

ANIMAL CONTROL PLAN

CHAUTAUQUA NATIONAL WILDLIFE REFUGE

I. Introduction

Chautauqua National Wildlife Refuge consists of the main unit at Lake Chautauqua near Havana, Illinois, and the Cameron-Billsbach Unit, seventy miles to the north. The refuge also administrates Meredosia National Wildlife Refuge, fifty-five miles to the south.

Lake Chautauqua was formerly a drainage district protected by a series of dikes from the Illinois River. These dikes now enclose the 3,400 acre lake which is a haven for migrating waterfowl and a production area for wood ducks. Wildlife habitat varies from 919 acres of bottomland timber to 135 acres of upland timber. Water levels in the lake fluctuate from deep water in late winter to low water in the summer, exposing the underlying mudflats.

The Cameron-Billsbach Unit was at one time heavily managed with crop production and a series of dikes to aid in water control of Weis Lake. Cuts in manpower and the addition of the Meredosia Refuge have cut these programs. Heavy siltation of Weis and Billsbach Lakes from the Illinois River, which splits the unit, has also taken its toll on wildlife use. The unit consists of 1,040 acres of open water, 40 acres of upland woods, and 629 acres of bottomland timber which includes an island in the river.

In the spring, most of Meredosia NWR is covered by the Illinois River which borders the refuge on the west. Consequently, the area is dominated by 1,394 acres of bottomland timber which is dotted with ponds when the water recedes. There are 300 acres of former cropland now maintained as open fields with two moist soil units totaling 37 acres. Meredosia Lake forms the eastern edge of the refuge, connected to the moist soil units and ponds by a series of ditches. A long dike along the south helps protect the lower areas from minor fluctuations in the river and lake.

The primary objectives of the Chautauqua National Wildlife Refuge complex are to provide optimum conditions for resting, migrating waterfowl and to perpetuate optimum production of wood ducks. To meet these objectives, it may become necessary to control predators and wildlife, such as beaver, which may damage the habitat or control structures necessary to maintain optimum waterfowl habitat. This must be balanced by the secondary objectives of maintaining balanced populations of all resident wildlife species and providing the public with adequate opportunity to view wildlife species. This would preclude total elimination of any species. Control measures

should also take into account that hunting and trapping are other public uses that can be used to beneficially trim nuisance populations.

In fact, past management practices have relied on trapping to control commercially valuable furbearers. As recently as 1962, private trappers removed raccoons from the Chautauqua Refuge and raccoons, red and gray fox, and opossum from the Cameron-Billsbach Unit. Beaver were last trapped near Liverpool Lake in 1961. Raccoons have been live-trapped near wood duck banding operations by refuge personnel to reduce predation on the trapped ducks up until 1968. Where a one-time problem exists, such as a beaver dam blocking a water inlet, areas experts have been called in to help.

Several items should be taken into consideration when animal damage appears and becomes a problem to be controlled. First, it is essential to identify the true target specie(s). Second, at least a good estimate of the population which needs to be controlled must be obtained. A problem caused by one family of beaver in the wrong place should not ordinarily lead to a full-blown trapping program. Another aspect to consider on these refuges is their small size, especially the small fringe area along the ridge of Lake Chautauqua, which can greatly reduce the effectiveness of population control. New animals can easily reinvade the opened niche.

The following discussion briefly details some distinctive marks of common nuisance species found on the refuge. Further information on damage and its identification can be found in the appropriate literature on each specie. Details on setting up trapping programs can be found in the Fur Management Plan. It should also be cautioned that any control program using chemicals is generally not target-specific and should be avoided if at all possible. Use of any pesticide will generally require a specific plan and approval from the Regional Office (check with the Refuge Manual, 7RM14). Control measures cited here are generalized, as no control programs other than protective measures are projected in the foreseeable future. If such a program becomes necessary, a separate control plan shall be written up specifically for the target species. One-time control measures, such as the above beaver problem, will be handled by the area's wildlife biologist.

II. Predator Identification and Control

A. Fox Squirrel

Before the advent of predator-proof nesting boxes, fox squirrels did a lot of damage to wood duck eggs. Now, they are limited to natural cavity nesters and may still be inflicting major influence upon wood duck numbers. Since cavity nests are difficult to find and inspect, keeping a close eye on wood duck/squirrel population size can indicate if the squirrels are becoming a serious threat.

Fox squirrels have no known distinctive marks of egg feeding. Since they were ranked second as nest destroyers in a 1959 study here, most of the damage not shown to be raccoon related is likely due to the squirrel.

Passive control of damage by increased use of predator resistant nest boxes in areas of heaviest rodent predation has been the preferred method in the past. However, if squirrel populations must be trimmed, a controlled hunt would be the most preferable method. Any chemical baiting would not be as target selective and is generally not very useful in fox squirrel control.

Fox

Both red and gray fox have been found on the areas, but the red is the most prevalent. The fox is most active as a predator on migrating waterfowl on these refuges, but may also take the occasional nesting mallard or her young. In general, their effect is beneficial in taking injured and dying waterfowl along the shoreline, reducing the risk of a disease outbreak.

Control may be necessary if the population becomes too large and begins to prey on more of the healthy migrants. Foxes tend to carry their kill to the den to feed the pups, or they may partially bury it after carrying it from the kill location. A deserted kill, especially of young birds, may have tooth marks under the wing on both sides of the body, often with the head missing. The breast and legs are eaten first, with other appendages scattered about and smaller bones sheared off. The toes of the victim are often found in a curled up, unnatural condition from the fox's pulling of the tendons. Eggs will generally be opened just enough to be licked out, with shells left beside the nest. They are rarely removed to the den.

In past management efforts, fox have been taken by professional trappers. The last fox taken were three red and one gray fox in 1962 at the Cameron-Billsbach Unit. Populations have stabilized since trapping was halted, giving peak populations of ten red fox on Chautauqua NWR, eight on Meredosia NWR, and five on Cameron-Billsbach. If fox become a serious hazard to waterfowl populations by terrorizing healthier migrants or eradicating upland nests, trapping may need to be resumed.

Target specific alternatives should also be considered, such as revival of the sport of fox hunting. If the depredations occur mainly in the spring when the fox is feeding its young, the den may be found by tracking the adult. Steel leg traps in the adult trails will take the parents while the young may be destroyed humanely after digging out the den.

Raccoon

Many studies have shown the raccoon to be the most common destroyer of wood duck nests, especially in this area. They are adept climbers and will not only eat the young, but will also take the hen if she is found on the nest.

They will eat the eggs of upland nesting ducks, or any nesting bird, they come upon. They may remove one or more of the eggs from the nest or eat it there. Raccoon-damaged eggs are characteristically heavily cracked with the line of fracture along the long axis. Hens taken off the nest often have the head bitten off and left some distance from the body, while the breast and crop may be torn and chewed. Entrails are sometimes eaten and bits of flesh may be found near the water. Raccoons have also been notorious for entering wood duck traps during banding operations and killing or injuring most of the trapped ducks.

Owls also

In a 1959 study of wood duck nest success in natural cavities and nesting houses, the investigators pointed out that population size had no apparent bearing on nest success from year to year. Therefore, the best control method to guard against nest predation would be to keep the raccoons out of the nests as much as possible. Predator-proof nest boxes are the most efficient method. The study showed 78% nest success in the predator-proof nest boxes with only 35% success in natural cavities. Application of tanglefoot around the trunk of known nesting cavities also increases success rate, but is less cost-effective.

Present control measures to reduce predation on trapped ducks consists of carefully setting the traps to reduce the raccoons' access for digging under the cage and keeping the entrance too small for the raccoons to enter. In the past, however, raccoon populations were larger and warranted more drastic measures. Professional trappers last took raccoons from the refuges in 1962, when eleven were removed from the west and south dikes of Lake Chautauqua and another eleven from around Weis Lake. Present populations are estimated from eight to sixteen raccoons, and would not support such trapping. Refuge personnel also trapped raccoons, using live-traps near banding operations to be selective in the kill. Such trapping ceased in 1968, when raccoon numbers fell so low that negligible disturbance of the traps was seen. If the populations do increase to a point where banding operations are significantly disrupted, a live-trap should be set near the operations. Non-target wildlife should be relocated to avoid recapture while feral dogs and cats are humanely disposed of. Trespass animals should either be taken to the local animal shelter or their owners contacted.

Mink

Studies of predation in the prairie pothole regions have pointed to the mink as the most versatile of waterfowl predators. They are capable of taking hens and ducklings of both wood ducks and upland nesters, and the eggs of woodies, having the greatest impact overall on woodies. Mink have not been shown in any study here that they have any impact on local wood duck populations, but an increase in population size could conceivably make the vulnerable young ducklings an attractive food source for the mink. Predator-proof nest boxes should keep nest predation to a minimum. Mink predation is indicated by characteristic single or double sets of tooth punctures on the neck or head, having killed their victim by piercing the skull, upper neck, or jugular vein. They usually will eat the head and breast. Eggs may be broken at the ends with openings 15 - 20mm in diameter, or with punctures on either the side or ends and the embryos gone.

Trapping plans for 1962-64 indicate that permits would allow no taking of mink on Chautauqua NWR, but would allow five on the Cameron-Billsbach Unit. There are no reports of any mink actually being taken. Trapping would be the most efficient means of trimming any excess population. ?? NO

Striped Skunk

Though skunks are notorious for robbing eggs from nests, they are unable to climb into wood duck nests. They are primarily a factor in upland nesting bird populations. Eggs will be opened at one end with the edges crushed in by the skunk putting its nose in the egg to feed. Canine tooth marks are at least $\frac{1}{2}$ inch apart.

Control of the striped skunk will probably not become necessary for their predatory activity. However, they may pose a nuisance if they invade public use areas, the headquarters or residence. *main reason is not*
~~The area's wildlife biologist should be contacted for such a one-time removal.~~ *Wildlife Assistance people handle this.*

Opossum

Very little is known about the opossum population on the refuge. Estimates range from eight on Meredosia NWR to twenty on Chautauqua Refuge. Though not a serious wildlife predator, its climbing ability and taste for bird eggs will lead it to destroy a wood duck nest. Opossums that have invaded poultry farms show a characteristic messiness, leaving chewed egg shells scattered in the nest. They may also take any vulnerable young or upland game birds, commencing to eat at the anal opening and leaving a few messy, wet feathers.

Opossum have been trapped as late as 1962. Trapping would be considered to be the best control tool.

No

Dogs and Cats

These will take an occasional waterfowl or vulnerable wildlife. Dogs primarily attack larger mammals and have proven a problem by chasing deer on the refuge. In such an instance, pet owners were notified to pen up the animals. The owners then gave the OK to destroy the dogs in question if necessary. Feral dogs, however, should be humanely destroyed, preferably by shooting.

Cats entirely consume the meaty portions of large birds, leaving behind loose skin and exposed bones with teeth marks. Only wings and scattered feathers of smaller birds will remain. If feral cats are a problem, they should be humanely destroyed, preferably by a clean shot. Pet owners should be contacted and asked to keep problem cats inside or put a bell on to minimize their predation.

III. Habitat Destruction: Identification and Control

Beaver

The greatest damage done by beaver consists of plugging waterways and water control structures, inhibiting water management programs. Beaver can also cause extensive damage by gnawing and felling too many trees. They leave trees with a characteristic cone-shaped stump surrounded by wood chips. They may also strip the bark from felled trees.

Removal of the dam or lodge by blasting is generally an effective means of clearing up the beaver problem. Blasting should be carried out only by an expert. However, if the beaver is persistent, it may rebuild, resulting in a no-win situation until the beaver is removed. Generally, such a one-time situation should be handled by the refuge personnel and may consist of using gas cartridges, strychnine-alkaloid baited sticks, or live-trapping to be transported to a less strategic area of the refuge.

In the past, beaver have been trapped on the refuge by professionals. This should only be considered if the beaver population is getting out of hand and damaging groves of trees. Selective area trapping where beaver are a problem is also to be considered.

Muskrat

Muskrat have both beneficial and detrimental effects. They help maintain open areas in the vegetation and their houses provide

Logging Areas

excellent ~~lodging~~ for waterfowl. Muskrat tunneling can weaken dikes, causing blowouts. The Meredosia NWR population has been causing these sorts of problems but, so far, they have been easily repairable.

Muskrat sign in addition to their houses includes dens (which can be seen at low water), slides, cave-in's (as a result of undermining muskrats), sightings, tracks, and droppings.

The preferred control method is trapping. Since the pelts are commercially valuable, professional trappers might be willing to work the area. Past trapping plans have called for trappers to take muskrats. For example, 600 of the 800 estimated to be present around Lake Chautauqua in 1962 were to be trapped, but there are no records of muskrats actually taken. Current estimates range from 20 muskrats on the Cameron-Billsbach Unit to 45 at Lake Chautauqua, not enough to support a trapping program.

Cottontail Rabbit

Rabbit populations on the refuges have been kept in check by the fox populations. Winter can be a harsh time for rabbits, though, and past studies have shown that they can damage young trees by gnawing the base of a sapling in search for winter food. They can strip bark from a young tree or even snip the end of lower branches, leaving a clean, oblique cut on the stem. They will usually clip stems of $\frac{1}{4}$ inch in diameter or less and up to 20 inches tall. Sometimes, they can be seen feeding or their trails and droppings near the base of the damaged plant will give them away.

In particularly harsh winters, rabbits can be fed corn or some other feed to reduce damage. A hunting program can also be initiated. Taste repellants, such as Thiram or Zac, can be applied to the back of vulnerable shrubs and trees, but as these must be applied each year, it is generally not cost-effective. Barriers of aluminum foil or hardware cloth around the trunk of valuable trees is preferable to taste repellants. Though initial cost is greater, the barrier will last through several seasons. To protect a grove of seedlings, the entire area may be fenced off and rabbits eliminated from the enclosure if damage is possible.

White-tailed Deer

Deer have caused damage in other areas by over-browsing and ripping young saplings while rubbing their antlers. Deer use the Chautauqua NWR and Cameron-Billsbach Unit mainly as a resting area and sometimes for browsing. Meredosia NWR is used seasonally, when the area is dry, for all activity.

Damage from deer browsing is characteristic with an oblique cut ending in a ragged strip since deer lack upper incisors. Rubbing antlers leave stripped and ragged bark on saplings and bushes.

Current populations are kept trimmed due to the hunting activity on private property surrounding the refuge, though hunting is not allowed on refuge lands. There is no anticipated need for deer control, but if necessary, the refuge could be opened briefly for hunting.

Carp

Rough fish such as carp are very damaging to vegetation. Their activity not only can uproot and break submergent and fragile emergent vegetation, but the increased turbidity decreases productivity of submergents. Since the dikes on all three areas are not high enough to exclude the annual flood waters of the Illinois River, there can be no control of this fish. The best control methods are to dry out an area and/or use Rotenone which will kill all fish. The area can then be restocked with the desirable fish. However, the stocking of all the lakes is currently under the control of the river.

Table 1. FY 1984 estimate of use days and peak number of potential target mammals.

<u>Species</u>	<u>Chautauqua NWR</u>	<u>Cameron-Billsbach Unit</u>	<u>Meredosia NWR</u>
Fox squirrel	92,750 (425)*	55,650 (255)	147,750 (575)
Red fox	2,825 (10)	1,400 (5)	2,250 (8)
Raccoon	15,125 (55)	7,250 (25)	17,750 (70)
Mink	1,100 (4)	755 (4)	425 (2)
Striped skunk	2,500 (10)	1,725 (6)	725 (4)
Opossum	5,250 (20)	3,150 (12)	2,125 (8)
Beaver	4,750 (16)	2,850 (10)	2,375 (8)
Muskrat	12,825 (45)	5,750 (20)	8,575 (35)
Cottontail rabbit	30,225 (175)	18,250 (100)	4,535 (20)
White-tailed deer	2,750 (10)	1,650 (6)	4,400 (16)

*Use days (peak no.)

OTHERMice

The house mouse and deer mouse frequently get into buildings at the headquarters and their gnawing can cause considerable damage. There is a continuous control program inside the buildings using snaptraps. Traps are baited with peanut butter which is replaced once a month for continued desirability to the mice. The traps are placed along the edge of walls or objects and in dark areas where mice are most likely to frequent. There is at least one trap per building; the grain bins and workshop have two each; the north garage has three, since it is a much frequented area.

The residence is also protected using snaptraps, placed at the refuge manager's discretion. Mouse poison, such as D-Con, is used only during the winter. All traps are to be checked once a week, more often if an increase in captures is noted. In such a case, more traps should also be set in the infected area.

Carcasses are disposed of by incineration or by burial at the landfill.

JUN 17 1985

Regional Refuge Supervisor, FWS, Twin Cities, MN (RP2)

Draft Animal Control Plan

Refuge Manager, Chautauqua NWR, Havana, IL

Based on the nature of animal control work at Chautauqua and after a careful review of the Refuge Manual and 50 CFR, which provides good guidance on animal control, we are dropping our request for an Animal Control Plan at Chautauqua. We suggest, however, that you mark your copy DRAFT and place it in the refuge files for future reference.

If the beaver and muskrat damage to dikes and water control structures is severe enough, consideration might be given to preparation of formal pest control proposals to address the problem. If chemical control is contemplated, such proposals are required, along with completed "Pesticide Use Proposal Forms."

~~7/8/~~ John W. Ellis

John W. Ellis

Enclosure

cc: Cummings (memo only)
PSW-TS (memo only)

Edw
6/17/85

memorandum

DATE: MAY 24 1985

REPLY TO
ATTN OF:

Sr. Staff Specialist, FWS, Twin Cities, MN (PSW/TS)

SUBJECT:

Chautauqua NWR Animal Control Plan

TO:

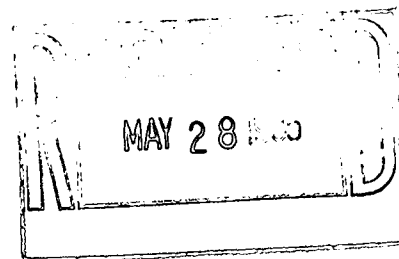
Regional Refuge Supervisor, FWS, Twin Cities (RF2)

As you requested, the Animal Control Plan for Chautauqua has been reviewed. We are not sure why the plan was written since the Refuge Manual does not call for one. Apparently, it came from the 1984 Operational Inspection Report, item 25 of which indicated that an Animal Control Plan was required for animals that burrow in the dikes.

Much of the plan is speculative. That is, it states what might be done if problems should develop. The plan would be more helpful if it were confined to control activities that are currently being carried out, if any. It would be even more correct to prepare specific "pest control proposals" for individual problems that exist (7 RM 14.7).

The Refuge Manual and 50 CFR both provide good guidance on animal control. Therefore, we recommend that this Animal Control Plan for Chautauqua not be approved. Rather, it should be marked Draft and copies placed in the Regional Office and refuge files for future reference, if necessary. If the beaver and muskrat damage to dikes and water control structures is severe enough, consideration might be given to preparation of formal pest control proposals to address the problems. If chemical control is contemplated, such proposals are required, along with completed "Pesticide Use Proposal Forms".

R. Wayne Heier



OPTIONAL FORM NO. 10
(REV. 1-80)
GSA FPMR (41 CFR) 101-11.6
5010-114

memorandum

DATE: May 7, 1985

REPLY TO
ATTN OF:

Division 2 Biologist, Mark Twain NWR, Quincy, IL

SUBJECT:

Chautauqua "Animal Control Plan"

TO:

Regional Director, Twin Cities, MN (RF-46) *5/9/85*

The animal control plan is well done and quite thorough in its coverage and only minor notations are made.

- page 4 - second paragraph - Also beheading of birds is often the trait of a horned owl.
- page 5 - second paragraph - Trapping will remove some animals and create a short duration vacuum but unless done during the waterfowl nesting period, it has little effect on decreasing nest predation.
- fourth paragraph - They are not only a nuisance but one of the main vectors for rabies.
- page 6 - first two lines - The inference that trapping would be the best control to reduce nest predation is again only true if done during the nesting period and normally not true if the normal state trapping seasons are followed.
- page 7 - first line - Replace "lodging" with loafing sites.

Attachment



Gerald E. Cummings
Gerald E. Cummings