



2015 Alligator Management Report



Prepared by Mark Barbee

Alligator Management Team Chair

August 15, 2016

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 2015, 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 nine (49) CITES tags were issued to successful Alligator hunters in 2015. The number of nuisance complaints increased by approximately 30% from 2014 with a total of 83 reports, of which 84% 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 49 Alligators were harvested. Although 103 tags were available for 2015 only 84 permits were issued to qualifying hunters. This represents a 58% hunter success rate and a slight decrease from the 2014 harvest with a 64% success rate. The harvest sex ratio was 5.4:1 (M:F), a significant increase from the 2014 harvest ratio of 2.2:1. There was only one (1) subadult (4-6 ft. size class) harvested in 2015 as opposed to seven for the 2014 season. Males continued to be harvested in greater numbers, comprising 82% of the harvest. Harvested males (for all harvest years) had consistently been larger in AMZ 1 than those from AMZ 3. The 2015 season harvest resulted in a mean TL of 9.4 ft.(AMZ 1) equaled to 9.4 ft.(AMZ 3). A new maximum size harvest record of 13'10" was harvested in AMZ 3. The previous maximum size record (13'9") established during the 2013 season still remains the second 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 2016. Approximately 80% of all 2016 surveys exhibited a decrease in the APM metric. The pooled mean APM value for the 2016 post-harvest surveys was 7.7, a decrease of 3.4 APM from 2015 (11.0 APM). The pooled APM values of long-term survey sites from 2008 -2015 range from 5.7 – 11.0, with the greatest difference still 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 116 Alligator sport hunt permits for 2016. 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 49 CITES tags were issued in 2015 (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 2015, 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 83 nuisance Alligator occurrences were recorded from 18 counties within AMZs 1–3 (Table 2). The number of nuisance occurrences in 2015 increased by approximately 30% from 2014. AMZs 1 and 3 accounted for 84% 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 2015 to 66.1 (Table 3).

AMZ 1: Miller County had the greatest number (n = 16) of nuisance reports among AMZs and counties; one (1) Alligator was harvested in this county (Tables 2 and 4). Hempstead County had the second greatest number (n = 14) and seven (7) Alligators were harvested in Miller County.

AMZ 3: Drew County had the greatest number (n = 4) of nuisance reports, and two (2) Alligators were harvested from this county. Ashley and Chicot County had the second greatest number (n = 6) of nuisance reports and three (3) Alligators were harvested in Ashley and one (1) Alligator in Chicot county.

Alligator Harvest – Arkansas’ ninth Alligator sport hunt was held during the last two weekends in September 2015 in AMZ’s 1 and 3. A total of 49 Alligators were harvested out of a possible 84 qualifying permit holders, yielding a 58% hunter success rate. AMZ 1 produced the second highest harvest of Alligators in 2015, with a harvest of 21 Alligators; Little River County comprised the majority of those taken (Table 4). AMZ 3 produced the highest harvest of Alligators in 2015, with a harvest of 28 Alligators; Arkansas County produced the majority of Alligators in 2015 with a harvest of eighteen (18) 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 thirteen (13) counties in both AMZ 1 and AMZ 3 (Table 4).

Harvest Demographics – The 2015 harvest sex ratio was 5.4:1 (M:F) (Table 5). One (1) subadult [4–≤6 ft. total length (TL)], was harvested in 2015 from AMZ 3 (Table 4). This is a decrease from the 2014 harvest of 7 subadults. The mean TL of all males (n = 40) was 0.2 ft. less than in 2014, though the harvest was significantly higher in 2014 (n = 40) (Table 5). Harvested males from AMZ 1 and AMZ 3 had an equal higher mean TL (Table 6). The mean TL of all females (n = 9) was 1.2 ft. longer than in 2014. Males comprised 82% of the harvest in 2015 (69% in 2014, 68 % in 2013, 77% in 2012, 65% in 2011, 67% in 2010, 58% in 2009, 89% in 2008 and 57% in 2007).

2016 Post-Harvest Population Survey – Spotlight survey routes were conducted during April – June 2016 (survey methods are described in the 2007–2008 annual reports). The 2016 post-harvest survey routes (n = 16; Table 7) when combined with historic data allow for long-term trend assessment. Nine (9) of these localities had harvests in 2015. 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 80% of all 2016 surveys (Table 7) exhibited a decrease in the APM metric (range -0.1 to -3.3). This is an increase over the 2015 post-harvest survey data where approximately 43.8% of survey routes exhibited decreased APMs. The difference between years can again be attributed to fluctuating water events, which increased dispersion and decreased observability due to increased aquatic vegetation.

The decrease in APM (Δ -39.2) at Grassy Lake is in contrast to the increase in the APM (Δ 30.4) between 2014 and 2015 surveys. This population fluctuation is likely an effect of two unusual early year flood events that potentially dispersed the population prior to survey. Only one survey was completed, with no replicate, during the 2016 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 (50.4 APM). The decrease in APM (Δ -3.3) within the Arkansas River Complex was likely influenced by lower than normal water levels and increased aquatic vegetation resulting in decreased detectability and access to remote areas.

The pooled mean APM value for all 2016 post-harvest surveys was 7.7, a decrease of 3.4 APM from 2015 (11.0 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 2016 Harvest – The recommendations for the proposed 2016 Alligator harvest are based on the data generated from the post-harvest population survey. The following parameters were used in determining the 2016 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 2016 will be a maximum of 116 permits. The Alligator Management Team will recommend that no more than 46 harvest tags be issued in AMZ 1: twenty-eight (28) tags will be issued to the public through a randomized computer drawing, eighteen (18) for specific public lands and twenty (20) for private land-at-large; and eighteen (18) tags will be issued directly to private landowners with surveyed populations. A maximum of 70 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 thirty (30) 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 2017 Alligator harvest will be based on the 2016 post-harvest population survey data. A maximum of 100 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 2015. “Harvested” applies to Alligators taken during the sport hunt. There were no active Alligator farmers in 2015.

Application	<i>N</i>
Harvested	49
Farmed	0
Total	49

Table 2. Number of nuisance occurrences by Alligator Management Zone (AMZ) and county in 2015.

AMZ 1		AMZ 2		AMZ 3		AMZ 4		AMZ 5	
County	<i>N</i>	County	<i>N</i>	County	<i>N</i>	County	<i>N</i>	County	<i>N</i>
Hempstead	14	Calhoun	1	Ashley	6			Logan	1
Howard	3	Clark	2	Bradley	1				
Lafayette	2	Columbia	2	Chicot	6				
Little River	7	Ouachita	2	Desha	5				
Miller	16	Union	1	Drew	7				
Sevier	2			Lincoln	2				
				Jefferson	3				
Total	44		8		30				1

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
2003	58	61
2004	50	57.3
2005	47	54.8
2006	36	51
2007	71	54.3
2008	61	55.3
2009	108	61.9
2010	82	64.4
2011	75	65.2
2012	52	64
2013	78	65.2
2014	60	64.8
2015	83	66.1

Table 4. Data for 2015 Alligator harvest. (TAPT = Temporary Alligator Possession Tag)

TAPT#	CITES#	AMZ	County	Capture method	Dispatch method	Sex	TL (ft.)
101-2	15-0013	1	Hempstead	Harpoon	Shotgun	M	9.3
102-1	15-0011	1	Little River	Harpoon	Shotgun	M	9.2
102-10	15-0024	1	Lafayette	Harpoon	Shotgun	M	7.4
102-12	15-0006	1	Hempstead	Snare	Shotgun	M	10.6
102-14	15-0023	1	Lafayette	Harpoon	Shotgun	F	7.7
102-17	15-0032	1	Hempstead	Snare	Shotgun	M	10.8
102-18	15-0021	1	Hempstead	Harpoon	Shotgun	F	8.5
102-20	15-0010	1	Little River	Harpoon	Shotgun	M	6.5
102-6	15-0005	1	Sevier	Harpoon	Shotgun	F	7.4
102-7	15-0031	1	Little River	Snare	Shotgun	M	6.5
102-9	15-0008	1	Howard	Snare	Shotgun	F	7.7
106-1	15-0012	1	Little River	Harpoon	Shotgun	M	8.7
106-2	15-0007	1	Little River	Snare	Shotgun	F	8.5
106-3	15-0002	1	Little River	Harpoon	Shotgun	M	12.3
106-5	15-0001	1	Little River	Snare	Shotgun	F	9.0
106-6	15-0003	1	Sevier	Harpoon	Shotgun	M	12.4
110-3	15-0022	1	Hempstead	Harpoon	Shotgun	M	9.0
110-4	15-0025	1	Hempstead	Harpoon	Shotgun	M	7.0
112-1	15-0009	1	Hempstead	Harpoon	Shotgun	M	10.2
113-2	15-0014	1	Miller	Snare	Shotgun	M	9.8
115-1	15-0004	1	Little River	Snare	Shotgun	M	10.8
202-2	15-0072	3	Arkansas	Harpoon	Shotgun	M	7.1
300-1	15-0103	3	Drew	Harpoon	Shotgun	F	5.6
301-1	15-0091	3	Ashley	Snare	Shotgun	M	12.1
301-2	15-0101	3	Ashley	Snare	Shotgun	M	11.2
301-3	15-0102	3	Ashley	Snare	Shotgun	M	9.7
302-1	15-0074	3	Arkansas	Harpoon	Shotgun	F	9.8
302-3	15-0076	3	Arkansas	Harpoon	Shotgun	M	9.8
303-11	15-0075	3	Arkansas	Snare	Shotgun	M	9.3
303-12	15-0071	3	Arkansas	Harpoon	Shotgun	M	8.5
303-14	15-0092	3	Chicot	Snare	Shotgun	F	7.9
303-17	15-0077	3	Arkansas	Harpoon	Shotgun	M	7.4
303-18	15-0095	3	Drew	Harpoon	Shotgun	M	7.3
303-2	15-0105	3	Drew	Harpoon	Shotgun	M	10.1
304-1	15-0064	3	Arkansas	Harpoon	Shotgun	M	10.2
304-11	15-0093	3	Desha	Harpoon	Shotgun	M	9.5
304-12	15-0073	3	Arkansas	Harpoon	Shotgun	F	6.9
304-13	15-0054	3	Arkansas	Harpoon	Shotgun	M	7.8

304-18	15-0063	3	Arkansas	Harpoon	Shotgun	M	13.8
304-20	15-0053	3	Arkansas	Harpoon	Shotgun	M	6.1
304-3	15-0051	3	Arkansas	Harpoon	Shotgun	M	12.2
304-4	15-0061	3	Arkansas	Harpoon	Shotgun	M	7.2
304-5	15-0055	3	Arkansas	Harpoon	Shotgun	M	9.2
304-6	15-0066	3	Arkansas	Harpoon	Shotgun	M	9.4
304-7	15-0052	3	Arkansas	Harpoon	Shotgun	M	6.9
304-9	15-0062	3	Arkansas	Harpoon	Shotgun	M	11.6
305-2	15-0104	3	Arkansas	Harpoon	Shotgun	M	9.2
307-1	15-0094	3	Drew	Harpoon	Shotgun	M	10.6
309-1	15-0065	3	Lincoln	Harpoon	Shotgun	M	9.6

Table 5. Comparison of total length (feet) by sex for all sport harvested Alligators in 2015.

Sex	<i>N</i>	Range	Mean (\bar{x})
Male	40	6.1 – 13.8	9.4
Female	9	5.6 – 9.8	7.9

Table 6. Comparison of total length (feet) by AMZ and sex for sport harvested Alligators in 2015.

AMZ 1				AMZ 3			
Sex	<i>N</i>	Range	Mean (\bar{x})	Sex	<i>N</i>	Range	Mean (\bar{x})
Male	15	6.5 – 12.4	9.4	Male	24	6.1 – 13.8	9.4
Female	6	7.4 – 9.0	8.1	Female	4	5.6 – 9.8	7.5

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 2015 and 2016 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*	2009 APM	2010 APM	2011 APM	2012 APM	2013 APM	2014 APM	2015 APM	2016 APM	Δ APM
	Holly Mound	Yes	n/a	2.5	3.3	1.2	2.0	3.0	1.8	3.0	3.2	0.2
	Bois d'Arc Lake	Yes	1.8	1.8	23.6	5.8	3.6	10.5	5.4	6.0	3.1	-2.9
	Lake Erling	Yes	1.4	0.2	1.5	1.3	1.0	0.9	3.4	- ⁴	- ⁴	- ⁴
	Lost Lakes	Yes	n/a	3.9	8.7	6.7	12.2	13.6	9.3	21.6	19.8	-1.8
1	Yellow Creek/Cypress Bayou	Yes	1.3	1.5	5.4	3.5	5.0	4.1	7.6	1.9	6.2	4.3
	Grassy Lake	No	30.8	42.4	51.3 ¹	35.7 ¹	62.9 ¹	67.8 ¹	59.1 ¹	89.6 ¹	50.4 ¹	-39.2
	Mercer Bayou	No	0.6	0.1	1.2	1.2	1.8	1.8	1.4	1.6	0.3	-1.3
	Millwood Lake	Yes	0.6	1.6	4.8	2.3	4.5	2.0	2.7 ¹	1.5 ¹	1.4	-0.1
	Beard's Lake	No	1.7	2.3	4.4	4.8	4.9	3.9	4.2	2.8	3.4	0.6
	Long Lake	No	0.4	1.2	1.4	3.7	3.3	0.7	0.4	1.1	0.0	-1.1
2	Bragg Lake	No	1.0	0.4	0.6	1.1	1.1	1.5	1.5	1.7	1.1	-0.6
	White Oak Lake	No	0.2	0.1	0.0	0.1	0.6	0.3	0.4	0.5	0.3	-0.2
	Arkansas River Complex ²	Yes	4.0	11.7	13.2	1.7 ³	9.1	8.1	12.7	9.2	5.9	-3.3
3	Tillar Duck Club	Yes	5.0	8.8	11.1	9.0	15.0	12.6	15.2	9.9	8.3	-1.6
	McClendon Farm	Yes	3.1	9.7	13.8	12.1	16.3	14.7	10.6	8.8	6.8	-2.0
	Hampton Farm	Yes	5.6	11.8 ¹	6.4	6.4	8.2	6.3	6.3	6.3	5.7	-0.6

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

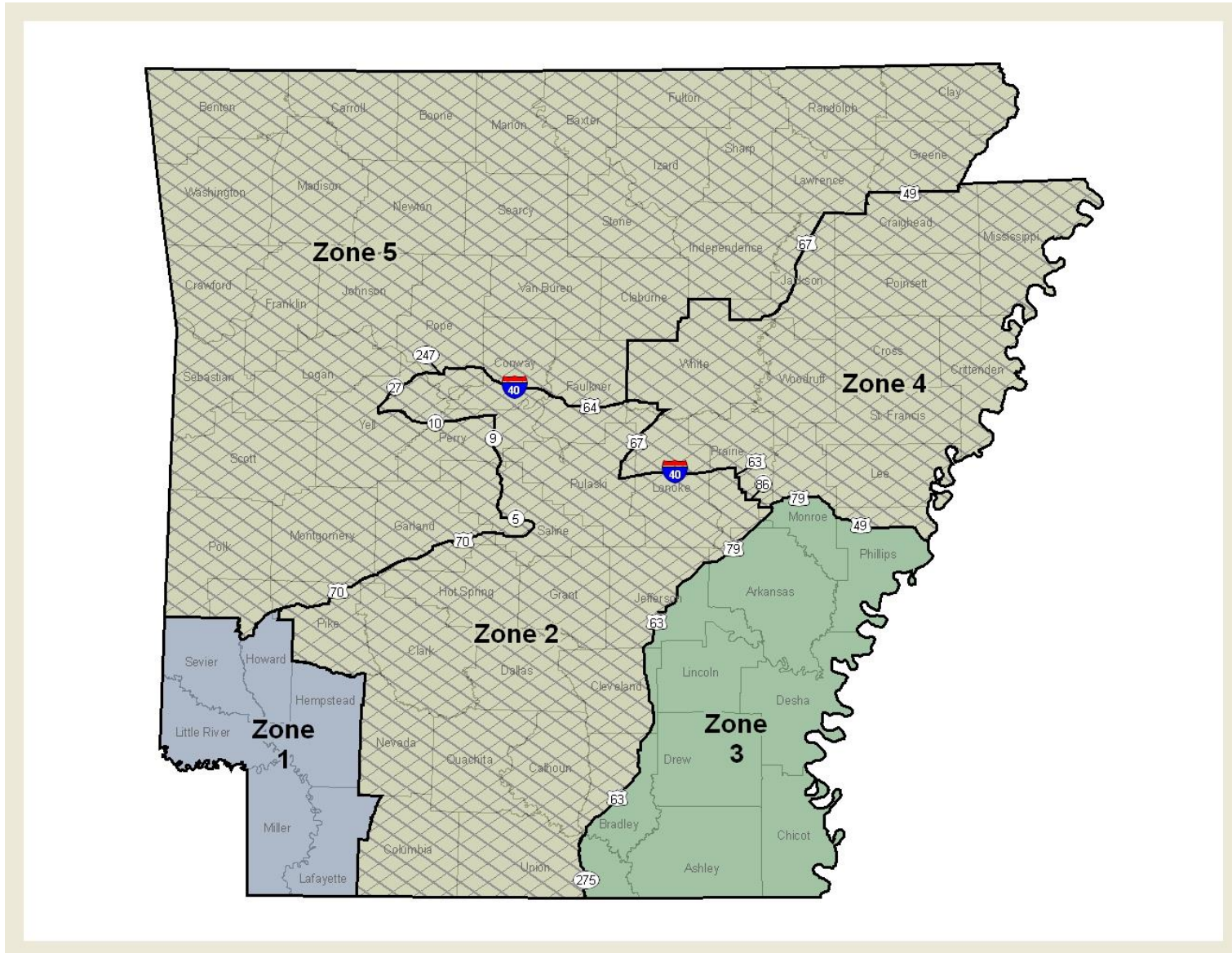


Fig. 1. Current Alligator Management Zones (AMZs); the Alligator sport hunt is permitted in highlighted zones 1 and 3.