

BEST MANAGEMENT PRACTICES FOR LOUISIANA ALLIGATOR FARMING



Prepared by
Louisiana Department of Wildlife and Fisheries,
Office of Wildlife, Coastal and Nongame Resources Division and
Louisiana State University, School of Veterinary Medicine
Endorsed by
Louisiana Alligator Farmers and Ranchers Association
June 2011

Best Management Practices For Louisiana Alligator Farming

| | Page |
|--|------|
| Historical Perspective | 1 |
| Oversight by the U.S. Fish and Wildlife Service | 2 |
| Farming/Ranching Program | 3 |
| Principles of Animal Welfare | 4 |
| INTRODUCTION | 5 |
| BEST MANAGEMENT PRACTICES | 6 |
| Egg collection and transport | 6 |
| Egg incubation and hatching | 7 |
| Culture for adult breeders | 7 |
| Shed culture/welfare | 7 |
| Capture and handling methods | 8 |
| Harvest practices | 9 |
| Releases to the wild | 10 |
| Transport of alligators for release or between farms | 10 |
| Quarantine of diseased alligators | 11 |
| Discretion with welfare of captive animals and euthanasia | 11 |
| SUMMARY | 11 |
| Do's and Don'ts of working with alligators | 11 |

Best Management Practices

For

Louisiana Alligator Farming

The Louisiana Department of Wildlife and Fisheries (Department) manages the American alligator (*Alligator mississippiensis*) as a commercial, renewable natural resource. The Department'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 crocodylian species throughout the world. Louisiana's alligator management program consists of two complex segments: research and management of the wild population and a statewide farm/ranch program. The program is funded by self-generated revenues (alligator hide tag fees, shipping label fees, other alligator related fees and alligator hide severance taxes). Since the inception of the Department's program in 1972, this program has provided hundreds of millions of dollars of revenue to landowners, trappers and farmers.

Historical Perspective

Alligators have been used commercially for their valuable leather since the 1800s. This harvest was generally unregulated through the mid-1900s. 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 Department'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 the Department was ready to initiate its new sustained use management program.

Oversight by the U.S. Fish and Wildlife Service

Five years after Louisiana closed the alligator harvest season, the alligator was listed on 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 the nine 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 by each species. Currently, the alligator is listed on Appendix II of CITES, because of the similarity of their appearance to other crocodilians that are truly endangered or threatened.

In order to fulfill CITES requirements, the USFWS through a series of rulemakings, has developed a complex set of requirements that the individual states, including Louisiana, must comply with in order to be granted export approval for harvested alligators skins and products. The most critical component in these requirements is that the Department 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 and 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 the USFWS). The USFWS requires strict accountability for each tag allocated to the harvester, requiring all unused tags be returned at the close of the season.

Farming/Ranching Program

Early alligator farms in Louisiana were generally small, family owned operations; and often run more as a hobby or curiosity than a commercial enterprise. Extensive studies conducted by Department biologists demonstrated that 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, the Department initially required a quantity of juvenile alligators equal to 17% of the eggs hatched by the rancher be returned to the wild within two years of hatching. In the first three years of the release program (1988-1990) returns were limited to fewer than 15,000 alligators. Sizes at release were generally small, and averaged 36-38 inches.

Our research and review of the ranching program documented that the released alligators are able to forage for food in the wild, grow well, have high survival rates, and successfully nest in the wild. Thus, we decreased the return percentage to 14% of the eggs hatched, starting with the 2000 egg permit collection. Continued monitoring and stable to rising survey numbers led us to again decrease the return percentage to 12% of the eggs hatched, beginning with the 2007 egg permits (releases "due" to be returned in spring/summer 2009). Thus, the management program is adjusted when available data warrants a change; although very close monitoring of the effects of this change will continue.

Enormous effort has been made by the Department to monitor the fate of the alligators released to the wild. Each alligator released is measured, sexed, tail-notched, tagged and recorded prior to release to the same area where they harvested alligator 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 recent years when weather conditions and water levels led to excellent nesting efforts, around 500,000 eggs have been collected which averted high hatchling mortality that would have occurred from hurricane impacts.

The economic revenue to Louisiana citizens (landowners, trappers, ranchers, etc) from the alligator program is valued at \$50,000,000 - \$60,000,000 annually in peak years. In light of this tremendous value to the state, we have developed this document entitled "Best Management Practices –Louisiana Alligator Farming" to supplement the Department's Alligator Rules and Regulations. This document is intended to guide alligator farmers and ranchers to ensure the humane treatment of captive reared alligators on farms in Louisiana. Similar documentation for farmed Australian Crocodiles exists ("Code of Practice on the Humane Treatment of Wild and Farmed Australian Crocodiles", 2009, Endorsed by the Natural Resource Management Ministerial Council of the Australian Government) and when applicable, similar practices are herein endorsed. Portions of this document were written by Javier Nevarez, DVM, PhD, of the LSU School of Veterinary Medicine to summarize appropriate care and euthanasia of captive alligators.

Principles of Animal Welfare

We must first begin by differentiating animal welfare from animal rights. Animal welfare seeks to ensure the humane and proper treatment of animals recognizing their significant role in society. Animal welfare acknowledges the importance of animals in agriculture as a source of food and other products but seeks to provide these animals with humane living conditions and treatment. Specifically it aims to provide animals with appropriate physical and mental needs for the species. Animal rights is a more radical view that does not support the use of animals for the benefit of humans and often seeks to abolish any activities that support the maintenance of animals in captivity for any reason.

“The American Veterinary Medical Association, as a medical authority for the health and welfare of animals, offers the following eight integrated principles for developing and evaluating animal welfare policies, resolutions, and actions.

1. *The responsible use of animals for human purposes, such as companionship, food, fiber, recreation, work, education, exhibition, and research conducted for the benefit of both humans and animals, is consistent with the Veterinarian's Oath.*
2. *Decisions regarding animal care, use, and welfare shall be made by balancing scientific knowledge and professional judgment with consideration of ethical and societal values.*
3. *Animals must be provided water, food, proper handling, health care, and an environment appropriate to their care and use, with thoughtful consideration for their species-typical biology and behavior.*
4. *Animals should be cared for in ways that minimize fear, pain, stress, and suffering.*
5. *Procedures related to animal housing, management, care, and use should be continuously evaluated, and when indicated, refined or replaced.*
6. *Conservation and management of animal populations should be humane, socially responsible, and scientifically prudent.*
7. *Animals shall be treated with respect and dignity throughout their lives and, when necessary, provided a humane death.*
8. *The veterinary profession shall continually strive to improve animal health and welfare through scientific research, education, collaboration, advocacy, and the development of legislation and regulations.”*

Reference: http://www.avma.org/issues/animal_welfare/default.asp

As a worker in an alligator farm/ranch, each individual is responsible for the welfare of the alligators. If a worker is witness to any procedures or handling of animals that appears inappropriate or inhumane, they should report this immediately to their supervisor or owner of the farm/ranch. In case their supervisor or the owner of the farm/ranch is the individual carrying out the inappropriate treatment of the animals, the worker should contact the Louisiana Department of Wildlife and Fisheries to report the problem. If an outside organization or individual approaches a worker of an alligator farm/ranch to ask questions about the operations of the facility, the worker should direct them to the owner of the facility.

The worker should not answer any questions, as they may not have full knowledge of the whole operation and management practices.

Introduction

Alligator farming or ranching is an industry that utilizes alligators as a renewable natural resource in Louisiana and other southeastern states. The success of the industry depends on the proper management of alligators as a resource. It is important that alligators are managed properly in the wild as well as in captivity. In order for the industry to be successful there must also be a market for the alligators being produced. Part of maintaining this valuable market is to ensure that all farms/ranches are employing humane methods of working with alligators. This document will provide information about how to properly handle alligator eggs and the animals throughout their time at the farm/ranch including euthanasia, and the period after euthanasia.

1. The commercial alligator program in Louisiana consists of a wild harvest, a farm/ranching program, and a nuisance alligator harvest program. Alligator products (raw hides, finished hides, novelty items such as alligator heads and other parts, manufactured leather products, taxidermy specimens, and meat) are traded domestically and internationally.
2. State and federal regulations exist for all aspects of the alligator industry as outlined above. The staff of the Louisiana Department of Wildlife and Fisheries closely monitors activities on alligator farms.
3. This document will serve as a guideline to ensure captive alligators are cared for with their welfare as a high priority. The Department encourages that animals be maintained in conditions that ensure their survival and humane care, with minimal stress and disturbance with little or no risk of injury. The Department endorses euthanasia practices that minimize pain and suffering while insuring human safety.
4. As the Louisiana alligator industry continues to grow and develop, it is important that a consistent set of standards for the humane treatment of alligators is available to industry participants.
5. The standards herein described as “Best Management Practices” (BMPs) are based on current knowledge of alligator welfare issues and what is thought to be the best management practices in humane handling techniques. These BMPs address the unique physiology, behavior, body structure, and safety concerns associated with alligators as compared to mammalian or avian animal production systems and are based on ethical veterinarian recommended care and practices.
6. These BMPs recognize that few studies exist on alligator methods of euthanasia and that alligator sensory perception, physiology, behavior, discomfort and pain awareness are not the same as in mammalian species. The Department encourages humane treatment, yet recognizes

that this BMP document is a “work in progress” that should be modified as new information becomes available. Research on captive husbandry and euthanasia is ongoing and will be monitored closely so any relevant new information might be incorporated into BMPs when obtained.

7. These BMPs are intended for use by commercial alligator producers and exhibitors licensed by the state of Louisiana to collect and incubate eggs, raise and exhibit alligators and harvest alligators for commercial use.

Best Management Practices

Egg collection and transport

8. Any eggs of uncertain viability that are not collected must be replaced back in the nest in the upright position to ensure the maximum chance of hatching naturally. Avoid mechanical injury by rough handling, and restore nest cavity and remaining eggs to pre-collection condition.
9. Eggs should be marked on the upper surface with a non-toxic marker while still in the nest (as they are found in the nest and not rotated), to avoid mechanical injury to the embryo. Eggs should be kept horizontal. They should be packed carefully to avoid rolling or rotation and to avoid damage from rough uneven terrain during boat and vehicle transport. Eggs should not be exposed to direct sunlight and be protected from overheating (about 91° F) or exposure to low temperatures (below about 80° F) during collection, transport, and incubation. Adequate humid conditions should be provided to avoid desiccation; yet adequate ventilation must be provided to avoid hypoxia (low oxygen) and allow for adequate gas exchange.
10. Female alligators may defend their nests in the wild; when egg collecting it may be necessary to hit the ground or water near the alligator with a pole to make a noise to scare the alligator away. For the safety of the egg collectors it may be necessary to deliver a brief tap to the alligator’s head or nose, which will usually deter it without any injury to the alligator, due to the thick bone in the upper part of the snout and skull. Caution should be taken to not hit the eyes. Use good judgment and the least amount of force as possible to gently push the alligator away.
11. It is safer to have a minimum of two people in each collecting boat. One can be observant for a guarding female alligator while the other person collects and packs the eggs.
12. Each clutch must be kept separate and identified as to permit number and land company. Records on clutch size, egg viability, and hatch rates should be kept for each clutch.

Egg incubation and hatching

13. Temperature and humidity regimes are recommended as above (see item 10). Avoid fluctuating temperatures. If any eggs appear to die during incubation, they should be removed to avoid microbes from affecting the other eggs in the clutch or other clutches in the incubator. Discarded eggs should be recorded by each individual clutch for inventory purposes and completion of 10 day egg collection and hatch reports.
14. Swelling of the eggs can indicate that they are too damp; consider replacing damp nesting material and/or reducing humidity within the incubator.
15. Air spaces under the eggshell may indicate the incubation environment is not humid enough; consider wetting the nesting material and/or increasing the humidity within the incubator.
16. If eggs begin to hatch, examine the embryo/hatchling for unresorbed yolk. If present, the eggs may need to incubate longer. Some hatchlings emerge spontaneously; some may need assistance in liberation from the egg.
17. It is often best to let the umbilicus dry for a day after hatching before putting the hatchlings in water. If there is unresorbed yolk, a longer period may be needed before placing hatchlings in water.
18. Be sure to avoid overcrowding, as hatchlings can easily be trapped if there is a “pile up” and they are pinned underwater and suffocate or are drowned by other hatchlings. They are gregarious and can crowd, especially in corners of pens with shallow water.

Culture for adult breeders

19. Adult alligators maintained out of doors should be in secured facilities with fences buried deeply enough to avoid escape by burrowing. Tops of fences can be angled inward to prevent alligators from climbing over fence tops.
20. Provide adequate fresh water of appropriate depth and shaded areas to avoid overheating.
21. Outside enclosures should be in rural areas with no or limited access to passersby. This will avoid harassment and exposure to items being thrown into pens to encourage the animals to “move” for photography purposes etc.

Shed culture/welfare

22. Spacing and temperature should be provided as per current regulations.

23. Alligators should be separated by size class to avoid fighting and to allow ready access to food for all alligators.
24. Alligators should be fed frequently (four to five days a week) or more.
25. Alligators should have ready access to clean water. Holding tanks should be cleaned frequently. Daily is preferred but must be weighed against other factors such as observed water quality associated with excess feed decomposition and animal waste, water volume, and animal disturbance associated with more frequent water changes. Washing less often than ideal may adversely affect alligator health, survival, growth and hide quality.
26. Sheds should be insulated enough to provide warmth in winter and encourage growth, and ventilated enough to avoid overheating during the summer months and accumulation of ammonia and odor from waste materials.
27. Pest and insect control should be routinely practiced throughout the alligator farm so as to minimize potential disease transfer to captive alligators.

Capture and handling methods

28. Alligators should be handled carefully and professionally when grading and sorting. Do not toss live alligators. Rather, place them carefully in bin, tote, or stall.
29. Small alligators can safely be caught by hand and held by securely grasping them behind the head. Larger alligators may need to be restrained by a short noose snare placed around the neck or upper jaw.
30. Capture should be undertaken by trained, experienced personnel to ensure safety of the entire work team, and to minimize stress and struggling by the alligator. This is often safest if conducted in deeper water, where the alligator cannot push off the floor of the pen.
31. Covering the eyes of the alligator with a cloth will help limit stress of captured alligators.
32. Jaws can be secured with thick rubber bands or electrical or duct tape. Care must be taken not to cover the nostrils. Tape or bands should be secure for safety purposes but not so tight as to cause depressions or necrosis in the skin.
33. For larger alligators, the legs may need to be secured with wide tape if being transported.

34. It is recognized that working with alligators has some associated risks but this does not justify inappropriate treatment of the alligators. All workers should have training on how to properly and humanely work with alligators before directly working with the animals. Any person not comfortable working with an alligator in a humane and safe manner should seek assistance and training before doing so.
35. While there is some degree of physical strength and force that must be used for capturing and restraining alligators, once captured and properly restrained the animals should be handled in a gentle manner. Workers should always act in a responsible and professional manner keeping in mind the welfare of the animal whenever handling is required, including the time period after the animal has been euthanized.

Harvest practices

36. Farmers should refer to guidelines by professional veterinarians as to further details regarding euthanasia practices. Current recommendations on euthanasia methods for alligators are based on those employed in other species. The euthanasia of animals takes into consideration the safety of the personnel as well as the welfare of the animals. At this time the procedure used is at the discretion of each facility based on experience and personnel safety and training but it must always take into consideration the welfare of the animals. Any procedure employed must ensure that the brain and/or spinal cord are sufficiently damaged so that there is no connection between the brain and the rest of the body.
37. Euthanasia must be as humane and rapid as possible. Recognizing that reptile physiology is markedly different than mammalian physiology, persistent reflexes in alligators may not be an indicator of pain awareness or consciousness.
38. Based on current information and technology, the method of rapid cervical spine severance (cervical dislocation) with exsanguination has been demonstrated to be most humane. Farm employees with extensive experience can euthanize an alligator in a matter of seconds using this method. This may be followed immediately by pithing (insertion of a rod into the foramen magnum to destroy the brain) in some instances.
39. The use of penetrating or non-penetrating captive bolt firearm followed by spinal cord severance for near immediate brain destruction is also considered to be a humane euthanasia method.
40. Gunshot followed by spinal cord severance or gunshot alone may be used, keeping in mind safety considerations of working indoors and ricochet of bullet fragments.

Releases to the wild

41. Handle alligators carefully and professionally when grading or sorting. Do not toss live alligators. Place carefully in bin, tote or stall to minimize or avoid trauma.
42. It is recommended to discontinue feeding a few days prior to the release, to avoid defecation by alligators on the release table and in burlap bags.
43. Tape mouths of alligators no more than one day before the scheduled release.
44. Do not pile too many alligators in bins or totes for release – those on the bottom of the tote might suffer crush injuries or suffocation.
45. Place only a reasonable number of alligators for a reasonable period of time in a 4'X4' tote (recommend no more than twenty alligators of approximately 4' in length for 30 to 60 minutes). Appropriate adjustments are necessary for larger alligators or for holding alligators for a longer period of time.
46. Do not toss sacked alligators on to trailers before release, or toss from bin or totes on elevated trucks down to the release table site. Carefully pass the alligator down to the next person.
47. Choose release sites in the wetlands carefully. Juvenile habitats consist of shallow ponds, rather than deep canals or large lakes. Release a reasonable quantity in each pond based on pond size. Do not release large quantities in one pond or a canal or roadside ditches. Handle carefully and professionally on releases. Do not throw alligators distances or toss forcefully into water. Release alligators gently over the side of the boat.

Transport of alligators for release or between farms

48. Transport discretely (covered and out of the view of the public on roadways) and with all due attention to welfare. Do not pile sacks. Do not pile multiple "layers" in crates/totes. Do not crowd alligators. Allow ample air space for adequate ventilation and protection from direct sunlight.
49. Place animals in a secure trailer to avoid loss of animals during transit.
50. Stop feeding a few days before transport to avoid regurgitation and aspiration due to taped mouths.
51. Avoid overheating and dehydration; it is particularly easy for hatchlings to overheat.

Quarantine of diseased alligators

52. Immediate consultation with Department staff and Louisiana State University School of Veterinary Medicine (LSUSVM) is recommended if disease outbreak is suspected. Alligators should be quarantined and preventative measures taken (foot bath washes, cleaning of equipment, etc.) to limit spread of disease.

Discretion with welfare of captive animals and euthanasia

53. Use caution and discretion when discussing our successful alligator management and harvest programs with casual visitors to your farm and with media spokespersons and journalists, to ensure accurate, tasteful, and humane techniques, acceptable for all audiences, are portrayed being aware that all persons may not share an appreciation for harvest of any animal species.

SUMMARY

Do's and Don'ts of working with alligators

Do:

- Seek training and assistance on how to properly handle alligators
- Make sure that you have appropriate tools and equipment before working with the alligators
- Look out for their welfare
- Handle them with respect and dignity even after death
- Follow humane euthanasia principles
- Move animals carefully
- Lay an animal down on the floor or table gently
- Keep in mind they are capable of feeling fear and stress
- Conduct work activities in a professional manner when handling live or dead alligators
- Transport and move animals in a secure way to minimize escape, injury to personnel, and injury to the animals
- Ask for guidance and training
- Report any mistreatment of the animals to your supervisor, farm/ranch owner, or the Louisiana Department of Wildlife and Fisheries

Don't:

- Don't harass, hit, mistreat, scream, or carry out any other action that may be perceived as aggressive towards an alligator
- Don't swing alligators by their tails for either moving them or for euthanasia
- Don't euthanize alligators by a blow to the head against the concrete or any other structure
- Don't euthanize alligators by a blow to the head with a hammer or any other tool other than those described in the euthanasia section
- Don't place live alligators in ice or in a freezer or refrigerator
- Don't carry out any procedures that may be perceived as unpleasant to the animal, with the exclusion of euthanasia procedures, which are always unpleasant
- Don't use excessive force
- Don't leave animals in direct sunlight
- Don't throw animals across the room
- Don't throw or slam animals against the floor
- Don't throw bags or containers holding animals
- Don't attack an alligator for any reason unless the alligator threatens the life of a person

The American alligator is a renewable natural resource and farming/ranching operations help create jobs for many in Louisiana. Workers are directly responsible for the welfare of the animals and must ensure that the animals are being treated humanely. The humane treatment of the alligators must occur at all stages of the operation from the moment of egg collection until the skin and meat are harvested from the carcass. It is critical that the alligators be handled appropriately in the farms/ranches so the jobs created by the industry can continue to exist. Training of workers in humane handling techniques is available through the LSUSVM (in English or Spanish).

These *Best Management Practices For Louisiana Alligator Farming* are recommended by the Louisiana Department of Wildlife and Fisheries and the Louisiana State University School of Veterinary Medicine and are endorsed by the Louisiana Alligator Farmers and Ranchers Association.