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METHODS OF CAPTURING, MARKING AND SEXING ALLIGATORS

BY

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A study was begun in April, 1958, to gather information on alligator (*Alligator mississippiensis*) growth and movement. For the purpose of the study it was necessary to live capture, mark and sex alligators of all size classes in bayous, canals and shallow impoundments.

Very little information was available in the literature regarding the handling of alligators and considerable time was spent developing the technique used during the study. The purpose of this paper is to present the various methods used to capture, mark and sex alligators and to discuss the techniques found most effective. From the beginning of the study through September, 1963, over 1,600 alligators were captured.

The study was conducted on the Rockefeller Wildlife Refuge at Grand Chenier, Louisiana. The refuge is owned by the Louisiana Wildlife and Fisheries Commission and as a result of rigid protection, supported a very large alligator population. Also, a large segment of the specimens were captured on the Sabine National Wildlife Refuge at Hackberry, Louisiana. Alligators were found on all portions of the areas that afforded suitable habitat.

Capturing Alligators:

Alligators were captured both at day and at night, but in general night hunts proved more successful. Not only was it possible to capture more alligators at night but also a wider range of size classes.

The principal method of capturing alligators was basically the same as that used by McIlhenny in 1927 (McIlhenny, 1935). This consisted of night hunting in a boat with a headlight and a strong wire slip noose attached to a stiff bamboo pole. Small aluminum hulls powered by 18 horsepower outboard motors were used in most cases during my study for night hunting. An airboat was used in shallow impoundments. One man sitting in the bow of the boat located the alligator by shining its eye with a 6-volt headlight. The alligator was then captured by slowly maneuvering the boat up to the animal and placing a snare mounted on a stout pole, around its neck, then quickly tightening the snare. Kleflock swivel snares as manufactured by Animal Trap Company of America were used during the study. Alligators less than six feet long were captured with the No. 0 snare and placed in regular burlap sacks until tagged. Those over six-feet long were captured with the No. 3 snare and immediately towed to the bank, marked, measured then released.

An alligator less than three feet long was easily captured at night by quickly grasping it behind the neck with one hand as it swam along the surface of the water, then pulling it into the boat and grasping the tail with the other hand to prevent the animal from twisting.

Alligators were usually taken by this method only under ideal conditions which included: deep water which permitted a rapid and noiseless approach and a night when they were holding particularly well. Nevertheless, when such conditions appeared this method was very effective. One crew captured over 100 alligators on Rockefeller Refuge in a period of about three hours using this technique.

Although a number of alligators were live captured during the day, these made up less than 10 per cent of all captured. At this time alligators are very scary and difficult to approach. Most specimens captured during the day were newly hatched animals at the nest site. Alligators hatch in late summer and will remain in the vicinity of the nest at a hole or den with the mother for the first winter. When the hole was approached the young would submerge but then surface after about 10 minutes and could be picked up either by hand or with a dip net. Although there are many stories describing the fierceness of the mother alligator, at no time during this study did females attempt to defend the nest or young.

After alligators reach a length of about five feet, many will live in holes or burrows in the marsh. These holes are easily located with a marsh buggy. Alligator hunters use a long pole with a hook on one end to remove the animal from the hole. The alligator is prodded with the pole until he bites it and becomes hooked. However, this usually results in serious injury to the animal and those live-captured for the study were dug out of the holes with shovels.

Several alligators were captured during the study on dry ground as they apparently traveled overland from one waterhole to another. This was especially common during drought periods. In fact, I spoke with several persons having seen alligators at such times crossing Highway 82 which borders Rockefeller Refuge.

Nets were used to capture alligators on different occasions. This method was particularly valuable in capturing animals in deep water that could not be captured otherwise. The gear used included haul seines, trawls and cast nets.

Because of the danger and difficulty involved in handling alligators, particularly large animals, various anesthetics and tranquilizers were tested in an effort to determine those most effective. Alligators have relatively simple circulatory and excretory systems; consequently, the animals responded slowly to most drugs and recovery often took several days. Sodium pentobarbital administered intramuscularly produced anesthesia within one hour, but recovery often required as long as 72 hours. Avertin (Sterling-Winthrop) was administered rectally at a rate of 0.50 grams per kilogram of body weight and within five minutes the alligator was very sluggish and unwilling to fight. The drug produced anesthesia within 20 minutes, but recovery required 19 hours. Avertin administered at one gram per kilogram of body weight was lethal.

Marking and Tagging:

An ideal marking or tagging system is one that can be rapidly and easily applied, easily recognized not only by persons associated with the study but also by other persons handling alligators and yet permanent enough to withstand several years of wear.

Various marks and tags were placed on alligators in an effort to find methods best suited for the study. Several alligators were marked, tagged and held in captivity in special concrete pools on Rockefeller Refuge. These alligators were checked periodically and the condition of each observed. The methods used were toe clipping, removing dorsal tail scutes, attaching a metal tag to the tail, attaching streamer tags and collars and tattooing.

None of these methods were perfect and I finally decided upon a combination of three of the methods. Toe clipping was permanent but only a small number could be marked; therefore, toe clipping was combined with notching the tail scutes. The tail scutes are the scales or ridges lying dorsally and posteriorly on the tail. Each toe was assigned a certain number and each scute a letter, thus this combination provided over 3,000 separate marks.

Although the marks were permanent, they would have probably gone

unnoticed by persons not familiar with the study. Therefore, a self-piercing monel tag was attached to a dorsal tail scute. The type used was size no. 681 of the National Tag and Band Company, the same as commonly used on white-tailed deer (*Odocoileus virginianus*). Each tag was numbered differently and provided a return address.

Streamer and internal anchor tags were tested and proved satisfactory for short termed studies. Either a tag or a barb was placed beneath the skin, usually on the side of the tail. This was attached to a flexible chain or plastic strip which extended through the skin so as to be externally visible. However, the openings through the skin were frequently slow healing, making this method undesirable for long termed studies. Also, the tags tested did not retain external identification for very long.

Tattooing was tested as a possible method of marking. Numbers were written on the light colored skin on the bottom of the tail with an electric tattooing device. The numbers were very clear when new but faded with age and after several months were barely legible.

A collar placed around an alligator's neck was very satisfactory for short termed usage. The collar provided a method of rapid field identification and could be seen at a distance. They were particularly valuable when the animals were captured, then marked and released soon afterwards. Those previously captured the same night could be readily identified. A vinyl plastic tape was used for making collars. Alligators grow at a fairly rapid rate; therefore, it was necessary to use material that was thin enough to break when the animal outgrew the collar.

Sexing Alligators:

Alligators have few external or secondary sexual characteristics, therefore, the sex was determined only by an examination of the cloaca. McIlhenny (1935) stated that it was not possible to determine the sex from an outward appearance on a specimen under seven feet long. However, both McIlhenny and Viosca (1939) observed that the sexes could be easily recognized on larger animals because the head of the male becomes rugged and more massive with age.

Viosca described a method of separating the sexes of all age classes based on scutallation around the vent, but stated that there were irregularities in both sexes. This method was checked for possible use during my study, but because of the variation among individual animals, the method was not used.

Viosca also described another method of sexing alligators based on the presence or absence of the penis character. If an alligator was a male the penis would protrude if the animal was placed on its back, across a bended knee, and then pressure applied on both sides of the vent with the thumbs while bending the tail downward. This method was listed by Viosca as not infallible, especially with very young alligators.

A modification of this method was used to sex small alligators, less than 30 inches long, during this study. The specimen was placed on its back on a flat surface, then by pressing beneath the pubis at the vent with the thumb and index finger and at the same time bending the tail upward, the penis would protrude if a male. This technique was found to be very reliable.

Larger animals which could not be handled so easily were sexed by a method very similar to that described by Bradt (1938) for sexing beaver. The little finger was inserted into the cloaca then moved anteriorly through the cavity. If the animal was a male the penis could be felt by moving the finger from side to side along the ventral floor of the cloaca.

SUMMARY

A study was begun April, 1958, to gather information on alligator growth and movement. The study was conducted on the Rockefeller Wildlife Refuge in Grand Chenier, Louisiana, and for the purpose of the study it was necessary to live capture, mark and sex alligators of

all size classes in bayous, canals and shallow impoundments on the refuge.

Alligators were located at night using a small boat, an outboard motor and a headlight. An alligator was then captured by slowly maneuvering the boat up to the animal and placing a snare, mounted on a stout pole, around its neck then quickly tightening the snare. Alligators less than six feet long were captured and placed in regular burlap sacks until tagged. Alligators over six feet long were captured and immediately towed to the bank, marked, measured then released.

Two methods were used to mark alligators for future identification. The first method was by toe clipping and removing or notching dorsal scutes along the posterior portion of the tail. Clipping certain toes and certain dorsal tail scutes, each properly coded, provided over 3,000 separate marks. In addition to the mark, a self-piercing metal tag was attached to the alligator's tail, thus providing a double check on identification. Alligators recaptured after three years were easily identified.

Determining the sex of alligators was done by examining for the presence or absence of the penis character. The penis will protrude from the cloaca of the male when pressure is applied beneath the pelvic. The little finger was inserted into the cloaca of large specimens and if a male the penis could be felt.

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WATERFOWL MANAGEMENT ON TWO U. S. ARMY CORPS OF ENGINEERS MULTIPLE PURPOSE RESERVOIRS IN MIDDLE TENNESSEE

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ABSTRACT

The evolution and success of a State waterfowl management program on federally purchased perimeter lands on the Old Hickory and Cheatham Lock and Dam Projects in Middle Tennessee are described. Basic development upon operations' initiation (Old Hickory 1957 and Cheatham 1959) and early project years consisted of provision of quantities of suitable agricultural foods on upland areas adjacent to the reservoirs. Beginning in 1959 on Old Hickory and 1960 on Cheatham, the program was materially altered from that above to one centered upon the construction and operation of twenty-four small seasonal sub-impoundments. These varying in size from six to 200 surface acres are annually drained, cultivated for food production and subsequently reflooded prior to the beginning of the fall migration period. A marked increase in wintering waterfowl and consequently hunting opportunity occurred following the establishment of water management, even in the face of declining state and flyway populations. Changes in population numbers and periods of build up relative to the development programs are documented. Other principle aspects of management and approximate costs of construction and operation of the water control systems are discussed.