



2014 Alligator Management Report



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July 7, 2015

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 2014, 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.

Fifty eight (58) CITES tags were issued to successful Alligator hunters in 2014. The number of nuisance complaints decreased by approximately 30% from 2013 with a total of 60 reports, of which 82% 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 58 Alligators were harvested. Although 103 tags were available for 2014 only 91 permits were issued to qualifying hunters. This represents a 64% hunter success rate and a slight increase from the 2013 harvest with a 60% success rate. The harvest sex ratio was 2.2:1 (M:F), a slight increase from the 2013 harvest ratio of 1.9:1. There were (7) subadults (4-6 ft. size class) harvested in 2014 as opposed to two for the 2013 season. Males continued to be harvested in greater numbers, comprising 69% 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 9.9 ft. compared to 9.2 ft. The maximum size record (13'9") established during the 2013 season still remains the largest alligator harvested to date.

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 2015. Approximately 37.5% of all 2015 surveys exhibited a decrease in the APM metric. The pooled mean APM value for the 2015 post-harvest surveys was 11.0, an increase of 2.1 APM from 2014 (8.9 APM). This is the highest pooled mean APM. The pooled APM values of long-term survey sites from 2008 -2015 range from 5.7 – 11.0, 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 2015. 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 2015 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 is used as a control for comparing trends in the number of nuisance occurrences and population density variation among AMZ's.

CITES Tags Use – A total of 58 CITES tags were issued in 2014 (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 2014, 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 have historically been obtained as juveniles from legally permitted Alligator farmers in Florida or Louisiana.

Nuisance Occurrences – A total of 60 nuisance Alligator occurrences were recorded from 18 counties within AMZs 1–3 (Table 2). The number of nuisance occurrences in 2014 decreased by 30% from 2013. AMZs 1 and 3 accounted for 82% 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 2014 to 65.2 (Table 3).

AMZ 1: Hempstead County had the greatest number (n = 13) of nuisance reports among AMZs and counties; eleven (11) Alligators were harvested in this county (Tables 2 and 4). Miller County had the second greatest number (n = 7) and four (4) Alligators were harvested in Miller County.

AMZ 3: Chicot County had the greatest number (n = 8) of nuisance reports, and two (2) Alligators were harvested from this county. Drew County had the second greatest number (n = 6) of nuisance reports and five (5) Alligators were harvested in this county.

Alligator Harvest – Arkansas’ eighth Alligator sport hunt was held during the last two weekends in September 2014 in AMZ’s 1 and 3. A total of 58 Alligators were harvested out of a possible 91 qualifying permit holders, yielding a 64% hunter success rate. AMZ 1 produced the highest harvest of Alligators in 2014, with a harvest of 30 Alligators; Hempstead County comprised the majority of those taken (Table 4). In AMZ 3 Arkansas County produced the majority of Alligators in 2014 with a harvest of eleven (11) Alligators. Arkansas County consistently produces the greatest number of harvested Alligators (n=11), 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 2014 harvest sex ratio was 2.2:1 (M:F) (Table 5). Seven (7) subadults [4–≤6 ft. total length (TL)], were harvested in 2014, one from AMZ 1 and six from AMZ 3 (Table 4). This is an increase from the 2013 harvest of 2 subadults. The mean TL of all males (n = 40) was 1.2 ft. less than in 2013, though the harvest was significantly lower in 2013 (n = 30) (Table 5). As in 2013, harvested males from AMZ 1 had a higher mean TL than AMZ 3 (Table 6). The mean TL of all females (n = 18) was 0.5 ft. shorter than in 2013. Males comprised 69% of the harvest in 2014 (68 % 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 2014: AMZ 1 (9.9 ft.) and AMZ 3 (9.2 ft.).

2015 Post-Harvest Population Survey – Spotlight survey routes were conducted during April – June 2015 (survey methods are described in the 2007–2008 annual reports). The 2015

post-harvest survey routes (n = 16; Table 7) when combined with historic data allow for long-term trend assessment. Ten (10) of these localities had harvests in 2014. 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 43.8% of all 2014 surveys (Table 7) exhibited a decrease in the APM metric (range -1.8 to -5.3). This is an increase over the 2014 post-harvest survey data where approximately 37.5% of survey routes exhibited decreased APMs. The difference between years can be attributed to flooding, which increased dispersion and decreased observability due to increased aquatic vegetation.

The increase in APM (Δ 30.5) at Grassy Lake is in contrast to the decrease in the APM (Δ - 8.7) between 2013 and 2014 surveys. This population fluctuation is likely an effect of two years of drought conditions in 2011-2012. 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 (89.6 APM). The decrease in APM (Δ -3.5) within the Arkansas River Complex was likely influenced by higher than normal water levels and increased aquatic vegetation resulting in decreased detectability.

The pooled mean APM value for all 2015 post-harvest surveys was 11.0, an increase of 2.1 APM from 2014 (8.9 APM). The 2015 pooled mean was the highest to date. The pooled mean APM (2008 – 2015) ranges from 5.9 to 11.0 with the greatest difference observed between the 2011 and 2012 surveys.

Harvest Estimation and Proposed 2015 Harvest – The recommendations for the proposed 2015 Alligator harvest are based on the data generated from the post-harvest population survey. The following parameters were used in determining the 2015 harvest rate: (1) only observations of Alligators \geq 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 2015 will be a maximum of 103 permits. The Alligator Management Team will recommend that no more than 42 harvest tags be issued in AMZ 1:

thirty- two (32) will be issued to the public through a randomized computer drawing, twelve (12) for specific public lands and twenty (20) for private land-at-large; and ten (10) tags will be issued directly to private landowners with surveyed populations. A maximum of 61 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 twenty-one (21) 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 2016 Alligator harvest will be based on the 2015 post-harvest population survey data. A maximum of 69 tags will be issued for private land-at-large and public land hunts. The number of private land tags issued may vary based upon 2016 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 2014. “Harvested” applies to Alligators taken during the sport hunt. There were no active Alligator farmers in 2014.

Application	<i>N</i>
Harvested	58
Farmed	0
Total	58

Table 2. Number of nuisance occurrences by Alligator Management Zone (AMZ) and county in 2014.

AMZ 1		AMZ 2		AMZ 3	
County	<i>N</i>	County	<i>N</i>	County	<i>N</i>
Hempstead	13	Calhoun	2	Arkansas	1
Howard	2	Clark	2	Ashley	2
Lafayette	2	Columbia	1	Chicot	8
Little River	2	Hot Spring	1	Desha	2
Miller	7	Ouachita	2	Drew	6
		Union	3	Lincoln	1
				Jefferson	2
Total	26		11		23

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
2014	60	64.8

Table 4. Data for 2014 Alligator harvest. (TAPT = Temporary Alligator Possession Tag)

TAPT#	CITES#	AMZ	County	Capture method	Dispatch method	Sex	TL (ft.)
101-1	14-0064	1	Hempstead	harpoon	shotgun	M	7.9
101-3	14-0080	1	Hempstead	harpoon	shotgun	M	10.3
101-4	14-0052	1	Hempstead	harpoon	shotgun	M	8.6
102-1	14-0091	1	Hempstead	harpoon	shotgun	F	6.8
102-10	14-0065	1	Miller	harpoon	shotgun	M	11.8
102-13	14-0079	1	Miller	snare	shotgun	M	8.3
102-15	14-0081	1	Lafayette	harpoon	shotgun	M	8.3
102-16	14-0053	1	Howard	snare	shotgun	M	9.3
102-18	14-0100	1	Lafayette	harpoon	shotgun	F	6.8
102-20	14-0077	1	Little River	harpoon	shotgun	F	7.4
102-4	14-0082	1	Lafayette	harpoon	shotgun	M	11.9
102-5	14-0093	1	Hempstead	harpoon	shotgun	M	11.5
102-6	14-0071	1	Lafayette	harpoon	shotgun	M	10.5
102-8	14-0092	1	Lafayette	harpoon	shotgun	M	11.6
102-9	14-0060	1	Little River	harpoon	shotgun	F	7.1
106-1	14-0062	1	Little River	harpoon	shotgun	M	6.7
106-2	14-0059	1	Little River	harpoon	shotgun	M	9.3
106-3	14-0051	1	Hempstead	harpoon	shotgun	M	13.2
106-4	14-0078	1	Little River	harpoon	shotgun	M	7.9
106-5	14-0054	1	Little River	harpoon	shotgun	M	11.8
110-1	14-0095	1	Hempstead	snare	shotgun	M	7.9
110-2	14-0072	1	Hempstead	snare	shotgun	M	11.6
110-3	14-0090	1	Hempstead	snare	shotgun	M	12'
110-4	14-0094	1	Hempstead	snare	shotgun	M	12.4
111-1	14-0066	1	Miller	snare	shotgun	M	9.6
112-3	14-0076	1	Hempstead	harpoon	shotgun	M	12.3
113-2	14-0067	1	Miller	harpoon	shotgun	M	5.9
114-1	14-0089	1	Lafayette	harpoon	shotgun	F	8.3
115-1	14-0061	1	Little River	harpoon	shotgun	M	7.4
115-2	14-0063	1	Little River	harpoon	shotgun	F	8.4
300-0	14-0045	3	Drew	harpoon	shotgun	M	6.8
300-2	14-0046	3	Drew	harpoon	shotgun	F	4.7
301-1	14-0041	3	Ashley	snare	shotgun	M	11.7
301-2	14-0101	3	Ashley	snare	shotgun	F	9.1
301-3	14-0042	3	Ashley	harpoon	shotgun	F	6.4
302-1	14-0002	3	Arkansas	harpoon	shotgun	F	5.8
302-2	14-0003	3	Arkansas	harpoon	shotgun	F	7.2
303-1	14-0014	3	Desha	snare	shotgun	F	4.2
303-10	14-0047	3	Drew	snare	shotgun	M	7.3

303-12	14-0037	3	Chicot	harpoon	shotgun	M	6.8
303-17	14-0032	3	Desha	harpoon	shotgun	M	12.4
303-18	14-0001	3	Arkansas	harpoon	shotgun	F	5.9
303-2	14-0021	3	Arkansas	harpoon	shotgun	M	7.0
303-4	14-0104	3	Ashley	snare	shotgun	F	4.5
303-5	14-0044	3	Chicot	harpoon	shotgun	M	9.8
303-7	14-0036	3	Desha	harpoon	shotgun	F	8.8
303-9	14-0043	3	Ashley	snare	shotgun	M	7.4
304-1	14-0013	3	Arkansas	harpoon	shotgun	M	9.0
304-11	14-0033	3	Arkansas	harpoon	shotgun	F	5.6
304-15	14-0035	3	Desha	snare	shotgun	M	11.1
304-17	14-0034	3	Arkansas	harpoon	shotgun	M	12.0
304-2	14-0038	3	Arkansas	snare	shotgun	M	8.1
304-3	14-0048	3	Arkansas	snare	shotgun	M	11.8
304-6	14-0031	3	Desha	snare	shotgun	M	8.7
304-7	14-001	3	Arkansas	harpoon	shotgun	F	7.3
305-2	14-0012	3	Arkansas	harpoon	shotgun	F	6.4
306-1	14-0103	3	Drew	snare	shotgun	M	8.7
307-1	14-0102	3	Drew	harpoon	shotgun	M	9.1

Table 5. Comparison of total length (feet) by sex for all sport harvested Alligators in 2014.

Sex	<i>N</i>	Range	Mean (\bar{x})
Male	40	5.9 – 13.1	9.6
Female	18	4.2 – 9.1	6.7

Table 6. Comparison of total length (feet) by AMZ and sex for sport harvested Alligators in 2014.

AMZ 1				AMZ 3			
Sex	<i>N</i>	Range	Mean (\bar{x})	Sex	<i>N</i>	Range	Mean (\bar{x})
Male	24	5.9 – 13.1	9.9	Male	16	6.8 – 12.4	9.2
Female	6	6.7 – 8.4	7.5	Female	12	4.2 – 9.1	6.4

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 2014 and 2015 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	2014 Harvest	Pre-harvest APM*	2008 APM	2009 APM	2010 APM	2011 APM	2012 APM	2013 APM	2014 APM	2015 APM	Δ APM
	Holly Mound	Yes	n/a	1.6	2.5	3.3	1.2	2.0	3.0	1.8	3.0	1.2
	Bois d'Arc Lake	Yes	1.8	4.0	1.8	23.6	5.8	3.6	10.5	5.4	6.0	0.6
	Lake Erling	Yes	1.4	0.4	0.2	1.5	1.3	1.0	0.9	3.4	- ⁴	-
	Lost Lakes	Yes	n/a	15.4	3.9	8.7	6.7	12.2	13.6	9.3	21.6	12.3
1	Yellow Creek/Cypress Bayou	Yes	1.3	2.8	1.5	5.4	3.5	5.0	4.1	7.6	1.9	-5.7
	Grassy Lake	No	30.8	43.5	42.4	51.3 ¹	35.7 ¹	62.9 ¹	67.8 ¹	59.1 ¹	89.6 ¹	30.5
	Mercer Bayou	No	0.6	0.1	0.1	1.2	1.2	1.8	1.8	1.4	1.6	0.2
	Millwood Lake	Yes	0.6	2.7	1.6	4.8	2.3	4.5	2.0	2.7 ¹	1.5 ¹	-1.2
	Beard's Lake	No	1.7	2.7	2.3	4.4	4.8	4.9	3.9	4.2	2.8	-1.4
	Long Lake	No	0.4	0.5	1.2	1.4	3.7	3.3	0.7	0.4	1.1	0.7
2	Bragg Lake	No	1.0	0.9	0.4	0.6	1.1	1.1	1.5	1.5	1.7	0.2
	White Oak Lake	No	0.2	0.1	0.1	0.0	0.1	0.6	0.3	0.4	0.5	0.1
	Arkansas River Complex ²	Yes	4.0	11.0	11.7	13.2	1.7 ³	9.1	8.1	12.7	9.2	-3.5
3	Tillar Duck Club	Yes	5.0	6.6	8.8	11.1	9.0	15.0	12.6	15.2	9.9	-5.3
	McClendon Farm	Yes	3.1	9.4	9.7	13.8	12.1	16.3	14.7	10.6	8.8	-1.8
	Hampton Farm	Yes	5.6	3.3	11.8 ¹	6.4	6.4	8.2	6.3	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.

4= Lake Erling was not surveyed due to a change of ownership

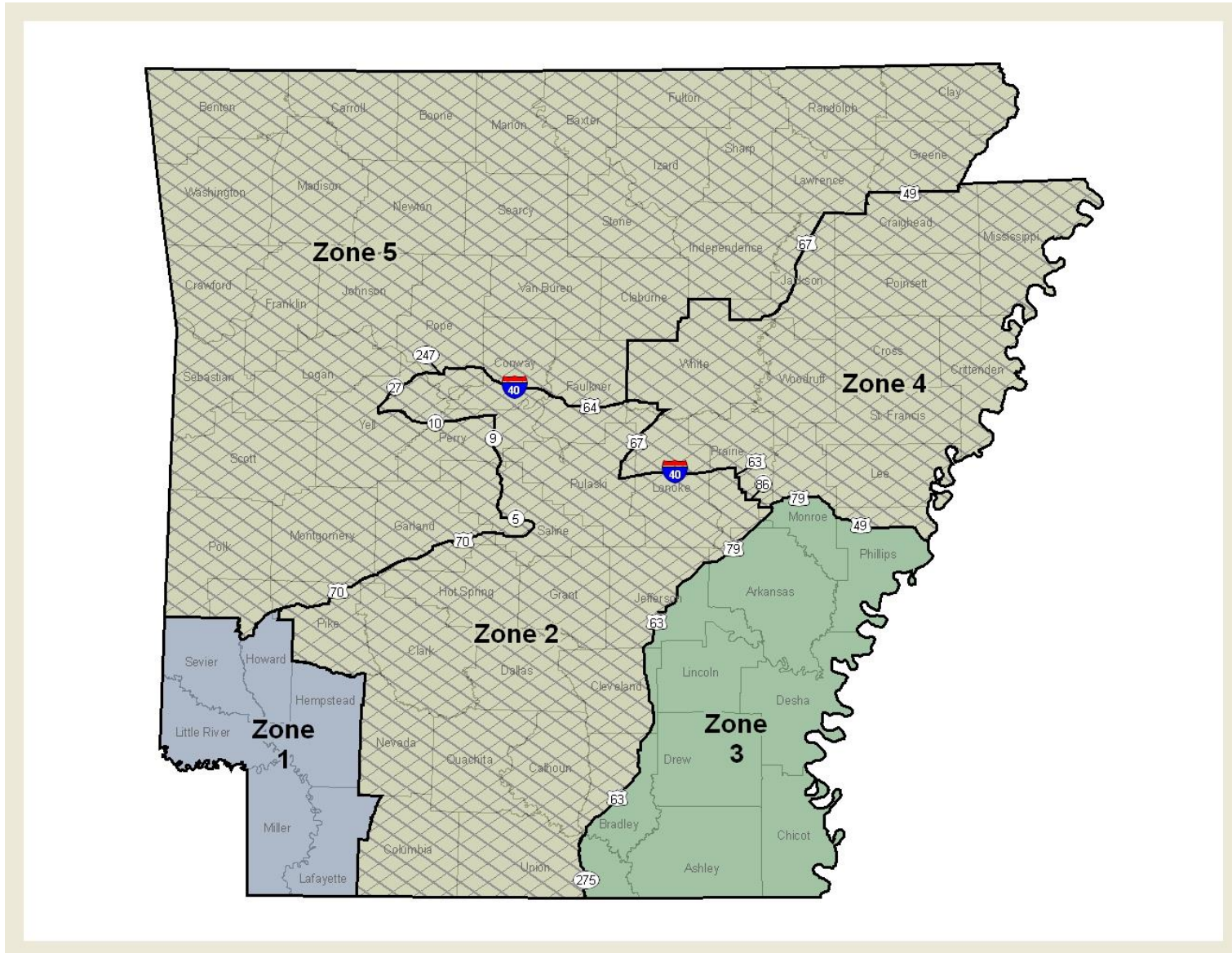


Fig. 1. Current Alligator Management Zones (AMZs); the Alligator sport hunt is permitted in highlighted zones 1 and 3.