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LOUISIANA'S ALLIGATOR MANAGEMENT PROGRAM

2020-2021 ANNUAL REPORT

Presented to

The House Committee on Natural Resources and Environment &
The Senate Committee on Natural Resources

Prepared by

Louisiana Department of Wildlife & Fisheries
Office of Wildlife,
Coastal & Nongame Resources Division

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

ALLIGATOR MANAGEMENT PROGRAM

2020-2021 ANNUAL REPORT

The charge of the Louisiana Department of Wildlife and Fisheries is to protect, conserve and replenish the natural resources, wildlife and aquatic life of the state.

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INTRODUCTION

The Louisiana Department of Wildlife and Fisheries (LDWF) manages the American alligator (*Alligator mississippiensis*) as a commercial, renewable natural resource. LDWF's sustained use program is one of the world's most recognizable examples of a wildlife conservation success story. Louisiana's program has been used as a model for managing various crocodilian species throughout the world. Since the inception of LDWF's program in 1972, over 1.1 million wild alligators have been harvested, over 11.5 million alligator eggs have been collected, and nearly 7.6 million farm raised alligators have been sold bringing in millions of dollars of revenue to landowners, trappers and farmers. Conservative estimates have valued these resources at over $245 million annually, providing significant, direct economic benefit to Louisiana.

This report, per R.S. 56:279 (E), provides a historical perspective, outlines the basis and philosophy of LDWF's management program, reviews the federal government's oversight and approval role for management of the alligator in the United States, discusses wild, farm and nuisance alligator programs, lists research activities, and reviews the revenue and expenditure information associated with the management program and the Louisiana Alligator Resource Fund. A separate report, furnished by LDWF, details the activities and expenditures of the Alligator Advisory Council.

HISTORICAL PERSPECTIVE

Alligators have been used commercially for their valuable leather since the 1800s. This harvest was generally unregulated throughout the 1900s, until a gradual population decline resulted in severely reduced harvests in the early 1950s. In 1962, the alligator season in Louisiana was closed, and research studies focusing on basic life history factors were undertaken which led to development of a biologically sound management program. Of tremendous importance was the establishment of a rigorous survey method to estimate and monitor population trends.

From 1962 through August 1972, alligators were totally protected. During this time a myriad of state and federal laws regulating harvest distribution and allocation of take, methods of harvest and possession, transportation and export of live alligators, alligator skins and their products was enacted. Similarly, in 1970 the Louisiana Legislature recognized that the alligator's value, age at sexual maturity, and vulnerability to hunting required unique consideration and passed legislation providing for a closely regulated experimental commercial harvest.

The goals of the LDWF's alligator program are to manage and conserve Louisiana's alligators as part of the state's wetland ecosystem, provide benefits to the species, its habitat and the other species of fish and wildlife associated with alligators. The basic philosophy was to develop a sustained use management program which, through regulated harvest, would provide long term benefits to the survival of the species, maintain its habitats, and provide significant economic benefits to the citizens of the state. Since Louisiana's coastal alligator habitats are primarily privately owned (approximately 81%), our sustained use management program provides direct economic benefit and incentive to private landowners, and alligator hunters who lease land, to protect the alligator and to protect, maintain, and enhance the alligator's wetland habitats. One of the most critical components of the management program was to develop the complex set of regulations which required individual applications for each property to be considered for tag allocation, landowner permission, proof of ownership and detailed review of habitat quality related to alligator abundance, all of which combined to equitably distribute the harvest in relation to population levels.

During the period of total protection (1962-1971) alligator populations increased quickly and by 1972 LDWF was ready to initiate its new sustained use management program. On Sept. 5, 1972 the alligator season was reopened in Cameron Parish and a total of 59 hunters harvested 1,350 alligators. The season was expanded to include Vermilion Parish in 1973, Calcasieu Parish in 1975, an additional nine coastal parishes in 1979 and statewide in 1981 (*Table 1*).

TABLE 1. *Louisiana Alligator Season Dates, Area Open, Harvest Level and Tag Cost, 1972-2020*

YEAR	SEASON DATES	# OF DAYS	PARISHES	TAG FEE	
				AMOUNT	PAID BY
1972	Sept. 5-17	13	Cameron	$5.00[2]	hunter/farmer
1973	Sept. 10-28	19	Added Vermilion	$5.00[2]	hunter/farmer
1975	Sept. 20 - Oct. 19	30	Added Calcasieu	$5.00[2]	hunter/farmer
1976	Sept. 9 - Oct. 8	30	No Change	$5.00[2]	hunter/farmer
1977	Sept. 1-30	30	No Change	$5.00[2]	hunter/farmer
1979	Sept. 7 - Oct. 7	31	Coastwide1	$5.00[2]	hunter/farmer
1980	Sept. 4 - Oct. 4	31	No Change	$5.00[2]	hunter/farmer
1981	Aug. 31 - Sept. 30	31	Statewide	$5.00[2]	hunter/farmer
1982	Sept. 4 - Oct. 3	30	Statewide	$5.00[2]	hunter/farmer
1983	Sept. 10 - Oct. 9	30	Statewide	$5.00[2]	hunter/farmer
1984	Sept 8 - Oct. 7	30	Statewide	$5.00[2]	hunter/farmer
1985	Aug. 31 - Sept. 30	31	Statewide	$5.00[2]	hunter/farmer
1986	Sept. 6 - Oct. 6	31	Statewide	$5.00[2]	hunter/farmer
1987	Sept. 5 - Oct. 5	31	Statewide	$5.00[2]	hunter/farmer
1988	Sept. 10 - Oct. 10	31	Statewide	$2.00/tag	hunter/farmer
1989	Sept. 9 - Oct. 8	30	Statewide	$4.00/tag	hunter/farmer
1990	Sept. 1-30	30	Statewide	$4.00/tag	hunter/farmer
1991	Aug. 31 - Sept. 29	30	Statewide	$4.00/tag	hunter/farmer
1992	Sept. 10 - Oct. 4	25	Statewide	$4.00/tag	hunter/farmer
1993	Sept. 11 - Oct. 10	30	Statewide	$4.00/tag	fur dealer/shipper
1994	Sept. 3 - Oct. 2	30	Statewide	$4.00/tag	fur dealer/shipper
1995	Sept. 2 - Oct. 1	30	Statewide	$4.00/tag	fur dealer/shipper
1996	Sept. 7 - Oct. 6	30	Statewide	$4.00/tag	fur dealer/shipper
1997	Sept. 6 - Oct. 5	30	Statewide	$4.00/tag	fur dealer/shipper
1998	Sept. 2 - Oct. 1	30	Statewide	$4.00/tag	fur dealer/shipper
1999	Sept. 1 - 30	30	Statewide	$4.00/tag	fur dealer/shipper
2000	Aug. 30 - Sept. 30	32	Statewide	$4.00/tag	fur dealer/shipper
2001	Aug. 29 - Sept. 30	33	Statewide	$4.00/tag	fur dealer/shipper
2002	Aug. 28 - Sept. 30	34	Statewide	$2.00/tag	fur dealer/shipper
2003	Sept. 3 - Oct. 2	30	Statewide	$2.00/tag	fur dealer/shipper
2004	Sept. 1 - 30	30	Statewide	$3.00/tag	fur dealer/shipper
2005[3]	Sept. 14 - Oct. 30	46	Statewide	$4.00/tag	fur dealer/shipper
2006	Sept. 6 - Oct. 5	30	Statewide	$4.00/tag	fur dealer/shipper
2007[4]	Aug. 29 - Sept. 27	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 5 - Oct. 4	30	West Zone		
2008[5]	Aug. 27 - Oct. 19	54	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 3 - Oct. 19	47	West Zone		
2009	Aug. 26 - Sept. 24	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 2 - Oct. 1	30	West Zone		
2010	Aug. 25 - Sept. 23	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 1 - 30	30	West Zone		
2011	Aug. 31 - Sept. 29	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 7 - Oct. 6	30	West Zone		
2012[6]	Sept. 1 - Oct. 4	34	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 5 - Oct. 4	30	West Zone		
2013	Aug. 28 - Sept. 26	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 4 - Oct. 3	30	West Zone		
2014	Aug. 27 - Sept. 25	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 3 - Oct. 2	30	West Zone		
2015	Aug. 26 - Sept. 24	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 2 - Oct. 1	30	West Zone		
2016	Aug. 31 - Sept. 29	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 7 - Oct. 6	30	West Zone		
2017	Aug. 30 - Sept. 28	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 6 - Oct. 5	30	West Zone		
2018	Aug. 29 - Sept. 27	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 5 - Oct. 4	30	West Zone		
2019	Aug. 28 - Sept. 26	30	East Zone	$4.00/tag	fur dealer/shipper
	Sept. 4 - Oct. 3	30	West Zone		
2020[7]	Aug. 26 – Oct. 24	60	East Zone	$3.00/tag	fur dealer/shipper
	Sept. 2 – Oct. 31	60	West Zone		

1. *Added Iberia, St. Mary, Terrebonne, Lafourche, St. Charles, Jefferson, Plaquemines, St. Bernard and St. Tammany*
2. *Per issuance, regardless of number*
3. *Opening date was postponed and season was extended due to Hurricanes Katrina and Rita*
4. *State was divided into alligator hunting zones (east and west) from 2007 to present*
5. *Season was extended due to Hurricanes Gustav and Ike*
6. *East Zone season was postponed and extended due to Tropical Storm Isaac*
7. *Tag issuing schedule for West Zone altered by impacts of Hurricanes Laura and Delta*

OVERSIGHT BY THE U.S. FISH & WILDLIFE SERVICE

Five years after Louisiana closed the alligator harvest season, the alligator was listed under the federal Endangered Species Act in 1967. At this time the alligator was considered an endangered species throughout its range. In March of 1974, Louisiana petitioned the Secretary of the Interior, requesting that populations of the alligator in Louisiana be removed from the list of threatened and endangered species in Cameron, Vermilion and Calcasieu parishes. In subsequent years, similar petitions sought to reclassify the alligator, first in nine additional coastal parishes in 1978 and then statewide in 1981. Each of these petitions was based on results of detailed scientific study and the demonstrated success of the early harvest programs.

Export of alligator skins and products out of the United States is regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This treaty, which became effective in 1975, regulates the international trade in protected species; its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The U.S. Fish and Wildlife Service (USFWS) administers CITES requirements and controls for the United States. The species covered by CITES are listed on one of three appendices, according to the degree of protection needed. Currently, the alligator is listed on Appendix II of CITES, because of their similarity of appearance to other crocodilians that are truly endangered or threatened.

In order to fulfill CITES requirements, USFWS, through a series of rulemakings, has developed a complex set of requirements with which the individual states, including Louisiana, must comply in order to be granted export approval for harvested alligator skins and products. The most critical component in these requirements is that LDWF must certify on an annual basis that the harvest programs we administer will not be detrimental to the survival of the species. The "no detriment" finding is predicated on our assessment of the current condition of the alligator population, including trends, population estimates or indices, data on total harvest, harvest distribution and habitat suitability evaluation. Additionally, the management program must provide for a rigorously controlled harvest with calculated harvest level objectives. All alligators and eggs harvested must be taken from specifically identified properties and all hides individually tagged (with approved, serially marked CITES export tags furnished by USFWS). USFWS requires strict accountability for each tag allocated to the harvester, requiring all unused tags be returned at the close of the season.

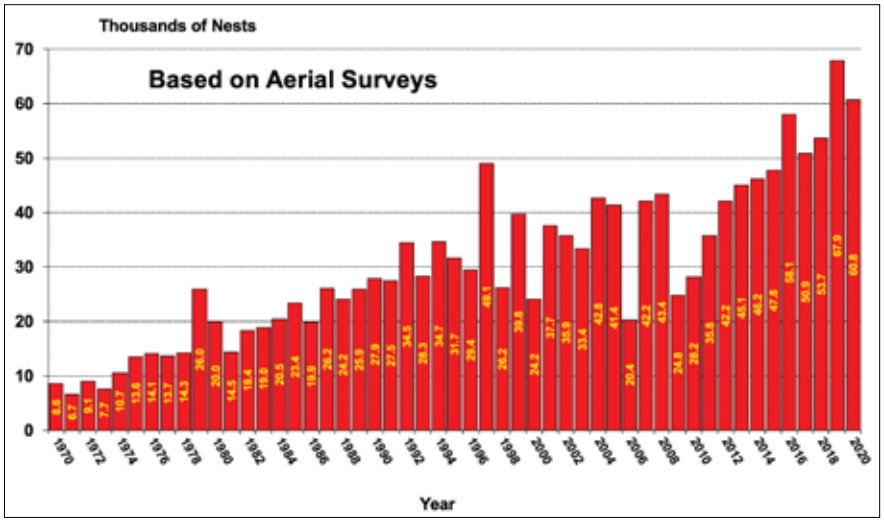
WILD ALLIGATOR MANAGEMENT PROGRAM

In 1970, the Louisiana State Legislature (Act 550) gave LDWF full authority to regulate alligators in Louisiana. Since that time, LDWF has annually inventoried alligator nest production throughout coastal Louisiana in order to assess the status of alligator populations. Results of annual alligator nest surveys are compiled to provide estimates of nest density (acres per nest) by parish and by habitat type (brackish, intermediate, or fresh marshes). Private and publicly owned lands (state and federal refuges and wildlife management areas) are compiled separately.

In June/July 2020, over 2,800 miles of transects were flown, surveying 135,000 acres of wetland habitat. The sampling intensity covers approximately 3.4% of 2.3 million acres of private coastal wetlands, and 3.4-10.8% of some 622,000 acres of public coastal wetlands. During the summer of 2020 we estimated that 60,794 alligator nests were present in coastal marsh habitats (an 11% decrease from 2019). At the time, the 2020 nest survey was the second highest nest count on record (*Figure 1*).

Nest density and alligator population estimates are combined with a detailed review of harvest parameters and a general assessment of environmental factors observed during each survey to determine final harvest level objectives. Over 50 individual alligator harvest quotas are developed annually in order to distribute the harvest in relation to alligator abundance in the various habitats across the state. A listing of the 2020 wild alligator harvest quotas is appended as Exhibit 1. In the best habitat one alligator is harvested per 55 acres, while in the poorer habitats one alligator is harvested per 400 acres.

FIGURE 1. LOUISIANA COASTAL MARSH ALLIGATOR NEST PRODUCTION (1970-2020)



Alligator hunters annually submit a description of the property on which they have permission to hunt. LDWF assesses the habitat quantity and quality and determines the number of alligators that can be harvested by each hunter. This methodology ensures that alligators are harvested in proportion to their population levels and that the harvest will not negatively impact populations at any location. The currently approved quota system represents an allowable wild alligator harvest, which coupled with the state authorized wild alligator egg harvest program represents a level of population utilization currently unparalleled in the world of crocodilian management.

Under this sustained use alligator program, over 1.1 million wild alligators have been harvested since 1972 (*Table 2*). The annual harvest takes place in September and October to specifically target the adult males and immature segments of the alligator population. Adult females, which typically inhabit interior marshes in the fall, would be more susceptible to harvest if the season was scheduled during the spring or summer. During the 2020 wild season, a total of 13,700 alligators were harvested by 2,568 licensed alligator hunters. Alligators harvested averaged 7.6 feet in length (*Figure 2*), with an estimated value of nearly $3 million. This decrease in harvest is the result of reduced hunting effort in the West Zone due to the negative impacts of Hurricanes Laura and Delta, as well as a depressed hide market worldwide caused by the COVID-19 pandemic.

Each year the alligator program staff works closely with landowners and alligator hunters to provide assistance regarding alligator management on their respective properties. We have provided numerous habitat based maps to landowners for their use in participation in both the wild and alligator egg harvest programs. Harvest reports summarizing average lengths and size class frequency distribution of harvested alligators are available upon request.

FIGURE 2. LOUISIANA WILD ALLIGATORS HARVESTED (2020 REGULAR HARVEST SKIN LENGTHS)

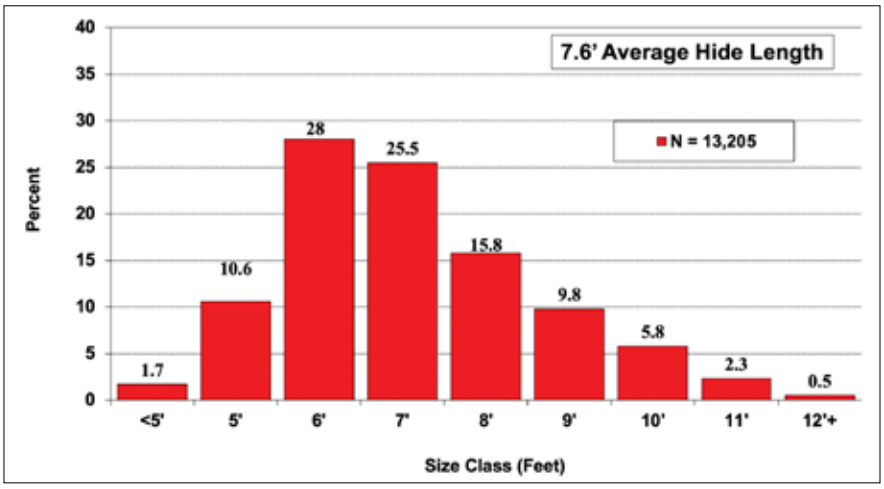


TABLE 2. *September Wild Alligator Harvest in Louisiana, 1972-2020*[1]

YEAR[2]	COMMERCIAL HUNTERS	TAGS ISSUED	# TAKEN	% SUCCESS	AVG. TOTAL LENGTH IN FT.	SKIN VALUE		MEAT[4]	
						AVG./FOOT	TOTAL	AMOUNT (LBS)	VALUE
1972	59	1,961	1,350	68.8	6.92	$8.10	$75,670	[3]	[3]
1973	107	3,243	2,921	90.1	7.58	$13.13	$290,714	[3]	[3]
1975	191	4,645	4,420	95.2	7.51	$7.88	$261,570	[3]	[3]
1976	198	4,767	4,389	92.1	7.09	$16.55	$515,003	[3]	[3]
1977	236	5,760	5,474	95	7.35	$12.23	$492,061	[3]	[3]
1979	708	17,516	16,300	93	6.92	$15.00	$1,691,940	100,089	$125,000
1980	796	19,134	17,692	92.5	6.59	$13.00	$1,515,674	100,089	$125,000
1981	913	15,534	14,870	95.7	6.92	$17.50	$1,800,757	100,089	$125,000
1982	1,184	18,188	17,142	94.2	6.82	$13.50	$1,578,264	100,089	$125,000
1983	945	17,130	16,154	94.3	6.92	$13.00	$1,453,214	100,089	$125,000
1984	1,104	18,386	17,389	94.6	6.99	$21.00	$2,552,531	100,089	$125,000
1985	1,076	17,466	16,691	95.6	7.09	$21.00	$2,485,123	150,133	$675,000
1986	1,207	23,267	22,429	96	6.92	$23.00	$3,569,800	310,275	$1,395,000
1987	1,370	24,635	23,892	97	7.09	$40.00	$6,775,771	500,444	$2,250,000
1988	1,545	24,111	23,526	98	7.25	$48.00	$8,187,048	600,533	$3,000,000
1989	1,769	25,492	24,846	97.4	7.25	$50.00	$9,006,675	747,448	$3,000,000
1990	1,916	25,920	25,644	98.9	7.25	$57.00	$10,597,383	701,063	$3,000,000
1991	2,001	24,646	24,011	97.4	7.45	$32.00	$5,724,222	684,109	$2,935,000
1992	1,696	25,551	24,313	95.2	7.25	$23.00	$4,054,193	687,835	$2,951,520
1993	1,702	24,805	23,991	96.7	7.25	$23.00	$4,000,499	687,615	$2,889,000
1994	1,774	27,694	27,120	97.9	7.35	$37.00	$7,375,284	771,610	$3,243,000
1995	1,877	28,931	28,442	98.3	7.35	$41.00	$8,570,997	809,088	$3,400,000
1996	1,947	26,578	25,793	97.0	7.41	$25.00	$4,778,153	734,793	$3,967,800
1997	1,973	29,900	29,085	97.3	7.08	$18.00	$3,706,592	828,423	$4,473,000
1998	1,888	30,198	28,639	94.8	7.08	$15.00	$3,041,462	804,679	$4,350,000
1999 regular	1,902	33,239	32,064	96.5	7.17	$22.00	$5,057,775	909,398	$4,881,000
1999 bonus		3,348	3,206	95.8	5.75	$15.50	$285,735	44,335	$237,250
2000 regular	1,941	31,999	30,532	95.4	7.17	$27.00	$5,910,690	1,061,903	$5,702,419
2000 bonus		3,299	3,146	95.4	5.75	$23.00	$416,059	56,785	$303,801
2001 regular	1,916	32,669	31,867	97.5	7.33	$22.00	$5,138,872	732,941	$3,298,235
2001 bonus		3,402	3,281	96.4	5.83	$20.00	$382,565	75,463	$339,584
2002 regular	1,955	31,757	30,451	95.9	7.25	$16.00	$3,532,316	700,373	$3,151,679
2002 bonus		3,370	2,932	87.0	5.83	$16.00	$273,497	67,436	$303,462
2003 regular	1,873	30,513	28,555	93.6	7.17	$13.00	$2,661,612	656,765	$2,955,443
2003 bonus		3,290	3,026	92.0	5.83	$13.00	$229,341	69,598	$313,191
2004 regular	1,859	31,530	30,406	96.4	7.17	$22.50	$4,905,248	699,338	$3,147,021
2004 bonus		3,705	3,518	95.0	5.83	$22.50	$461,474	80,914	$364,113
2005 regular	1,933	32,487	27,668	85.2	7.25	$34.50	$6,920,459	636,364	$2,863,638
2005 bonus		4,078	3,507	86.0	5.83	$34.50	$705,380	80,661	$362,975
2006 regular	1,872	28,501	27,319	95.9	7.42	$39.00	$7,905,572	628,337	$2,827,517
2006 bonus		3,710	3,538	95.4	6.00	$39.00	$827,892	81,374	$366,183
2007 regular	2,051	33,498	31,127	92.9	7.50	$38.50	$8,987,921	715,921	$3,221,645
2007 bonus		4,226	3,884	91.9	6.00	$38.50	$897,204	89,332	$401,994
2008 regular	2,222	36,299	31,774	87.5	7.50	$34.50	$8,221,523	730,802	$3,288,609
2008 bonus		4,425	3,851	87.0	6.00	$34.50	$797,157	88,573	$398,579
2009[5]	1,687	24,427	9,143	37.4	7.42	$7.50	$508,808	210,289	$946,301
2010	2,052	31,881	26,536	83.2	7.50	$13.00	$2,587,260	610,328	$2,746,476
2011	2,593	35,749	32,745	91.6	7.42	$17.00	$4,130,454	753,135	$3,389,108
2012	2,959	37,431	34,444	92.0	7.53	$23.50	$6,095,038	792,212	$5,545,484
2013	3,193	38,027	35,592	93.6	7.52	$29.00	$7,761,903	818,616	$5,730,312
2014	3,288	38,491	36,301	94.3	7.6	$29.00	$8,000,740	834,923	$5,844,461
2015	3,361	38,666	35,540	91.9	7.44	$23.50	$6,213,814	817,420	$5,721,940
2016	3,281	38,261	34,237	89.5	7.51	$17.00	$4,371,038	787,451	$5,512,157
2017	2,608	25,502	15,103	59.2	7.55	$7.50	$855,207	347,369	$2,431,583
2018	2,773	27,834	20,168	72.5	7.53	$7.50	$1,138,988	463,864	$3,247,048
2019	2,861	31,255	23,828	76.2	7.55	$7.50	$1,349,261	548,044	$3,836,308
2020[6]	2,568	23,550	13,700	58.2	7.6	$7.50	$780,900	315,100	$2,205,700

1. *Does not include Salvador WMA harvests from 1972-2003 and Marsh Island experimental, nuisance, and farm harvests from 1972-present.*
2. *The bonus tag program was initiated in 1999 to increase the overall number of wild alligators harvested without putting any additional pressure on the 6 feet and over portion of the wild population. The bonus tag program was suspended in 2009.*
3. *Sale of meat not permitted; La. Health Department regulations first allowed meat sales in 1979.*
4. *Bone in from 1979-1984, deboned from 1985-present.*
5. *Worldwide economic recession caused alligator hide demand to decline dramatically.*
6. *Worldwide COVID-19 pandemic and Hurricanes Laura and Delta in West Zone*

NOTE: Subject to change, numbers updated October 1, 2021.

FARMING/RANCHING PROGRAM

Early alligator farms in Louisiana were generally small, family owned operations; and often ran more as a hobby/curiosity than a commercial enterprise. Extensive studies done by LDWF biologists showed alligators could be efficiently cultured and grown in captivity. Egg ranching (collection of alligator eggs from the wild) proved more economical and successful than captive breeding; private egg collections were first permitted, on a limited basis, in 1986.

Louisiana's alligator ranching program increased dramatically between 1986 and 1990. To ensure wild alligators were not depleted as a result of egg collections, and to ensure future recruitment of sub-adult alligators to the breeding population, LDWF currently requires a quantity of juvenile alligators equal to 10% of the eggs hatched by the rancher be returned to the wild within two years of hatching.

A variable return rate was established based on the estimated survival rates for wild juvenile alligators. Using the relationship of survival between size classes, we extrapolated return rates based on expected survival rates for alligators from 36 to 60 inches. More alligators must be returned if the average total length is smaller, and fewer animals are required if the average length is larger. Close monitoring of the survival of these alligators will continue for many years.

Enormous effort has been made by LDWF to monitor the fate of the alligators released to the wild. In 2020 we released a total of 55,366 farm raised alligators into the wild to maintain wild alligator populations. Each alligator released is measured, sexed, tail-notched, tagged and recorded prior to release to the same area where the farmers had originally harvested the eggs. Although it is costly to the ranchers to fulfill the "returns to the wild" obligation, it is an integral necessity of the program, considering the large number of eggs collected. In 2020, a total of 303,883 wild alligator eggs were collected producing 260,192 hatchling alligators (*Table 3*).

As of December 2020 there were 59 licensed farmers in Louisiana with on farm inventories totaling 788,224 alligators (*Figure 3*). During the 2020 tag year (January 2020 through December 2020) an estimated 374,961 farm-raised alligators were harvested, averaging 27.2 cm belly width (Figure 4). The total estimated value of these alligators was $74 million (*Table 4*).

FIGURE 3. LOUISIANA ALLIGATOR FARM INVENTORIES AND DENSITIES BY PARISH (DECEMBER 2020)

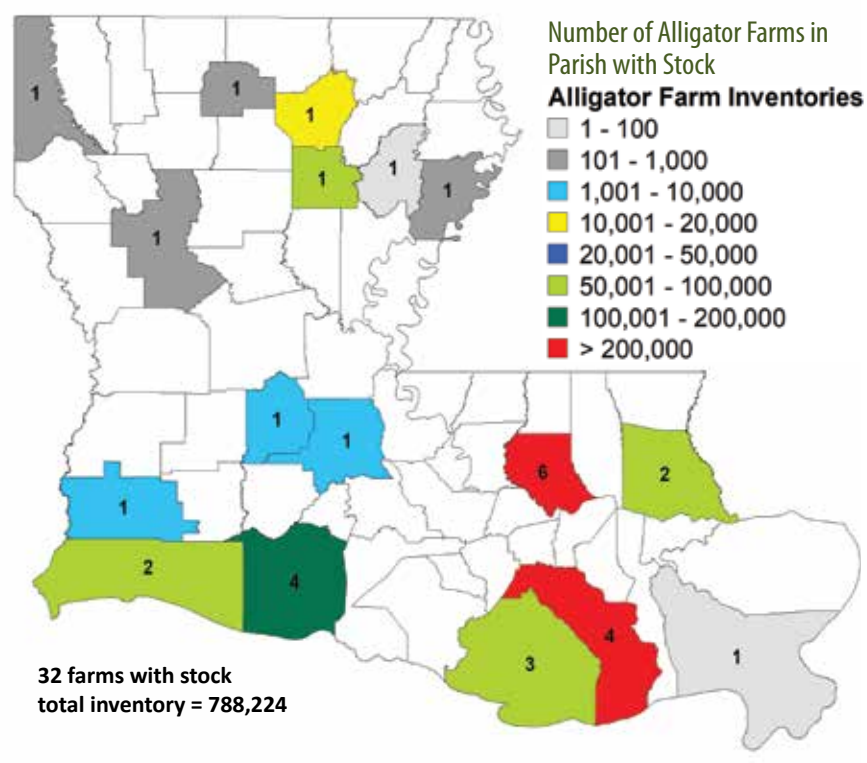
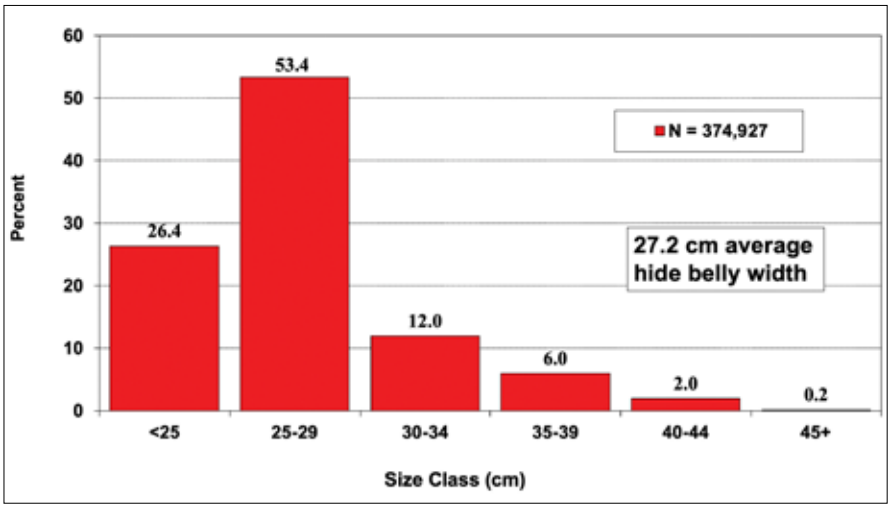


FIGURE 4. LOUISIANA FARM ALLIGATORS HARVESTED (2020 SKIN BELLY WIDTHS)



Beginning late winter and continuing into spring and summer of 2009, the worldwide economic recession significantly impacted world trade in raw and tanned alligator skins and manufactured products. Egg harvest numbers rebounded in 2011 and 2012, although some eggs were lost to coastal flooding in June 2012. Since early 2010, price and demand for farm-raised alligators has continued to recover. The estimated nest count of 60,794 was the second highest on record. With wild egg collections reaching 650,878 in 2019 and 303,883 in 2020, alligator farm inventories have remained above pre-recession numbers since late 2016.

TABLE 3. *Louisiana Alligator Ranching (1986-2020)*

YEAR	# OF PERMITS	EGGS COLLECTED	EGGS HATCHED	HATCH RATE	ALLIGATORS RETURNED TO WILD
1986	3	2,903	1,985	68.4%	none
1987	19	18,041	13,782	76.4%	none
1988	60	64,887	50,394	77.7%	1,680
1989	139	181,819	137,323	75.5%	7,078
1990	233	293,412	231,434	78.9%	6,088
1991	225	198,089	165,054	83.3%	44,415
1992	172	164,892	133,463	80.9%	35,230
1993	140	155,891	123,666	79.3%	29,015
1994	158	266,408	223,011	83.7%	21,632
1995	226	314,371	261,428	83.2%	20,795
1996	273	279,237	233,076	83.5%	40,919
1997	266	377,636	321,641	85.2%	48,171
1998	281	280,870	240,118	85.5%	36,732
1999	288	382,611	332,428	86.9%	44,171
2000	322	279,217	236,313	84.6%	39,559
2001	322	354,636	294,405	83.0%	48,288
2002	353	354,523	304,448	85.9%	32,716
2003	376	357,757	307,805	86.0%	50,417
2004	397	397,569	350,661	88.2%	47,431
2005	440	507,315	441,298	87.0%	35,992
2006	483	271,790	224,724	82.7%	40,694
2007	508	501,075	426,385	85.1%	61,913
2008	552	529,527	459,928	86.9%	48,578
2009*	253	29,822	25,077	84.1%	54,391
2010	454	205,261	173,483	84.5%	27,121
2011	531	353,176	300,546	85.1%	14,357
2012	526	413,648	349,514	84.5%	24,489
2013	560	498,285	432,386	86.8%	38,349
2014	593	528,719	468,142	88.5%	46,794
2015	651	465,100	394,231	84.8%	51,316
2016	685	616,546	548,416	88.9%	58,106
2017	680	387,373	332,711	85.9%	49,112
2018	713	587,776	536,361	91.3%	52,850
2019	699	650,878	579,008	89.0%	38,598
2020	621	303,883	260,192	85.6%	55,366
TOTAL	**13,202**	**11,574,943**	**9,914,837**	**85.7%**	**1,252,363**

**Worldwide economic recession caused alligator hide demand to decline dramatically. Updated October 1, 2021.*

TABLE 4. *Farm Alligator Harvest in Louisiana, 1972-2021*[1]

YEAR[1]	# OF FARMS		# SKINS	AVG. TOTAL	SKIN VALUE		MEAT[3]	
	LICENSED	SOLD SKINS	SOLD	LENGTH IN FT.	AVG./FOOT	TOTAL	AMOUNT (LBS)	VALUE
1972	8	3	35	5	$8.10	$1,418	[2]	[2]
1973	8	5	103	6.33	$13.13	$8,561	[2]	[2]
1975	8	3	83	5.5	$7.88	$3,597	[2]	[2]
1976	8	3	360	5.75	$16.55	$34,259	[2]	[2]
1977	8	4	376	5.25	$12.23	$24,142	[2]	[2]
1980	8	1	191	4.67	$13.00	$11,596	957	$3,342
1981	8	3	360	4.67	$17.50	$29,421	1,801	$6,300
1982	8	1	113	4	$13.50	$6,102	452	$1,582
1983	14	6	1,449	4.58	$13.00	$86,273	7,253	$25,357
1984	12	7	2,836	4.25	$21.00	$253,113	11,354	$39,704
1985	15	12	4,430	4.25	$21.00	$395,378	17,736	$79,740
1986	22	15	5,925	4.5	$23.00	$613,238	26,687	$119,983
1987	30	23	10,670	4.42	$24.00	$1,131,874	48,060	$216,067
1988	47	38	27,749	4.25	$36.00	$4,245,597	111,094	$554,980
1989	83	68	66,737	3.98	$32.00	$8,499,624	300,877	$1,202,362
1990	123	80	88,424	4.03	$24.00	$8,552,369	397,732	$1,786,059
1991	134	91	118,976	4.13	$15.00	$7,370,563	536,379	$2,380,000
1992	125	85	128,026	4.04	$12.00	$6,206,700	578,289	$2,566,000
1993	101	70	121,700	3.87	$17.00	$8,006,643	388,010	$1,720,000
1994	89	62	136,126	3.67	$20.00	$9,991,648	277,780	$1,197,000
1995	83	50	125,460	3.88	$20.00	$9,735,696	331,395	$1,323,000
1996	81	51	161,845	3.91	$15.50	$9,808,616	511,668	$2,297,900
1997	75	36	169,988	3.74	$16.75	$10,648,898	542,332	$2,435,700
1998	73	38	154,399	3.79	$17.00	$9,947,928	490,990	$2,209,455
1999	66	35	187,570	3.64	$17.00	$11,606,832	552,693	$2,487,119
2000	66	35	219,827	3.81	$20.50	$17,169,588	659,481	$2,967,665
2001	63	32	180,391	3.79	$20.50	$14,015,479	541,173	$2,435,279
2002	61	32	237,808	3.73	$23.50	$20,845,060	713,424	$3,210,408
2003	57	32	277,604	3.81	$24.00	$25,384,110	832,812	$3,747,654
2004	55	32	297,376	3.87	$26.00	$29,921,973	892,128	$4,014,576
2005	57	31	256,446	3.91	$38.00	$38,102,747	769,338	$3,462,021
2006	58	29	272,570	4.05	$42.50	$46,916,111	817,710	$3,679,695
				BELLY WIDTH IN CM [4]	AVG./CM			
2007	63	29	305,176	24.79	$7.25	$54,848,520	915,528	$4,119,876
2008[5]	60	31	290,267	26.41	$5.50	$42,162,733	870,801	$3,918,605
2009	59	28	304,196	28.64	$5.00	$43,560,867	912,588	$4,106,646
2010[6]	57	22	161,937	27.50	$6.50	$28,946,239	485,811	$2,186,150
2011	56	18	244,670	26.26	$8.00	$51,400,274	734,010	$5,138,070
2012	59	22	293,590	25.92	$8.50	$64,683,749	880,770	$6,165,390
2013[7]	53	15	100,669	25.45	$8.50	$21,777,221	302,007	$2,114,049
2014	54	21	341,888	25.77	$8.50	$74,888,857	1,025,664	$7,179,648
2015	56	19	328,964	26.19	$7.50	$64,616,754	986,892	$6,908,244
2016	57	20	394,050	26.60	$6.50	$68,131,245	1,182,150	$8,275,050
2017	57	20	382,041	27.31	$7.50	$78,251,548	1,146,123	$8,022,861
2018	56	23	450,220	28.08	$7.50	$94,816,332	1,350,660	$9,454,620
2019	58	22	438,577	26.96	$6.50	$76,856,233	1,315,731	$9,210,117
2020	59	23	374,961	27.20	$6.50	$66,293,105	1,124,883	$7,874,181

1. *Tag year extends from September of the year designated to the next September (example: 1997 = 9/97 to 8/98).*
2. *Sale of meat not permitted; La. Health Department regulations first allowed meat sales in 1979.*
3. *Deboned from 1980-present.*
4. *Average total length for 2007 is 4.08', 2008 is 4.25', 2009 is 4.58', 2010 is 4.42', 2011 is 4.25' and 2012 is 4.25'.*
5. *Worldwide economic recession caused alligator skin price to decline dramatically.*
6. *Low harvest resulted from reduced egg collections in 2009 due to worldwide economic recession.*
7. *2013 was transition year to tag year coinciding with calendar year. 2013 tag year only represents 9/1 to 12/31 (4 months).*

NOTE: Subject to change, numbers updated October 13, 2021.

INFORMATION/EDUCATION

In order to better meet the needs of the alligator industry, LDWF sponsors meetings for all segments of the industry (farmers, hunters, and landowners) which gives the industry participants an opportunity to prioritize and discuss the current issues facing the state's alligator industry. LDWF also created specific e-mail (LAalligatorprogram@wlf.la. gov) and website (*www.lagatorprogram.com*) addresses for the alligator program to provide additional and easier methods for alligator industry participants and the general public to ask questions and acquire information. Alligator program staff members continue to compile and update contact information, including e-mail addresses, which are used to promptly notify participants of available and arising program information. In addition to the on-site visits, the staff communicates with farmers on a regular basis to schedule releases, hide inspections, live animal inspections, coordinate farm transfers, alligator egg collection permits, and to issue and follow up on CITES harvest tags.

Numerous wildlife groups, including university faculty and students, were hosted at Rockefeller Wildlife Refuge for educational purposes; as were professional representatives from domestic and international organizations. Presentations were made at various civic organizations and captive alligators were often loaned out for educational purposes.

NUISANCE ALLIGATOR PROGRAM

LDWF manages a statewide nuisance alligator control program. The nuisance program is designed to remove problem alligators in order to avoid potential human/alligator conflicts. Through the process of nuisance alligator hunter appointments and annual renewals LDWF maintains a statewide network of qualified nuisance alligator hunters. Nuisance alligator complaints are phoned into various LDWF offices, where complaints are recorded and then forwarded to a nuisance alligator hunter in the vicinity of the complaint. Nuisance hunters respond promptly and catch and remove the alligator as deemed necessary. Hunters are allowed to harvest the nuisance alligator and to process the meat and skin of the alligator for commercial sale. This process provides for immediate response to problem alligators and for payment to the nuisance alligator hunter, thereby minimizing the program operating costs to LDWF. In 2020 low hide prices presented challenges to retention of nuisance trappers, despite LDWF authorizing incentive payments of $75 per complaint to participating nuisance hunters beginning in 2018.

During 2020-21, approximately 50 nuisance alligator hunters were enrolled in the program; annually the nuisance hunters respond to several thousand complaints and harvest more than 1,000 alligators.

RESEARCH ACTIVITIES

The following list provides a summary of the various research and monitoring projects that the alligator program staff conducted and/or participated in during fiscal year (FY) 2020-2021.

MONITORING

1. Evaluation of Survival, Growth and Reproduction in Farm Released Alligators

This activity involves numerous projects related to survival analysis, growth, and reproductive success (farm-released vs. native wild). Due to the reduction of the release rate percentage, it is imperative to monitor survival closely. The 12% return rate started with the 2007 permits (releases “due” in 2009); and this was decreased to 10% starting with the 2017 year permits (returns "due" in 2019). Information on size class frequency distribution of wild alligator populations and susceptibility to harvest is provided annually to enhance survival estimates. We now have "re-traps" that were captured over 20 years since release, and this is undoubtedly one of the largest markrecapture projects currently in progress. Last year we published a manuscript in Herpetological Review that documented survival of a fam-released alligator for over 22 years. Following the survival, growth and dispersal of farm-released alligators is a key component to our management, monitoring, and research programs that will continue for many years to come.

2. Coast-wide Nest Survey

The annual coastal nesting survey is essential for monitoring our alligator population, and is used annually to determine wild alligator and wild alligator egg harvest quotas (for the adult harvest each September as well as egg ranching quotas). This is an integral part of our required “finding of no detriment” needed to achieve export authorization by the USFWS.

3. Evaluation of Statewide Harvest Program

We continue to analyze size class frequency distribution, average size, sex ratios, etc. for alligators harvested each year. During the 2019 wild season staff collected sex ratio data on 8,997 alligators (72.8% males, 27.2% females) which represented a significant percentage of the total alligators harvested; similar such data was collected in the 2020 autumn harvest, though the harvest was impacted by Hurricane Laura in southwest Louisiana. This project, coupled with coast-wide nest survey provides critical information regarding the status of the wild alligator population. Data generated from these projects provides the basis for evaluating the impact of our current harvest strategies and for establishment of annual wild harvest quotas.

4. Evaluation of Alligator Nest Density

LDWF biologists work with cooperating alligator farmers to gain access to their GPS data from annual egg collections. This data will facilitate comparisons between our coast-wide nest survey and estimates of nest density as recorded by the farmer during egg collections. Some farmers have advised staff of reduced nest production on selected wetlands; close review of this nesting production data will allow us to evaluate nest distribution and density changes over time. Many areas had excellent nest production; the estimated nest count of 60,794 in 2020 again reflected good habitat conditions.

5. West Nile Virus (WNV)

LDWF, in conjunction with LSU School of Veterinary Medicine (LSUSVM), continues to monitor occurrence of WNV on alligator farms in Louisiana. Initial mortality related to WNV occurred in fall/winter 2003. Aggressive mosquito control on farms has reduced on farm mosquito populations and seems to have reduced the incidence of WNV in recent years. During FY 2020-2021 year we continued to have expertise from staff at LSUSVM available if needed to collect samples from farm alligators to monitor for any health concerns, provide diagnostics as needed, and assist with other health surveillance parameters. After several years of research, development, and testing, a WNV vaccine was developed, gained conditional approval by the USDA and became available to farmers in October 2011. Several farmers have taken advantage of this new proactive technology to prevent WNV in captive hatchling and yearling alligators.

6. Best Management Practices

LDWF and the LSU School of Veterinary Medicine in conjunction with the Louisiana Alligator Farmers and Ranchers Association developed a document entitled “Best Management Practices for Louisiana Alligator Farming.” The document was distributed in June 2011 and details recommended practices to ensure animal welfare of captive reared alligators in Louisiana, including egg collection, hatching, rearing, release to the wild and euthanasia. This document was updated and distributed in January 2013 and again in January 2016 as new information regarding euthanasia was investigated, and is currently being updated again as pertinent topics to alligator farming have become available. The intent of this

document is to ensure that licensed alligator farms/ranches are employing humane methods of working with alligators. Through industry contributions, Dr. Javier Nevarez at LSU's School of Veterinary Medicine has continued to work with LDWF staff to update Best Management Practices as needed. This has been even more important recently with international recognition of animal welfare concerns on crocodilian farms world-wide.

7. Alligator Research Facility

After several years of planning and fund raising by industry personnel, construction began on an alligator research facility at LSU's AgCenter Aquaculture Research Station. Funding for facility construction was provided purely by monetary donations from alligator industry participants including alligator farmers, wetland landowners, tanners, feed manufacturers, alligator hunters and other interested parties. The building is available to house alligators of various sizes for projects related to all phases of alligator husbandry. LDWF staff has worked closely with alligator producers and feed manufacturers to provide input to identify and prioritize research goals and secure long term funding sources for facility operation. The LSU AgCenter has established an Alligator Research Fund to receive additional donations for funding various research projects. Hatchlings were provided to Dr. Robert Reigh in August 2020 by LDWF from eggs collected and incubated at Rockefeller Refuge for continued research and nutrition studies to benefit the alligator farming industry; various diets and feeding regimes are tested and findings disseminated to industry personnel at meetings throughout the year or through publications in the scientific literature.

CONTRACTS

1. Diagnostic Services - LSUSVM (Dr. Javier Nevarez)

Dr. Javier Nevarez is contracted to provide diagnostic services as needed for the alligator industry. Farmers may consult with Dr. Nevarez at any time for assistance with any alligator husbandry or disease issue. Our staff often assists with logistics and transport of alligators/ samples to LSUSVM in Baton Rouge for evaluation. Periodic health surveillance of farm released alligators is conducted to monitor health status of farm alligators released to the wild; a manuscript on these findings is being prepared. Dr. Nevarez and colleagues worked with LDWF to evaluate possible culture of Chlamydia and Mycoplasma from wild and captive (farm-releases) alligators last fiscal year; the samples were held until all were collected so the samples could be analyzed more efficiently in a large batch analysis. This project was expanded markedly in 2021 and we provided alligator eggs, embryos, and nesting media to culture for Chlamydia. Lab supplies were ordered and plans were initiated to begin sampling farm juveniles in July 2021 and hatchlings (imported and native Louisiana) in August 2021 as per requests from industry personnel to increase the sample size of alligators tested.

2. Health Monitoring - LSUSVM (Dr. Javier Nevarez)

Dr. Javier Nevarez has been instrumental in providing guidance in evaluating concerns over possible disease introduction from alligators (predominantly hatchlings) imported from other southeastern states. Concerns are focused on Mycoplasma and Chlamydia. Additional samples were collected from wild alligators (liver and lung tissue) while a contract was being drafted. We collected samples last fiscal year from imported hatchlings and additional wild alligators to survey for prevalence of these microorganisms, if present. Results indicated more sampling should continue in the future. Dr. Navarez provided guidance as we implemented the required certificates of veterinary inspection of health for imports and exports of captive farm alligators.

3. Nutrition Research - LSU AgCenter, Aquaculture Research Station

A research contract was established for aquaculture nutritionist Dr. Robert Reigh and his research associate to conduct digestibility studies to continue to aid farmers in their farm management; industry support from feed manufactures at Cargill Inc. have been instrumental in this process. Research committee meetings are held periodically and projects are outlined for study. Current work is underway evaluating specific amino acid requirements and digestibility during grow-out. The coronavirus pandemic has led to obstacles with some studies while campus was on shutdown for health concerns.

OTHER RESEARCH

In addition to LDWF research studies, we continued to support and collaborate with graduate students, post-doctoral research associates, and university faculty with their research studies on numerous projects. Associates from several universities (Harvard University, Yale University, Clemson University, Missouri State University, University of North Texas, University of Missouri, Arizona State University, and Indiana University School of Medicine) were hosted at Rockefeller in 2018 - 2019 to collect additional samples for several studies, or we provided samples to them if travel costs were prohibitive. Due to the coronavirus pandemic beginning in early 2020 and continuing into 2021, numerous planned studies and field trips by university personnel were cancelled due to travel and safely concerns, with many university labs being shut down and travel prohibited. Research teams from Harvard University and Yale University were able to travel to Rockefeller in June 2021 to collect samples for ongoing studies. Several collaborators made presentations with LDWF staff as co-authors at meetings (some virtual) as listed in the next section.

Research efforts were hampered this year when Hurricane Laura (a massive Category 4 hurricane) made landfall in southwest Louisiana in late August. Staff from Rockefeller Refuge were displaced for months and the office and facilities were heavily damaged. Hurricane Delta hit in nearly the same location just six weeks later delaying recovery efforts. The lab at Rockefeller was used to store files, documents, and equipment salvaged from the Rockefeller office building. Staff are using the lab as work stations due to the heavy damage at the Rockefeller office, which was further damaged by a burst water line in the winter storm freeze in February 2021.

We published several abstracts and full papers this year, two of which were selected for a Publication Award by the Louisiana Association of Professional Biologists. Due to the coronavirus pandemic, staff members did not attend the annual SEAFWA conference usually held in October. Staff hosted the Alligator Working Group (AWG) meeting on Oct. 13, 2020 as a virtual "Zoom" meeting with good participation by the southeastern states alligator biologists and a variety of topics were discussed and common problems addressed to improve our management programs.

Our research efforts were hampered in large part by lack of holding facilities for alligators until we were granted access tot the new lab in February 2020 and began work to make the alligator holding tanks usable (designing and crafting lids, braces, handles, adjusting thermostats for stable heating capabilities, etc.) and began moving supplies into the lab for future use. Unfortunately, progress was halted due to the devastation caused by Hurricane Laura in late August 2020, followed by Hurricane Delta in mid-October 2020, both of which severely impacted facilities at Rockefeller Wildlife Refuge. Repairs and rebuilding are ongoing.

Research Manuscripts Published in 2020

Alderman, S. L., D. A. Crossley II, R. M. Elsey, and T. E. Gillis. 2020. Growing up gator: a proteomic perspective on cardiac maturation in an oviparous reptile, the American alligator (*Alligator mississippensis*). Journal of Comparative Physiology B. *https://doi.org/10.1007/s00360-020-01257-6*

Elsey, R. M., M. Miller, and N. Latiolais. 2020. *Alligator mississippiensis* (American alligator). Diet. Herpetological Review. 51(1):116-117. [squirrel in alligator stomach]

Elsey, R. M., M. Miller, N. Latiolais, and Q. Sam. 2020. *Alligator mississippiensis* (American alligator). Survival of farm-released juvenile. Herpetological Review. 51(1):117. [over 22 years survival]

Elsey, R. M. and S. G. Platt. 2020. *Apalone ferox* (Florida softshell). Caruncle regression. Herpetological Review. 51(2):309-310.

Elsey, R. M., N. Latiolais, and J. Whitaker. 2020. *Alligator mississippiensis* (American alligator). Diet. [eight blue-wing teal in alligator stomach]. Herpetological Review. 51(3):586-587.

Elsey, R. M. 2020. Book review of: Alligators: The Illustrated Guide to Their Biology, Behavior, and Conservation by Kent A. Vliet. Photographs by Wayne Lynch. 2020. Johns Hopkins University Press, Baltimore. Herpetological Review. 51(3):640 - 642.

Finger, J. W. Jr., S. M. Goetz, M. D. Kelley, L. M. Horne, S. Piccolomini, R. M. Elsey, and M. T. Mendonca. 2020. American alligator (*Alligator mississippiensis*) serum inhibits pitviper venom metalloproteinases. Journal of Herpetology. 54(2):151-154.

Kay, J. C., R. M. Elsey, and S. M. Secor. 2020. Modest regulation of digestive performance is maintained through early ontogeny for the Amercian alligator, *Alligator mississippiensis*. Physiological and Biochemical Zoology. 93(4):320-338. doi: 10.1086/709443

Madrid, V. S., A. A. Arias, K. Vega, R. M. Elsey, E. Azizi, and T. Owerkowicz. 2020. (Abstract). Effects of caudofemoralis longus tenotomy on 3D kinetics and kinematics in juvenile alligators. Poster presentation at the annual meeting of the Society for Integrative and Comparative Biology. January 3-7, 2020. Austin, Texas. Abstract P2-225, pg. 257.

Moss, R., K. M. Murphy, S. Gardner, M. Watkins, J. W. Finger, M. D. Kelley, R. M. Elsey, D. A. Warner, M. T. Mendonça. 2020. (Abstract). Immunologic and stress responses of hatchling American alligators (*Alligator mississippiensis*) exposed to ecologically relevant estrogen levels. Poster presentation at Auburn University College of Science and Mathematics Research Fair. November 5, 2020.

Murphy, K. M., M. Watkins, J. W. Finger, M. D. Kelley, R. M. Elsey, D. A. Warner, and M. T. Mendonca. 2020. (Abstract). Xenobiotic estradiol-17β and the microbial gut communities of hatchling American alligators (*Alligator mississippiensis*). Poster presentation at the annual meeting of the Society for Integrative and Comparative Biology. January 3-7, 2020. Austin, Texas. Abstract P1-269, pg. 293.

Platt, S. G., R. M. Elsey, N. D. Bishop, T. R. Rainwater, O. Thongsavath, D. Labarre, and A. McWilliam. 2020. Using scat to estimate body size in crocodilians: Case studies of the Siamese crocodile and American alligator with practical applications. Herpetological Conservation and Biology. 15(2):325-334.

Platt, S. G., T. R. Rainwater, R. M. Elsey, N. D. Bishop, and S. T. McMurry. 2020. On the occurrence of runt eggs in Morelet's crocodile. Caribbean Naturalist. 75:1-10.

Rehorek, S. J., R. M. Elsey, and S. C. Beeching. 2020. (Abstract). Morphometrics of the American alligator (*Alligator mississippiensis*) head. Poster presentation at the annual meeting of the Society for Integrative and Comparative Biology. January 3-7, 2020. Austin, Texas. Abstract P1-210, pg. 335.

Somaweera, R, J. Nifong, A. Rosenblatt, M. L. Brien, X. Combrink, R. M. Elsey, G. Grigg, W. E. Magnusson, F. J. Mazzotti, A. Pearcy, S. G. Platt, M. Tellez, J. van der Ploeg, G. Webb, R. Whitaker, and B. L. Webber. 2020. Ecological importance of crocodilians: towards an evidencebased justification for prioritizing conservation. Biological Reviews. 95(4):936-959.

Xu, C., J. Palade, R. E. Fisher, C. I. Smith, A. R. Clark, S. Sampson, R. Bourgeois, A. Rawls, R. M. Elsey, J. Wilson-Rawls, and K. Kusumi. 2020. (Abstract). Comparative anatomy and histology reveal the American alligator (*Alligator mississippiensis*) exhibits regenerative capacity of the tail. Accepted for presentation at the Experimental Biology meetings. April 4-7, 2020. San Diego, California; meeting cancelled due to coronavirus threat. Abstract to be published in FASEB journal.

Xu, C., J. Palade, R. E. Fisher, C. I. Smith, A. R. Clark, S. Sampson, R. Bourgeois, A. Rawls, R. M. Elsey, J. Wilson-Rawls, and K. Kusumi. 2020. (Abstract). Tail regeneration in the American alligator (*Alligator mississippiensis*): first characterization of appendage regrowth in an archosaurian reptile. Poster presentation at the 79th Annual Meeting of the Society for Developmental Biology. July 9-16, 2020. Chicago, Illinois.

Xu, C., J. Palade, R. E. Fisher, C. I. Smith, A. R. Clark, S. Sampson, R. Bourgeois, A. Rawls, R. M. Elsey, J. Wilson-Rawls, and K. Kusumi. 2020. Anatomical and histological analyses reveal that tail repair is coupled with regrowth in wild-caught, juvenile American alligators (*Alligator mississippiensis*). Scientific Reports. 10:20122 *https://doi.org/10.1038/s41598-020-77052-8*

We also have several manuscripts currently in press or in review; and we serve as manuscript reviewers for multiple scientific journals and review numerous manuscripts each year.

REVENUE AND EXPENDITURE INFORMATION

The Louisiana alligator industry is a vital aspect of Louisiana's economy. The Louisiana Legislature recognized that there were many national and international impediments to the industry's development, and that there was a need to develop and maintain a comprehensive alligator conservation program. In 1991, the Louisiana Alligator Resource Fund was established by the legislature to address this need (R.S. 56:279). This Act established a dedicated source of revenue intended to help defray the costs of the alligator program within the Coastal and Nongame Resources Division of LDWF. The specific goals of the legislation are:

1. To provide salaries and financial support including associated indirect costs for the following positions, to provide a minimum of six full-time technical positions (biologists) and eight nontechnical positions such as computer operators, secretaries, and wildlife specialists existing within the Coastal and Nongame Resources Division of LDWF.
2. To assist with funding for law enforcement activities associated with the alligator farm and wild industry when surplus funds are available and recommended by the Louisiana Alligator Advisory Council.
3. To assist with funding marketing programs recommended by the Louisiana Alligator Advisory Council when surplus funds are available.
4. To actively fund research on all aspects involved with alligator conservation and to develop the techniques needed to enhance the commercial alligator industry.
5. To assist in funding management of the alligator population through proper management, harvest and farm facility management.

This legislation provides all the enabling language required to establish the Louisiana Alligator Resource Fund including sources of income, investing of the fund, and expenditures from the fund. Further R.S. 56: 253 establishes the alligator hide tag fee and the alligator shipping label fee, specifies the details of collection of these fees, and establishes that these fees shall be no more than $4.00 per hide or live alligator. R.S.56:256, provides for the collection of a $0.25 severance tax on each alligator hide taken within the state. R.S. 56:279 C (1) provides that all revenues received by the state from tag fees, alligator shipping label fees, and from the severance tax on alligator skins shall be credited to the Louisiana Alligator Resource Fund.

During the 2012 legislative session, R.S.56:279 was amended to provide that monies from various additional alligator revenue sources are deposited in to the Louisiana Alligator Resource Fund. House Bill 643 (ACT 131) provided that "all revenues derived from the sale of alligators, alligator skins, or alligator eggs harvested from department-administered lands, all fees derived from alligator lottery harvest programs on department administered lands and public waters and all revenues derived from any other alligator related fee," be credited to the Louisiana Alligator Resource Fund. The bill also provided that the Office of Wildlife may expend funds from the Louisiana Alligator Resource Fund for alligator program administration. This change resulted in additional revenue for the Louisiana Alligator Resource Fund.

During FY 2020-2021, $1,776,013 was deposited into the Louisiana Alligator Resource Fund, a decrease in revenue of $754,287 from the previous year. Harvest and value of farm raised alligators remained fairly consistent this fiscal year, however wild hide prices remained low. Annual income and expenditure data for the Louisiana Alligator Resource Fund is reported in *Table 5*.

Table 6 summarizes the Louisiana Alligator Resource Fund expenditures by the alligator management program for FY 2019, 2020 and 2021. Expenditures by the alligator management program totaled $2,065,273 in 2020-2021. This is reflective of the stability in program activities associated with stabilized harvests levels (wild alligators, wild alligator eggs, and farm-raised alligators). Currently the alligator program staff consists of six biologists, three wildlife technicians, two administrative coordinators, one data manager, and two to four seasonal WAE technicians.

All expenditures from the Louisiana Alligator Resource Fund are provided for in R.S. 56:279. LDWF carefully approves and monitors all expenditures to ensure compliance with all legal requirements. LDWF's fiscal office can produce a variety of expenditure and budget reports upon request.

***TABLE 5.** Alligator Resource Fund Income, Expenditures, and Balance, FY 2015 - 2021*

	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Severance	96,937	102,921	100,049	120,069	97,643	115,782	94,096
Interest	2,433	8,516	22,238	58,579	115,283	65,828	1,540
Shipping Label Fees	154,572	138,360	171,788	147,848	241,192	168,308	58,784
Collection Permit Fees	6,800	5,925	5,775	5,751	5,625	4,500	4,700
Hide Tag Fees	1,550,993	1,646,729	1,600,790	1,921,097	1,562,285	1,739,462	1,131,532
Res. Alligator Hunter Licenses	83,059	84,925	83,600	66,325	70,325	87,975	79,250
N/R Alligator Hunter Licenses	80,400	76,800	73,500	70,050	94,800	138,900	132,750
Misc Income	6,728	0	0	0	399	0	0
Industry Generated Revenue	1,981,922	2,064,176	2,057,740	2,389,719	2,187,552	2,320,755	1,502,651
Hides/ Harvest	256,862	214,560	143,589	63,996	83,470	106,875	50,008
Egg Harvest	419,937	326,860	299,320	327,280	381,737	87,480	157,624
Lottery	17,105	12,485	9,160	11,805	2,710	15,190	65,730
WMA Generated Revenue	693,904	553,905	452,069	403,081	467,917	209,545	273,362
Total Revenue	2,675,826	2,618,081	2,509,809	2,792,800	2,655,469	2,530,300	1,776,013
Less Expenditures	-1,223,930	-2,013,715	-1,536,310	-1,463,477	-1,854,170	-2,466,482	-2,065,273
Capital Outlay-FPC (T130)			-1,100,000		-1,500,000		
Add balance from prior year	2,025,918	3,477,814	4,082,180	3,955,679	5,285,002	4,586,301	4,650,118
YEAR END BALANCE	**3,477,814**	**4,082,180**	**3,955,679**	**5,285,002**	**4,586,301**	**4,650,118**	**4,360,858**

***TABLE 6.** Alligator Management Program Expenditures For Fiscal Years 2019, 2020 and 2021.*

BUDGET CATEGORY	2019	2020	2021
Personal Services	$1,138,202	$1,278,073	$1,177,729
Travel	$39,135	$21,194	$17,253
Operating Services	$84,650	$130,866	$136,484
Supplies	$81,714	$94,672	$64,798
Professional Services	$287,243	$319,816	$209,382
Other Charges	$192,925	$264,632	$325,841
Acquisitions	$1,653	$40,576	$58,600
Major Repairs	$0	$0	$0
Interagency Billings	$28,648	$316,653	$75,186
TOTALS	**$1,854,170**	**$2,466,482**	**$2,065,273**

HABITAT CONCERNS

One threat or potential limiting factor to Louisiana's alligator population is habitat loss. Because the vast majority of Louisiana's alligators are in the coastal parishes, saltwater intrusion and wetlands/marsh deterioration from numerous causes are very real threats. Additionally, the combined impact of recent hurricanes will likely result in long term reduction of alligator habitat quality in coastal Louisiana.

Vast resources by numerous state and federal agencies have been expended to attempt to limit these losses. Projects to restore/enhance marshes include construction of earthen terraces (to reduce wave action and turbidity), "breakwaters" and protection levees along coastlines, vegetative plantings, marsh restoration, and freshwater diversions. Alligators benefit directly from these efforts to maintain/enhance wetlands. The freshwater diversion projects (Davis Pond and Caernarvon) shift water from the Mississippi River in hopes of re-establishing more favorable salinity conditions for numerous fish and wildlife species. Some preliminary data suggests alligator nesting has improved in the areas enhanced by lower marsh salinity levels. It is critical that habitat changes are monitored, mapped and incorporated periodically into the alligator program. This will ensure that our harvest programs are adjusted accordingly for corresponding alligator population and habitat changes.

SUMMARY

Louisiana's alligator management program has clearly illustrated that controlled sustained use of the species is successful. The wild harvest has been in place for 49 years and the egg ranching program for 35 years and may appear to operate unchanged every year. However, constant adaptations are made to try to improve both programs. Requests by user groups (farmers, egg ranchers, trappers, landowners, buyers, dealers and other industry personnel) are received and considered as LDWF strives to safely manage the alligator resource to the benefit of many user groups with varied interests.

Louisiana's alligator industry is unique. It has recognized the importance of establishing a selfgenerated revenue source to provide the necessary regulatory and management efforts required to effectively manage the alligator resource. LDWF will continue to protect the alligator as a resource while striving to ensure long term, sustainable harvest programs. During FY 2020-2021, LDWF, through the use of the Louisiana Alligator Resource Fund, has worked toward achievement of the goals established by the Louisiana Legislature.

EXHIBIT 1

2020 MARSH ALLIGATOR TAG ALLOTMENT BY PARISH

	Tag Allotment/Marsh Type		
	Brackish	**Intermediate**	**Fresh**
[A]Cameron East	1:225	1:100	1:100
[A]Cameron Central	1:400	1:225	1:115
[A]Cameron West	1:225	1:100	1:130
Calcasieu	1:250	1:110	1:80
Jeff Davis			1:90
[B]Vermilion West	1:85	1:80	1:115
[B]Vermilion East	1:140	1:140	1:75
Iberia		1:120	1:120
St. Mary		1:65	1:65
Terrebonne	1:125	1:55	1:55
Lafourche	1:140	1:55	1:90
St. Charles	1:75	1:65	1:65
St. John the Baptist		1:55	1:55
Jefferson	1:200	1:55	1:55
Orleans	1:400	1:400	
[C] Plaquemines West	1:250	1:150	1:55
[D]Plaquemines East	1:400	1:80	1:55
Plaquemines Delta	1:225	1:175	1:160
St. Bernard	1:400	1:80	
St. Tammany	1:125	1:55	1:55
Tangipahoa		1:55	1:120

Cypress-Tupelo Swamp	1:160
Dewatered Marsh	1:400 (allotment may be altered pending habitat and biological assessment)
[E]Transitional Marsh	1:400 (except transitional marsh in Plaquemines East will be issued at the rate of 1 tag: per 300 acres)

[A]The dividing line for Cameron East and Central is the Mermentau River, the dividing line for Cameron Central and West is the Calcasieu River/Calcasieu Lake.
[B]The dividing line for Vermilion East and West is the Vermilion River Cutoff (4-mile cut).
[C]Marsh west of Mississippi River.
[D]Marsh east of Mississippi River.
[E]Marsh areas which are characterized by a generally declining alligator population caused by degradation of habitat.

2020 NON-MARSH ALLIGATOR TAG ALLOTMENT BY OFFICE AND PARISH
LAKE REGION

OFFICE	PARISH	HABITAT	ACRES OF HABITAT	TAG ALLOTMENT	REMARKS
Minden	Bienville/ Bossier/ Webster	Lake Bistineau	1,720	45	Public Lake Lottery Harvest
	Caddo	Wallace Lake	2,000	30	Public Lake Lottery Harvest
	Bossier	Black/Cypress Lake	400	45	Public Lake Lottery Harvest
	Caddo	Cross Lake	500	45	Public Lake Lottery Harvest
	Caddo	Caddo Lake	1,800	15	Public Lake Lottery Harvest
	Bienville	Kepler Lake	250	30	Public Lake Lottery Harvest
	Jackson	Caney Lake	5,000	12	Public Lake Lottery Harvest
	Saline, DeSoto	Toledo Bend	4,000	27	Public Lake Lottery Harvest
	Bossier	Ivan Lake (Bodcau)	520	6	Public Lake Lottery Harvest
	Claiborne	Corney Lake	1,600	6	Public Lake Lottery Harvest
	Claiborne	Lake Claiborne	6400	6	Public Lake Lottery Harvest
SUB TOTAL			**24,190**	**267**	
Pineville	Rapides	Kincaid Lake	1,000	6	Public Lake Lottery Harvest
	Rapides	Indian Creek	500	6	Public Lake Lottery Harvest
	Rapides	Cotile Lake	400	9	Public Lake Lottery Harvest
	Grant	Nantachie Lake	800	6	Public Lake Lottery Harvest
	Winn	Saline Lake	3,000	18	Public Lake Lottery Harvest
	Natchitoches	Black Lake	1,000	18	Public Lake Lottery Harvest
SUB TOTAL			**6,700**	**63**	
Monroe	Ouachita	Bayou Desaird North	580	9	Public Lake Lottery Harvest
	Ouachita/ Morehouse	Bartholomew Lake	405	9	Public Lake Lottery Harvest
	Tensas	Big Lake WMA	1,000	21	WMA Lottery Harvest
		Buckhorn WMA	300	18	WMA Lottery Harvest
		Lake St. Joseph	800	45	Public Lake Lottery Harvest
		Lake Bruin	2,800	15	Public Lake Lottery Harvest
		Lake St. John	200	30	Public Lake Lottery Harvest
	Caldwell	Beouf WMA	2,200	42	WMA Lottery Harvest
	Concordia	Lake Concordia	800	30	Public Lake Lottery Harvest
	Union	D'Arbonne Lake	1800	9	Public Lake Lottery Harvest
	Ouachita	Russell Sage WMA	4300	24	WMA Lottery Harvest
SUB TOTAL			**15,185**	**252**	

2020 NON-MARSH ALLIGATOR TAG ALLOTMENT BY OFFICE AND PARISH
LAKE REGION

OFFICE	PARISH	HABITAT	ACRES OF HABITAT	TAG ALLOTMENT	REMARKS
Lake Charles	Evangeline	Chicot Lake	1,625	30	State Parks (Experimental Harvest)
	Beauregard	Bundicks Lake	400	6	Public Lake Lottery Harvest
	Vernon	Anacoco Lake	1,000	12	Public Lake Lottery Harvest
		Vernon Lake	4,600	9	Public Lake Lottery Harvest
SUB TOTAL			**7,625**	**57**	
Lafayette (Opelousas Zone)	Avoyelles	Grassy Lake WMA	1,000	27	WMA Lottery Harvest
		Grassy Lake WMA		30	Highest Bidder Basis
		Spring Bayou WMA	5,000	60	WMA Lottery Harvest
		Spring Bayou WMA		90	Highest Bidder Basis
		Pomme-de-Terre WMA	800	12	Highest Bidder Basis
	Iberia/St. Martin	Attakapas WMA	26,300	35	Highest Bidder Basis
	Assumption	Elm Hall WMA	2,843	30	WMA Lottery Harvest
	Iberville, Pt. Coupee	Sherburne COE Lands	3,300	33	Highest Bidder Basis
	Iberville, St. Martin, Pt. Coupee	Sherburne WMA	11,780	21	WMA Lottery Harvest
	St. Landry, St. Martin	Indian Bayou COE Lands	2,878	18	WMA Lottery Harvest
				20	Highest Bidder Basis
	Concordia	Richard K Yancey WMA	8,000	150	WMA Lottery Harvest
	La Salle	Dewey Wills WMA	8,000	36	WMA Lottery Harvest
	La Salle	Dewey Wills WMA		20	Highest Bidder Basis
	Point Coupee	False River	3,000	6	Public Lake Lottery Harvest
SUB TOTAL			**72,901**	**588**	
LAKE REGION TOTALS			**126,601**	**1227**	**Experimental Harvests**

2020 NON-MARSH ALLIGATOR TAG ALLOTMENT BY OFFICE AND PARISH
CYPRESS-TUPELO SWAMP REGION

OFFICE	PARISH	ACRES OF HABITAT	TAG ALLOTMENT	ACRES/TAG	REMARKS
Lafayette (Opelousas Zone)	Iberville	29,880	187	160	Tag allotment based upon review of prior years harvest statistics, night counts and alligator model.
	Lafayette	1,200	8	160	
	Pointe Coupee	1,000	6	160	
	W. Baton Rouge	7,040	44	160	
SUB TOTAL		**39,120**	**245**	**160**	
Baton Rouge	Ascension	40,320	252	160	Tag allotment based upon review of prior years harvest statistics, night counts and alligator model.
	E. Baton Rouge	2,000	13	160	
	Livingston	66,720	417	160	
	Tangipahoa	36,181	226	160	
SUB TOTAL		**145,221**	**908**	**160**	
New Orleans	St. Charles	39,340	246	160	Tag allotment based upon review of prior years harvest statistics, night counts and alligator model.
	St. James	76,960	481	160	
	St. John	104,320	652	160	
SUB TOTAL		**220,620**	**1,379**	**160**	
Lafayette (New Iberia – Bourg Zone)	Assumption	98,560	616	160	Tag allotment based upon review of prior years harvests statistics, night counts and alligator model.
	Iberia	31,550	197	160	
	Lafourche	112,350	702	160	
	St. Mary	60,190	376	160	
	Terrebonne	43,014	269	160	
SUB TOTAL		**345,664**	**2,160**	**160**	
SWAMP TOTAL		**750,625**	**4,692**	**160**	

ATCHAFALAYA BASIN ALLIGATOR HABITAT

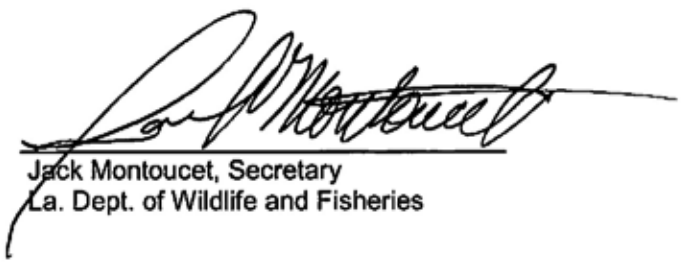
REGION	ACREAGE	DESCRIPTION
A. Henderson Lake	15,000	Bounded on the west by the West Guide Levee, on the North by Little Fordoche Bayou, on the east by the Haha Bay and Gim Slough and on the south by La. Hwy. 3177.
B. Crook Chen Cove-Buffalo Cove	32,000	Beginning at the northwest corner of Attakapas W.M.A.: A line north along Lake Fausse Point Cut to Bayou Benoit; west to the West Guide Levee, north to the East-West Canal located approximately 3 miles south of Catahoula, La.: East approximately 2 miles to canal; southeast on the same canal to Bayou Crook Chene; east to the main channel of the Atchafalaya River; south to the north boundary of Attakapas W.M.A.; west to point of beginning.
C. Spike Bay-Berry Lake	8,000	Beginning at a point 1-1/2 miles northwest of Bayou Sorrel Landing: west along canal 5 miles; south along Spike Bay for 2 miles; east to intersect Bayou Sorrel then continue east along Bayou Sorrel to East Guide Levee; north to point of beginning.
D. Upper Grand River Flats	12,000	Beginning at Upper Grand River Landing: north along East Guide Levee approximately 9 miles to a canal running northwest; northwest along that canal 2-1/2 miles to King's Ditch; south approximately 5 miles to include Billy Little Lakes; southeast approximately 4 miles to intersection of Upper Grand River and Little Tensas Bayou, east along Upper Grand River to point of beginning.
E. Bayou Pigeon-Belle River-Flat Lake	140,000	Beginning at Bayou Pigeon Landing; south along East Guide Levee to Morgan City (excluding Flat Lake); north-northwest along east side of the main channel of Six Mile Lake approximately 10 miles to 21-Inch Canal; northeast on 21-Inch Canal to Bayou Boutte; north on Bayou Boutte to the east boundary line of Attakapas W.M.A.; then north along its east boundary to Grand Lake; north along the east bank of Grand Lake to Keelboat Pass; northeast along Keelboat Pass and Flat Lake Pass to intersection of Williams Canal and a canal running southwest-northeast; northeast along that canal to intersection of Intracoastal Canal (East Guide Levee); south to Bayou Pigeon Landing.
TOTAL ALLIGATOR HABITAT WITHIN BASIN TYPE	207,000	Tags may be issued at the rate of one tag per 320 acres of habitat.

2020 NON-MARSH ALLIGATOR TAG ALLOTMENT BY REGIONS

REGION	ACRES OF HABITAT	ALLOTMENT	ACRES/TAG	REMARKS
Public Lakes/Non-Coastal WMAs	126,601	1,227		Includes public lakes and non-coastal Wildlife Management Areas. Tag allotment may vary depending on alligator populations.
Cypress-Tupelo Swamp	750,625	4,692	160	Swamp habitat outside the Atchafalaya Basin.
Atchafalaya Basin	207,000	647	320	That portion of the Atchafalaya Basin determined to be Cypress-Tupelo swamp containing permanent water as determined by aerial observations as well as approximately 400 miles of travel by boat during April-June, 1985.
GRAND TOTAL	**1,084,226**	**6,566**		

Additionally: Any private cypress-lake region habitat or coastal marsh alligator habitat determined by Department personnel to have a reproducing population may be issued tags at the rate of one tag per 80 acres of habitat; exceptionally dense alligator populations on a localized area may be issued tags at the rate of 1 tag per 25 acres of habitat (requires coordination and annual evaluation with Coastal and Nongame Resources or Wildlife Division personnel). Tags may be issued on the Red River within the 3 main management units at a rate of one tag per 500 yards of frontage. In areas containing minimal acreage of isolated parcels of non-contiguous wetland habitat, an individual landowner may apply for an alligator harvest tag to remove an alligator from his property during the open alligator season. Such habitats include fresh marsh, cypress-tupelo swamp, lake habitat, ponds/borrow pits.

Approved by:



July 1 - 2020

Jack Montoucet, Secretary
La. Dept. of Wildlife and Fisheries

DATE


LOUISIANA
DEPARTMENT
OF
WILDLIFE & FISHERIES