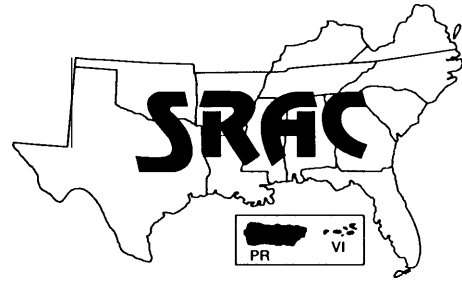


Southern
Regional
Aquaculture
Center



May 1993

Alligator Production

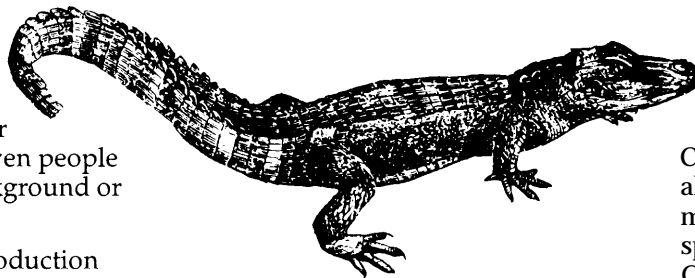
An Introduction

Michael P. Masser*

A mystique surrounds alligators. People find them both fascinating and horrifying. Alligator farming may intrigue even people who have no prior background or knowledge of farming.

In the 1980s alligator production became an important alternative agricultural business in the Deep South. Holding of alligators in captivity for breeding purposes was not a new idea. Historically, the first commercial alligator farm was started in Florida in the 1890s.

Production of alligators in a controlled indoor environment is new, however. Advances in environmentally controlled production methods during the 1980s improved survival rates, allowed sex determination, and produced market size alligators (4 feet long) in less than two years. These advances, together with the high prices paid for alligator hides, led to rapid expansion of the industry in the 1980s. A surplus of hides coupled with falling hide prices in the early 1990s led to a decline in the number of producers and an uncertain future.



It is legal to practice alligator farming in Alabama, Florida, Georgia, Louisiana, Mississippi and Texas. Louisiana leads the nation with 122 licensed alligator farms, followed by Florida with 42, Texas with 40, Georgia with 7, Mississippi with 5, and Alabama with 2 (1993). Regulation and permitting of alligator farms is under the jurisdiction of the state agency/authority (i.e., Conservation and Natural Resources, Game and Fish, Parks and Wildlife, etc.). Most state laws require an annual fee and a hide tag or a severance tax to farm alligators. To get specific information on the legal restrictions of alligator farming, check with your local Extension office or state game and fish department.

Historical perspective

The American alligator (*Alligator mississippiensis*) is a member of the order Crocodylia. This order includes alligators, crocodiles and

caimans. The American alligator was native to coastal plain and low land river bottoms from North Carolina to Mexico. The American alligator can grow to 16 feet or more in length. The only other species of alligator is found in China (*A. sinensis*) and is endangered. Crocodiles inhabit tropical areas around the world. There are 15 species of crocodiles, some of which can grow to 23 feet in length. There are four species of caimans that can be found only in Central and South America. Adult caimans are smaller than adult alligators or crocodiles, seldom attaining 6 feet in length. Hides of all of these species have been used commercially and have approximately the same value based on length and grade. Commercial exploitation has reduced wild populations of crocodylians throughout the world, and many have reached threatened or endangered status. Crocodile or caiman farming also is being attempted on 597 farms in 47 countries around the globe. The total worldwide population of crocodylians on farms is approximately 1,100,000.

American alligators were hunted for their hides beginning in the nineteenth century. By the turn of the century the annual alligator

* Extension Fisheries Specialist, Auburn University, Alabama

harvest in the U.S. was around 150,000 per year. Over-harvesting from the wild combined with habitat destruction slowly depleted the native population. The alligator population had severely declined by the 1950s and most states prohibited hunting by the 1960s. Under the 1973 Endangered Species Act the U.S. Fish and Wildlife Service placed alligators under "endangered" or "threatened" species status throughout most of their range to protect them from further exploitation.

Once protected, alligator populations recovered. Recovery was dramatic in some areas, particularly in Louisiana, which had prohibited legal harvest since 1962. Louisiana reopened limited harvesting of wild alligators based on sustainable yield in 1972. The Louisiana population continued to increase even with limited harvesting and was estimated by 1984 to be only slightly less than levels recorded at the turn of the century. Most other southern states also

have experienced alligator population increases after federal protection.

In 1983, the U.S. Fish and Wildlife Service changed the classification of the American alligator under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to what is called "threatened for reasons of similarity in appearance." This classification means that the American alligator is not threatened or endangered in its native U.S. range, but the sale of its products (hide, meat, etc.) must be strictly regulated (tags, markings and documentation) so that similar crocodilian species that are threatened/ endangered in other parts of the world, are not sold illegally as American alligators. In other words, this classification helps to protect other crocodilians around the world from illegal exploitation.

Today, nuisance control is allowed in Alabama, Florida, Georgia, Mississippi, South Carolina and Texas.

Limited harvesting from the wild is permitted in Louisiana, Texas and Florida. Table 1 gives harvest records from 1986 through 1991 for both farmed and wild harvested American alligators.

It is noteworthy that in 1991, 125,357 harvested alligators or 77.8 percent of the total harvest came from farms.

Ecology and life history

Alligators inhabit fresh to slightly brackish aquatic habitats. These habitats include marshes, swamps, creeks, rivers, lakes and ponds. Males grow larger than females, although growth rate is similar up to approximately 3 1/2 feet in length. Sexual maturity of females in the wild is usually reached at a length of 6 1/2 feet and an age of 9 to 10 years in Louisiana. Sexual maturity is not reached until 18 to 19 years in North Carolina (still 6 1/2 feet in length). The alligator, like all reptiles, is a cold-blooded animal, and the difference in age

Table 1. Alligator harvest in the United States 1986-1991 (USF&WS).

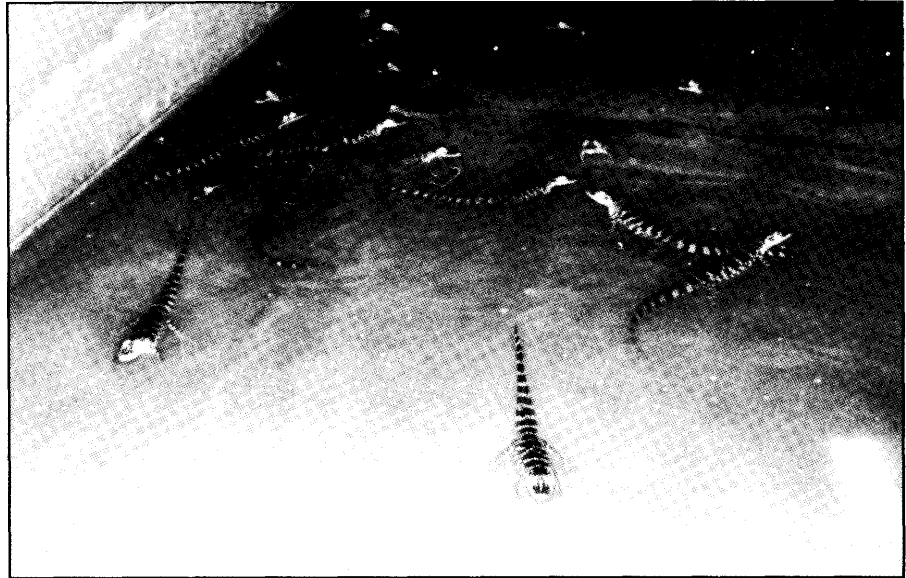
	1986	1987	1988	1989	1990	1991
Louisiana						
wild	17,000	20,000	23,000	24,846	25,575	24,500
farmed	3,000	2,500	27,500	62,000	88,500	105,000
Florida						
wild	4,000	4,653	7,444	8,000	8,108	8,436
farmed	3,921	6,479	7,529	16,385	20,007	18,797
Texas						
wild	952	1,396	1,647	1,830	2,035	1,820
farmed				20	348	700
South Carolina						
nuisance			361	272	247	271
Mississippi						
nuisance				100	100	100
farmed						160
Alabama						
nuisance						125
Georgia						
nuisance				344	578	489
farmed					80	700
TOTAL	28,873	35,028	67,481	113,797	145,578	161,098

to reach maturity is related to temperature-dependent growth. Optimum growth occurs at temperatures between 85 and 91°F. No apparent growth takes place below 70°F, while temperatures above 93°F cause severe metabolic stress and can cause death.

Alligators eat almost anything. Research shows that young alligators primarily consume invertebrates like crayfish and insects. As they grow, fish are included in their diet. For adult alligators, mammals such as muskrats and nutria become more important in the diet. Larger alligators even consume birds and other reptiles (including smaller alligators). Carrion is consumed whenever available. In general, the alligator's natural diet is very high in protein and low in fat.

Alligator courtship and breeding correlates with air temperature and can occur between April and July depending on weather conditions. Courtship and breeding occur in deep (at least 6 feet), open water. Courtship behavior includes vigorous swimming and bellowing activity. Both males and females bellow, but the male bellow is much more bass and vocal than that of the female. An alligator bellows with its mouth partially open, its head held at a 30- to 40-degree angle to the surface of the water, and its body submerged except for its tail which is arched above the water. Most courtship occurs just after sunrise and takes about 45 minutes from precopulatory behavior through first copulation. Repeated copulation is commonly observed.

After courtship and mating, females select and move to isolated ponds surrounded by dense vegetation for nesting. Nesting occurs about two or three weeks after mating, usually June through July, depending on temperature. Nest building and egg laying occur at



Baby alligators raised in indoor pool at an alligator farm.

night. Females build nests by raking surrounding vegetation and soil into a mound. A female may start several nests before a single nest is successfully completed. Twenty to 60 eggs are laid from the top into the center of the mound. All eggs are deposited at one time. When egg laying is completed the female covers the nest with about one foot of vegetation and remains nearby to guard nest from would-be predators. In any given year nesting activity usually occurs within a two-week period. Nesting occurs only once a year and not all females nest every year.

Warm summertime temperatures combined with heat generated from decaying mound vegetation maintain temperatures between 75 and 91°F and relative humidities of 94 to 99 percent in the nest. The eggs hatch in 65 days if temperature in the nest is consistently above 86°F. The young make grunting or peeping sounds after hatching and the female often claws open the nest to help release them. Hatching success is generally less than 60 percent. Research done in Louisiana suggests that survival of young alligators to four

feet long averages 17 percent or less. After an alligator reaches 4 feet in length it has few enemies other than larger alligators and man. Growth rates in the wild vary considerably, with temperature and food availability as the most influential factors.

Females do not move or migrate over long distances once they have reached breeding age and prefer heavily vegetated marsh-type habitat. Males move around extensively but prefer to establish territories in areas of open water. Males longer than 9 feet are the most successful breeders probably because of little understood behaviors related to social dominance.

This fact sheet has presented basic background information on alligator natural history and ecology. For additional information on the culture or farming of alligators, request SRAC Publication No. 231, *Alligator Production: Breeding and Egg Incubation*, SRAC Publication No. 232, *Alligator Production: Growth and Harvest* and SRAC Publication No. 233, *Alligator Production: Economics and Marketing*.

The work reported in this publication was supported in part by the Southern Regional Aquaculture Center through Grant No. 89-38500-4516 from the United States Department of Agriculture.