CONSERVATION OF A DINOSAUR IN MODERN TIMES: SOUTH CAROLINA'S ALLIGATOR MANAGEMENT PROGRAM

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Abstract: American alligator (*Alligator mississippiensis*) conservation is necessary given the animal's role in wetland ecosystems and its economic value. Although the alligator appears to be no longer threatened with extinction, the reptile's perceived reputation and a burgeoning human population combine to create a management paradox. Alligator management in South Carolina consists of a Nuisance Control Program, a Private Lands Harvest Program, and public education. Annually, over 750 alligator complaints are received by the South Carolina Department of Natural Resources (SCDNR), and harvest averages about 250 animals. To address alligator/human interaction in rural habitats, a harvest on private lands was established in 1995. The program, which has been well received by the public, encompasses over 27,000 acres in 7 counties and is valued over $75,000. Brochures, presentations, and the media have been utilized effectively to educate the public about alligators. A holistic approach is suggested for successful conservation of a species that has mixed attributes.

Key Words: alligator, *Alligator mississippiensis*, South Carolina, wildlife management

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INTRODUCTION AND HISTORY

Persevering for over 200 million years, crocodilians truly are living dinosaurs. Of the 23 species found worldwide, the American alligator (*Alligator mississippiensis*) occupies the northern most limit of the group's range and is the only species found in South Carolina.

The alligator has a storied history in the Palmetto State. Many early explorers described the species' presence and there are written accounts of Civil War soldiers using the animal's hide and meat. During the early 1900s, alligators were hunted without regulations or restrictions on take. In 1955, a law that prohibited night shooting, which originally was intended for white-tailed deer (*Odocoileus virginianus*), provided the first protection for alligators. Alligator trappers were required to possess licenses and tags beginning in 1962.

Despite these early regulations, the South Carolina alligator season was closed in 1964 due to low population densities. The alligator was afforded further protection under a series of federal laws in the late 1960s, which were precursors of the Endangered Species Act of 1973. However, established interstate poaching networks still threatened the species' recovery.

Legislation that contributed significantly to the recovery of the alligator was an amendment in 1970 to the Lacey Act of 1900. The Lacey Act, which prohibited the transportation of illegally harvested game (birds and mammals) across state lines, was amended and now included alligators. This regulation effectively ended the poaching era, and South Carolina's alligator population began its recovery.

Subsequently, the promulgation of the Endangered Species Act of 1973 enhanced the alligator's recovery and provided research funding to determine status and begin to answer other biological questions. Creation of the Convention on International Trade in Endangered Species (CITES) also contributed to its recovery by regulating the export of alligator hides, meat, and parts.

During the 1970s and early 1980s, the alligator was listed federally as threatened on the coast and as endangered elsewhere in South Carolina. The alligator was added to the state endangered species list in 1979 because of the animal's low reproduction rate and slow potential for recovery. Then, in June 1987, the U.S. Fish and Wildlife Service reclassified the American alligator from endangered or threatened to the category of

"threatened due to similarity of appearance" throughout its range (Fed. Register 52(107), 4 June 1987). Reclassification was based on evidence that suggested that the species no longer was deemed biologically endangered or threatened, but federal protection still was necessary to regulate take and commerce to protect the American crocodile (*Crocodylus acutus*) in the United States and other endangered crocodilians in foreign countries.

While the alligator was recovering during the last three decades, the South Carolina coastal area, which supports the highest alligator populations (Rhodes 1996), rapidly was being developed by humans. In the tri-county region around Charleston, for example, human population growth rose 41% from 1973 to 1994, whereas the amount of land converted to urban uses expanded 255% (Lacy and Jensen 1997). Consequently, human and alligator conflicts began to rise.

NUISANCE ALLIGATOR CONTROL PROGRAM

Prior to the alligator being reclassified in 1987, the only means the South Carolina Department of Natural Resources (SCDNR) had available to rectify alligator complaints from the public was relocation of problem animals or, in rare instances, harvest. Relocation was deemed ineffective because of high labor demands and cost, lack of suitable relocation sites, and the animal's ability to home (Murphy and Coker 1984). Harvest of an endangered species was allowed only in certain instances. Thus, there was no effective means to remedy nuisance alligator complaints.

The Florida Game and Fresh Water Fish Commission determined that the best approach to remove nuisance alligators was to contract with private hunters (Hines and Woodward 1980). This strategy maintained the agency's position that when an alligator was killed, its commercial value would be realized, and the problem simultaneously would be resolved.

Following this same protocol, South Carolina's Nuisance Alligator Program was established in 1988. Five nuisance alligator agents were contracted; these agents would receive 50%, SCDNR would receive 42.5%, and a hide broker would receive 7.5% of the hide revenue. Agents were permitted to retain all revenue derived from meat and other by-product (e.g., skulls) sales.

The number of alligator complaints has risen steadily (Table 1), and today the number of alligators harvested averages about 250 animals annually. A decline in hide prices in the early 1990s lead to a change in the hide revenue distribution. Agents currently receive 85%, whereas SCDNR and the hide broker split the remaining 15%. Economic analysis suggests that agents need to receive approximately $25/ft for a hide to remain profitable.

The current Nuisance Alligator Program effectively resolves public alligator complaints. However, SCDNR manpower needs will have to be addressed as complaint numbers rise, and a mechanism is needed to retain agents when hide prices are low.

PRIVATE LANDS ALLIGATOR PROGRAM

The majority of nuisance alligator complaints originate from urban areas (Rhodes, unpubl. data), but landowners in rural areas also are coping with increasing alligator populations. Many residents reluctantly tolerated the population increase, but others illegally shot nuisance alligators as a means to reduce local populations. Faced with a resource being wasted and requests from private landowners for relief, SCDNR began investigating in 1991 the feasibility of establishing an alligator season on private lands.

The first alligator season in 31 years was approved for four counties (Beaufort, Charleston, Colleton, Georgetown) in the fall of 1995. The owners of 13 properties participated and 17 trappers harvested 127 alligators (Table 2). In 1997, the area open to harvest was expanded to include private lands in all or a portion of seven counties (those listed above, plus Berkeley, Dorchester, and Jasper) and annual harvest increased to 211 alligators.

Landowners are required to pay certain fees (license, tags, hide validation), but they are permitted to retain 100% of any revenue

generated from product sales. Thus far, gross revenue has exceeded $75,000 for each season.

The SCDNR Private Lands Alligator Program effectively has addressed alligator conflicts on private lands while allowing landowners the opportunity to realize an economic benefit from supporting alligators in their wetlands. Having an economic incentive to conserve habitats that support alligators, in turn, benefits other wetland-dependant species.

INFORMATION DISSEMINATION

Whether from perceived fear or general interest, alligators garner tremendous attention by the public. SCDNR annually receives over 1,500 requests for information pertaining to alligators. The agency has developed several mediums to meet this demand.

A brochure that provides an overview of the species' natural history is available for distribution. An educational bulletin board is on display at one of SCDNR's most visited offices. Several popular and scientific articles are produced each year for media distribution and posting on the agency's homepage. Over a dozen talks are given annually to community associations, nature clubs, and at vacation resorts. Lastly, SCDNR personnel actively are involved with local media outlets (i.e., newspaper, radio, television) to educate the public about alligators.

CONCLUSIONS

Like the animal itself, the Alligator Program in South Carolina has evolved to meet its many challenges. Because a variety of multiple-user groups, each with either positive or negative attitudes toward alligators, developed over time, a management program was created and implemented to address the needs of these constituents. For managers seeking examples of successful management efforts for a wildlife species, especially one associated with opposing attitudes, the successful alligator programs developed by agencies in the Southeast serve as good models.

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Table 1. Summary of South Carolina's nuisance alligator harvest, 1988-1997.

Year	Complaints Received	Removal Permits Issued	Alligators Harvested	Alligators Harvested Per Tag Issued	Average Length (cm)	Avg. $/30.5 cm	Meat Sold (kg)
1988	550	433	370	0.85		44.45	
1989	458	376	268	0.71		52.01	
1990	535	358	253	0.71		59.46	
1991	645	421	271	0.64		47.11	
1992	711	365	210	0.58		30.22	
1993	615	380	235	0.62	222.8	22.18	1,843.8
1994	673	420	250	0.60	235.3	34.61	2,910.7
1995	741	449	280	0.62	237.1	45.19	3,031.5
1996	786	358	238	0.66	233.8	37.54	2,692.9
1997	770	382	246	0.64	235.4	20.00	3,228.2

Table 2. Summary of Private Lands Alligator Harvest, 1995-97.

Year	Number Properties	Number Trappers	Tags Issued	Harvest	Success Rate (%)	Average Length (cm)	Sex Ratio (% males)	Meat Produced (kg)
1995	11	17	159	127	80	206.3	60	1,078.4
1996	11	13	166	128	77	211.2	69	1,563.6
1997	28	18	395	211	53	217.8	72	2,110.8