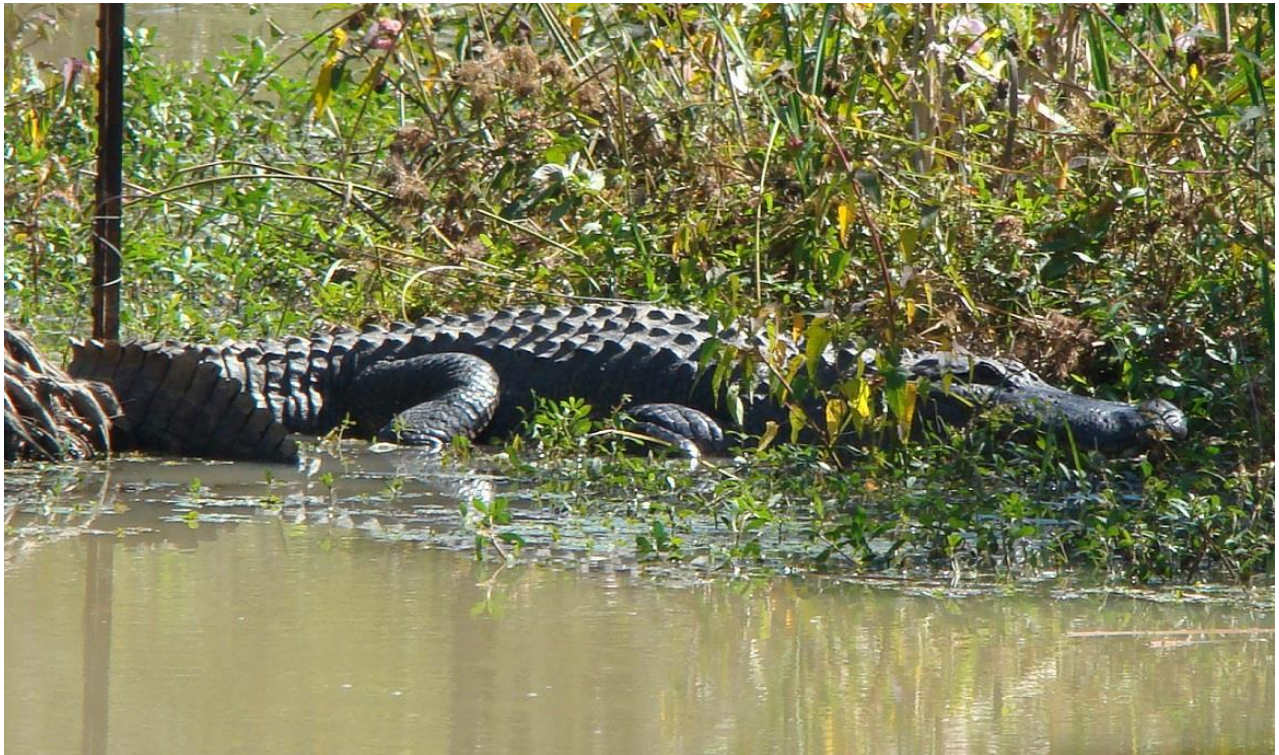




2013 Alligator Management Report



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Basking adult American Alligator at Freddie Black Choctaw Island Wildlife Management and Deer Research Area, Desha County, Arkansas, October 15, 2012. Photograph by Mark Barbee.

EXECUTIVE SUMMARY

This report presents information on the status of the Arkansas Game and Fish Commission's Alligator Management Program for 2013, 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.

Forty four (44) CITES tags were issued to successful Alligator hunters in 2013. The number of nuisance complaints increased by approximately 15% from 2012 with a total of 78 reports, of which 94% 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 44 Alligators were harvested, out of 73 available permits. This represents a 60% hunter success rate and a slight decrease from the 2012 harvest with a 68% success rate. The harvest sex ratio was 1.9:1 (M:F), a decrease from the 2012 harvest ratio of 3.3:1. Only two (2) subadults (4-6 ft size class) were harvested in 2013 the same as in 2012. Males continued to be harvested in greater numbers, comprising 68% 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 11.2 ft. compared to 10.3 ft. However, a new maximum size record was established with the harvest of a 13.9 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 2014. Approximately 37.5% of all 2014 surveys exhibited a decrease in the APM metric. The pooled mean APM value for the 2014 post-harvest surveys was 8.9, a slight decrease of 0.5 APM from 2013 (9.4 APM). This compared closest to the 2013 and 2010 pooled mean of 9.4 APM. The pooled APM values of long-term survey sites from 2008 -2014 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 103 Alligator sport hunt permits for 2014. 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 2013 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 44 CITES tags were issued in 2013 (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 2013, 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 78 nuisance Alligator occurrences were recorded from 15 counties within AMZs 1–3 (Table 2). The number of nuisance occurrences in 2013 increased by 15% from 2012. 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 increased in 2013 to 65.2 (Table 3).

AMZ 1: Miller County had the greatest number ($n = 12$) of nuisance reports among AMZs and counties; three (3) Alligators were harvested in this county (Tables 2 and 4). Hempstead County had the second greatest number ($n = 11$) and eight (8) animals were harvested in Hempstead County.

AMZ 3: Arkansas County had the greatest number (n = 9) of nuisance reports, and 18 Alligators were harvested from this county. Drew County had the second greatest number (n = 5) of nuisance reports and two (2) Alligators was harvested in this county.

Alligator Harvest – Arkansas’ seventh Alligator sport hunt was held during the last two weekends in September 2013 in AMZ’s 1 and 3. A total of 44 Alligators were harvested out of a possible 73 permits, yielding a 60% hunter success rate. AMZ 1 produced the second highest harvest of Alligators in 2013, with a harvest of 19 Alligators; Hempstead County comprised the majority of those taken (Table 4). In AMZ 3 Arkansas County produced the majority of Alligators in 2013 with a harvest of sixteen (16) Alligators. Arkansas County consistently produces the greatest number of harvested Alligators (n=18), 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 collectively harvested from ten (10) counties in both AMZ 1 and AMZ 3 (Table 4).

Harvest Demographics – The 2013 harvest sex ratio was 1.9:1 (M:F) (Table 5). Only (2) subadults [4–≤6 ft total length (TL)], were harvested in 2013, one from AMZ 1 and the other from AMZ 3 (Table 4). This is the same as from the 2012 harvest of 2 subadults. The mean TL of all males (n = 30) was 1.2 ft. greater than in 2012, though the harvest was significantly lower in 2012 (n = 23) (Table 5). As in 2012, harvested males from AMZ 1 had a higher mean TL than AMZ 3 (Table 6). AMZ 1 also produced a male (13.9 ft TL) that surpassed the 2012 record (13.2 ft TL) also from AMZ 1. The mean TL of all females (n = 14) was 0.1 ft shorter than in 2012. Males comprised 68% of the harvest in 2013 (77% 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 – 2013: AMZ 1 (10.0 ft) and AMZ 3 (8.7 ft.).

2014 Post-Harvest Population Survey – Spotlight survey routes were completed from April - June of 2014 (survey methods are described in the 2007–2008 annual reports). The 2014 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 2013. 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 37.5% of all 2014 surveys (Table 7) exhibited a decrease in the APM metric (range -0.3 to -8.7). This is an improvement over the 2013 post-harvest survey data where approximately 62% of survey routes exhibited decreased 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 decrease in APM ($\Delta -8.7$) at Grassy Lake is in contrast to the increase in the APM ($\Delta +4.9$) between 2012 and 2013 surveys. This population has sustained two years of drought conditions. Only one survey was completed, with no replicate, during the 2014 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 (59.1 APM). The increase in APM ($\Delta +4.6$) within the Arkansas River Complex was influenced by the observation of large numbers of juveniles (≤ 2 ft TL) that were observed during the 2014 survey. Another contributing factor could be attributed to the slightly higher than normal water levels and decreased aquatic vegetation resulting in an increased detectability.

The pooled mean APM value for all 2014 post-harvest surveys was 8.9, a decrease of 0.5 APM from 2013 (9.4 APM). The 2014 pooled mean compared closely to the 2013 and 2010 value of 9.4. The pooled mean APM (2008 – 2014) ranges from 5.9 to 9.5 with the greatest difference observed between the 2011 and 2012 surveys.

Harvest Estimation and Proposed 2014 Harvest – The recommendations for the proposed 2014 Alligator harvest are based on the data generated from the post-harvest population survey. The following parameters were used in determining the 2014 harvest rate: (1) only observations of Alligators ≥ 4 ft TL were used in calculating the harvest rate and (2) a harvest goal of 4% of the estimated Alligator population was applied for all surveyed private land and public land localities.

The proposed harvest rate for 2014 will be a maximum of 103 permits. The Alligator Management Team will recommend that no more than 49 harvest tags be issued in AMZ 1: thirty four (34) will be issued to the public through a randomized computer drawing, fourteen (14) for

specific public lands and twenty (20) for private land-at-large; and fifteen (15) tags will be issued directly to private landowners with surveyed populations. A maximum of 54 harvest tags will be issued in AMZ 3: forty (40) tags will be issued to the public through a randomized computer drawing, twenty (20) for specific public lands and twenty (20) for private land-at-large; and no more than fourteen (14) tags will be issued directly to private landowners with surveyed populations. All other AMZs will remain closed to the harvest of Alligators.

Future Harvest Rate Recommendations – The recommendations for the 2015 Alligator harvest will be based on the 2014 post-harvest population survey data. A maximum of 74 tags will be issued for private land-at-large and public land hunts. The number of private land tags issued may vary based upon 2015 post-harvest survey results. Only Alligators ≥ 4 ft TL will be used in calculating harvest rates. The harvest rate for all zones will not exceed a maximum of 4% for both private and public land. A variable harvest rate of 2-4% will be applied to future harvest rates if biological or environmental factors (i.e., excessive winter kill die off, drought conditions, etc.) warrant adjustment of the harvest rate.

Table 1. Number of CITES tags issued in 2013. “Harvested” applies to Alligators taken during the sport hunt. There were no active Alligator farmers in 2013.

Application	<i>N</i>
Harvested	44
Farmed	0
Total	44

Table 2. Number of nuisance occurrences by Alligator Management Zone (AMZ) and county in 2013.

AMZ 1		AMZ 2		AMZ 3	
County	<i>N</i>	County	<i>N</i>	County	<i>N</i>
Hempstead	11	Calhoun	1	Arkansas	9
Howard	4	Columbia	2	Ashley	4
Lafayette	10	Union	2	Chicot	4
Little River	4			Desha	3
Miller	12			Drew	5
Sevier	6			Jefferson	1
Total	47		5		26

Table 3. Number of nuisance Alligator complaints statewide by year, includes data from AMZs 4 and 5 for some years. 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
2013	78	65.2

Table 4. Data for 2013 Alligator harvest. (TAPT = Temporary Alligator Possession Tag)

<u>TAPT#</u>	<u>CITES#</u>	<u>AMZ</u>	<u>County</u>	<u>Capture method</u>	<u>Dispatch method</u>	<u>Sex</u>	<u>TL(ft.)</u>
102-8	13-0007	1	Miller	Snare	Shotgun	F	8.1
110-2	13-0031	1	Hempstead	Snare	Shotgun	F	5.8
102-17	13-0035	1	Lafayette	Snare	Shotgun	F	8.9
112-1	13-0036	1	Hempstead	Snare	Shotgun	F	8.3
102-6	13-0001	1	Hempstead	Harpoon	Shotgun	M	11.6
102-9	13-0002	1	Lafayette	Harpoon	Bang Stick	M	13.1
102-10	13-0003	1	Lafayette	Snare	Shotgun	M	12.0
113-1	13-0004	1	Miller	Harpoon	Shotgun	M	12.2
102-16	13-0005	1	Miller	Harpoon	Shotgun	M	9.8
102-12	13-0008	1	Hempstead	Snare	Shotgun	M	11.9
115-1	13-0009	1	Little River	Harpoon	Shotgun	M	10.8
102-15	13-0022	1	Little River	Harpoon	Shotgun	M	11.7
106-2	13-0024	1	Hempstead	Snare	Shotgun	M	9.8
112-2	13-0023	1	Little River	Harpoon	Shotgun	M	13.8
106-1	13-0021	1	Little River	Harpoon	Shotgun	M	10.2
101-1	13-0032	1	Hempstead	Harpoon	Shotgun	M	11.9
102-5	13-0033	1	Lafayette	Harpoon	Bang Stick	M	9.8
110-1	13-0034	1	Hempstead	Harpoon	Shotgun	M	9.3
102-18	13-0006	1	Hempstead	Harpoon	Shotgun	M	10.7
304-18	13-0058	3	Arkansas	Harpoon	Shotgun	F	7.5
303-5	13-0064	3	Arkansas	Snare	Shotgun	F	6.3
303-18	13-0065	3	Arkansas	Snare	Shotgun	F	6.1
304-15	13-0061	3	Arkansas	Harpoon	Shotgun	F	7.8
303-4	13-0041	3	Arkansas	Snare	Shotgun	F	6.4
303-12	13-0044	3	Arkansas	Harpoon	Shotgun	F	7.5
303-13	13-0051	3	Arkansas	Harpoon	Shotgun	F	7.5
304-14	13-0055	3	Arkansas	Snare	Shotgun	F	7.4
300-1	13-0089	3	Drew	Harpoon	Shotgun	F	6.2
303-3	13-0090	3	Lincoln	Harpoon	Shotgun	F	8.4
303-7	13-0042	3	Arkansas	Harpoon	Shotgun	F	5.8
302-2	13-0084	3	Arkansas	Harpoon	Shotgun	M	12.7
304-5	13-0059	3	Arkansas	Harpoon	Shotgun	M	9.0
304-11	13-0063	3	Arkansas	Harpoon	Shotgun	M	12.0
304-16	13-0062	3	Arkansas	Snare	Shotgun	M	9.0
302-1	13-0043	3	Arkansas	Harpoon	Shotgun	M	7.7
303-2	13-0045	3	Phillips	Harpoon	Shotgun	M	10.7
303-17	13-0052	3	Arkansas	Snare	Shotgun	M	8.0
304-1	13-0053	3	Arkansas	Harpoon	Shotgun	M	12.3
304-2	13-0054	3	Arkansas	Snare	Shotgun	M	10.0

303-6	13-0056	3	Lincoln	Harpoon	Shotgun	M	7.3
304-10	13-0057	3	Arkansas	Harpoon	Shotgun	M	12.5
304-4	13-0086	3	Desha	Harpoon	Shotgun	M	10.2
303-1	13-0087	3	Ashley	Harpoon	Shotgun	M	11.6
306-1	13-0088	3	Drew	Harpoon	Shotgun	M	11.4

Table 5. Comparison of total length (feet) by sex for all sport harvested Alligators in 2013.

Sex	<i>N</i>	Range	Mean (\bar{x})
Male	29	7.3 – 13.7	10.8
Female	15	5.7 – 8.9	7.2

Table 6. Comparison of total length (feet) by AMZ and sex for sport harvested Alligators in 2013.

AMZ 1				AMZ 3			
Sex	<i>N</i>	Range	Mean (\bar{x})	Sex	<i>N</i>	Range	Mean (\bar{x})
Male	15	9.3 – 13.7	11.2	Male	14	7.3 – 12.7	10.3
Female	4	5.7 – 8.9	7.8	Female	11	6.1 – 8.4	7.0

Table 7. Pre- and post-harvest comparison of Alligator density, based on the metric Alligators observed per survey mile (APM). Δ APM is the change in density between the 2013 and 2014 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	2013 Harvest	Pre-harvest APM*	2008 APM	2009 APM	2010 APM	2011 APM	2012 APM	2013 APM	2014 APM	Δ APM
	Holly Mound	No	n/a	1.6	2.5	3.3	1.2	2	3	1.8	-1.2
	Bois d'Arc Lake	Yes	1.8	4	1.8	23.6	5.8	3.6	10.5	5.4	-5.1
	Lake Erling	Yes	1.4	0.4	0.2	1.5	1.3	1	0.9	3.4	2.5
	Lost Lakes	Yes	n/a	15.4	3.9	8.7	6.71	12.2	13.6	9.3	-4.3
1	Yellow Creek/Cypress Bayou	Yes	1.3	2.8	1.5	5.4	3.5	5	4.1	7.6	3.5
	Grassy Lake	No	30.8	43.5	42.4	51.3 ¹	35.7 ¹	62.9 ¹	67.8 ¹	59.1 ¹	-8.7
	Mercer Bayou	No	0.6	0.1	0.1	1.2	1.2	1.8	1.8	1.4	-0.4
	Millwood Lake	Yes	0.6	2.7	1.6	4.8	2.3	4.5	2	2.7 ¹	0.7
	Beard's Lake	No	1.7	2.7	2.3	4.4	4.8	4.9	3.9	4.2	0.3
	Long Lake	No	0.4	0.5	1.2	1.4	3.7	3.3	0.7	0.4	-0.3
2	Bragg Lake	No	1	0.9	0.4	0.6	1.1	1.1	1.5	1.5	0.0
	White Oak Lake	No	0.2	0.1	0.05	0	0.1	0.6	0.3	0.4	0.1
	Arkansas River Complex ²	Yes	4	11	11.7	13.2	1.7 ³	9.1	8.1	12.7	4.6
3	Tillar Duck Club	Yes	5	6.6	8.8	11.1	9	15	12.6	15.2	2.6
	McClendon Farm	Yes	3.1	9.4	9.7	13.8	12.1	16.3	14.7	10.6	-4.1
	Hampton Farm	Yes	5.6	3.3	11.8 ¹	6.4	6.4	8.2	6.3	6.3	0.0

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.

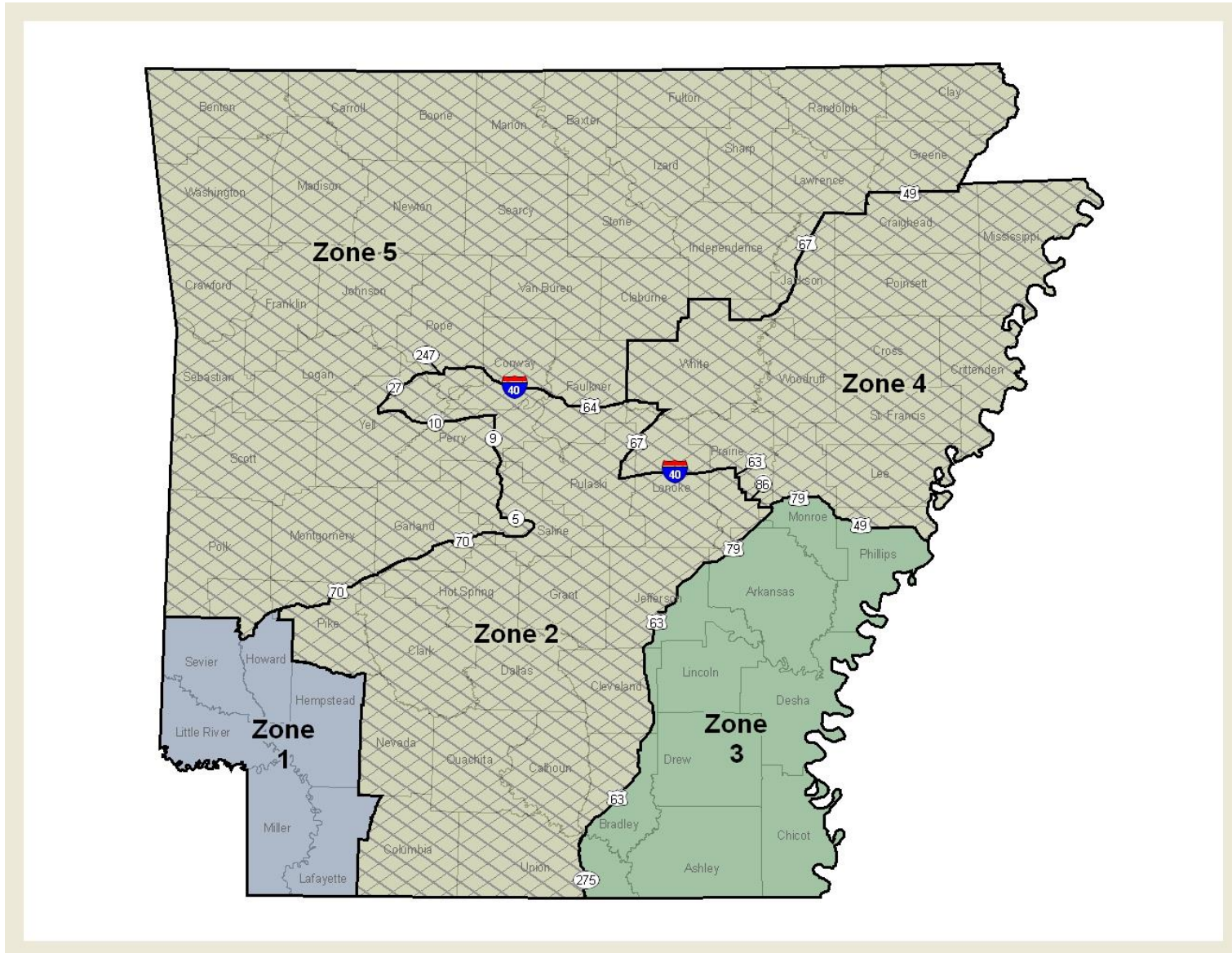


Fig. 1. Current Alligator Management Zones (AMZs); the Alligator sport hunt is permitted in highlighted zones 1 and 3.