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# REPORTED BEAVER DAMAGE AND CONTROL METHODS USED IN TEXAS

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**Abstract:** Beaver have greatly increased their range in Texas due to restocking and construction of man-made water impoundments. Damages can generally be categorized into dike and impoundment damage, tree damage, and flooding or other damages. These total \$9,326,541 for the fiscal years 1983, 1984, and 1985. Methods used to remove beaver include: conibear traps, leg-hold traps, snares, spotlighting, and technical consultation. Live traps are seldom used. Total number of beaver taken for fiscal years 1983, 1984 and 1985 is 5,158.

## Introduction

The beaver (*Castor canadensis*) is little known by the public in Texas, but is a major damaging species in the state. Since the reintroduction of the species 45 years ago, the range of the animal has spread to every part of the state, even into the Trans-Pecos and Panhandle areas. The probable reason for this great increase in population, far exceeding the original, natural population, is the construction of artificial water impoundments, especially since World War II. Therefore, beaver have a greatly increased habitat relative to that which was found under pristine conditions.

## Beaver Damage

With the implementation of the Management Information System (MIS) by the U.S. Fish and Wildlife Service, Animal Damage Control in the early 1980's, reportable, categorical data became available for the first time on reported beaver damage and number of animals taken as well as methods used to take them.

Generally, 3 categories of damage can be identified: tree damage, damage to dikes and impoundments, and flooding or other damages. Tree damage includes the felling, gnawing, girdling, or defacing of ornamental fruit, nut, lumber, or shade trees. Damage to dikes and impoundments includes burrowing, digging, or construction of lodges in pond dams, Soil Conservation Service (SCS) structures, irrigation canals, and city water systems. Flooding includes crop damage, road damage, tree damage, pasture and rangeland damage, and other high water-related damage. Other damages included in Table 1 with flooding may consist of gnawing on structures, vegetable garden, turf damage, and so on. These are relatively minor. Total damages reported by the MIS for FY 1983, 1984, and 1985 are \$9,326,541. Substantial damages occur, especially in the eastern portion of the state, that are not reported here due to large areas not being worked by Animal Damage Control personnel.

An explanation as to why some of these figures are so high can be illustrated by the damage incurred by a farmer in Bowie County, Texas in 1983. Approximately 400 acres of planted wheat were flooded when beavers dammed irrigation canals and runoff ditches throughout the field. The field was adjacent to a large swampy area. When heavy rains came, the field was flooded. This single incident totaled \$133,000 in damages (B. Martin, personal communication).

Complaints concerning the felling or damaging of shade and ornamental trees are received year round Monetary damage is often hard to estimate, but the loss of a large

**Table 1. Reported beaver damage in Texas.**

	Dikes and Impoundments	Trees	Flooding	Total
FY 83	\$112,800	\$248,074	\$3,304,345	\$3,665,219
FY 84	\$100,449	\$ 88,419	\$2,737,553	\$2,926,421
FY 85	\$177,904	\$273,667	\$2,283,330	\$2,734,901
Totals	\$391,153	\$610,160	\$8,325,228	\$9,326,541

(MIS, 1983--85)

**Table 2. Beavers taken by method.**

	Spotlight	Conibear	Other	Total
FY 83	450	716	39	1205
FY 84	782	1012	30	1824
FY 85	700	1193	236	2129
Totals	1932	2921	305	5158

(MIS, 1983--85)

shade tree is irreplaceable due to the growing time. Ornamental trees are often removed from yards by beavers in urban areas, but are easier to replace than an oak tree several generations old.

Fruit trees are considered a delicacy by the beavers and are eagerly sought out from yards, pastures, or orchards. In the 1970's, one orchard near Athens lost 200 trees, mostly peach trees, to beavers before control measures stopped damage. Most fruit tree damage is reported in urban areas with the entire tree oftentimes being removed.

Damage to nut trees, although not as common as fruit tree damage, does occur. Most damage is to pecan trees. Comanche, Hamilton, and Bosque counties in central Texas have damage to pecan trees--some over 3 feet in diameter. Smaller trees are cut and even some very large trees are girdled, causing high winds to blow them down. The harvesting of wild pecans is an important supplement to income for several landowners in the area.

The repair of cattle tank or farm pond dams is very expensive. Bulldozers and backhoe equipment may be necessary for repair. One cattle tank dam in Ellis County in 1984 cost \$15,000 to repair due to several beaver lodges being dug into the dam, one of which collapsed and left a hole 8 feet wide by 10 feet deep (Sramek, personal communication). One farm pond in Wood County drained in 20 minutes after the dam broke due to a beaver lodge in the dam. The beavers immediately took up residence in a farm pond 200 yards away on adjacent property. Livestock losses have been reported due to cattle collapsing the lodge while walking on the dam.

The SCS has experienced great difficulty with beaver problems. Lodges are sometimes dug in these dams and cause erosion damage. In 1981 some SCS dams in Montague County were damaged by beaver plugging drainage structures. An unusually heavy rain with flooding caused several emergency spillways to be utilized. Divers were used to remove debris from these structures so the lake could properly drain. Beaver also inundate effluent pipes and flood creek areas below these flood control dams.

Flooding is the single greatest source of monetary damage caused by beaver in Texas. Over 2.5 million dollars annually are reported lost to beaver flooding. In addition to crop flooding, many standing trees, both lumber and pastureland trees are lost each year to construction of beaver dams and blockage of drain systems. Usually, these flooded bottom lands also have the greatest amount of gnawing or cutting damage. Due to the flatness of terrain, a small beaver mud dam can hold back many acres of water. Coastal bermuda pastures, as well as native grass pastures, are rendered useless for much of the year during rainy weather. Beaver flooding of lowlands in some areas of East Texas has occurred for so many years, the residents no longer try to use the land for productive purposes.

County governments in East Texas spend large sums repairing road damage, freeing culverts from debris, and contending with county road flooding. One commissioner in Freestone County reported \$40,000 annually spent on beaver problems on county roads (Willard, personal communication). Another commissioner in Cass County reported \$8,000 per precinct per month spent each year (E. Tucker, personal communication, 1983). Bridges are often inundated and in some areas washed downstream during heavy rains. One particular culvert, 4 feet in diameter, has been washed out twice due to a large beaver dam approximately 40 feet upstream and due to the constant beaver activity in blocking the pipe with sticks and mud (M. Mapston, personal communication, 1983). Road damage can also occur by tunneling under state highways and other roads.

Relatively minor damage by beaver also occurs throughout the the state. Hood and Rockwall counties report damages to marinas and boat docks. Beaver were gnawing wooden

frameworks and styrofoam floatations. In one case, the beaver lived inside the floats under the marina. Beaver damaged a peanut field in Grayson County by eating the green foliage of the plants. Vegetable gardens near water are subject to damage.

### **Controlling Beaver Damage**

The U.S. Fish and Wildlife Service, in cooperation with Texas A&M University, has dealt with beaver damage problems for many years. Involvement with direct control of these damages has increased substantially since 1980. One tool extensively used is education. Many consultations are made each year by service personnel in which no direct operational action is taken. Various control methods and options for dealing with the damage are discussed with complainants. Residential and agricultural groups are given programs regarding this problem and information is also disseminated through local media.

Direct control operations involve 3 basic methods: (1) trapping with conibear traps, steel traps, and live traps; (2) snaring; (3) shooting, which may be subdivided into random shooting and spotlighting. Live trapping is seldom used in the state. The traps are inefficient, clumsy, and slow. Of greater importance is the fact that there are few, if any, places in the state for release of these animals without the considerable risk of further damages to property. There are very few state-owned or federal lands and on some of these lands the beavers are already doing damage.

Steel leghold traps are used to a limited extent. Generally, a #4 Newhouse trap with offset jaw attached to a drown-stick or heavy weight is utilized. Beaver, attracted by scent or food bait, are caught by a foot, usually a front foot, in shallow water at or near the bank. Upon being caught, a lunge is made into *deeper water*. If a drown-stick is used, the trap is attached to a wire leading several feet away from the bank into deeper water. A bent washer with a hole drilled in it serves as an anti-return device making sliding down the wire possible, but return to shallow water impossible. The beaver usually winds around the stick or sticks and entangles the trap. A heavy weight *attached to* the trap is simpler and performs the same job. Advantages of the steel trap are: (1) it can be used during high water times when entrances to beaver lodges are too deep to be accessible for conibear traps, and (2) if locations of lodges are unknown, or if lodges are on inaccessible property, beavers may be lured to traps. Disadvantages are: (1) a greater possibility of escape than with conibear traps, (2) excessive weight--making carrying of traps into remote, swampy areas difficult, (3) greater possibility of nontarget captures than with conibears. Leghold traps account for approximately 5% of the beaver taken in Texas.

Conibear traps are the mainstay of the ADC program in Texas. They are efficient, versatile, virtually escape proof, can be set on land or under water, and last many years with little adjustment. They are generally set at lodge entrances and quickly dispatch beavers as they swim through. Powered by a pair of powerful springs, the beavers are caught in the scissor-like jaws. No bait is necessary and a length of wire for attachment to a nearby stump is all that is necessary for use. Disadvantages are: its weight, the possible hazard to the trapper, and its limited usefulness during high water conditions. Because the conibear trap is a quick-kill trap, precautions should be taken to avoid placement in areas where children or pets are present. Nontarget captures are actually very low, mostly due to placement of conibear traps under water. Turtles are the main nontarget species caught. Approximately 60% of beaver removed are taken with conibear traps.

Snares are ancient devices used to capture animals throughout the world. They can be very useful for beaver control. Snares consist of a cable, preferably 4-5 feet long, made into a loop with some sort of locking device allowing the loop to be quickly drawn down,

but preventing it from loosening. Snares can be placed in front of entrances to lodges like conibears, but they are most useful when employed in overland sets along feeding and travel trails. Slides over tank dams or slides leading out of the water on the bank are also ideal sites. The loop of the snare should be large enough that the beaver can walk through it and have the loop draw up behind the shoulders. The beaver are usually alive when the snares are checked, so a very secure stake is required to hold them. If a tree is used for anchoring, a nail should be driven in the trunk about one inch above ground level. Then the anchoring wire should be looped around the trunk and tied beneath the projecting nail. The nail prevents the wire loop from being pulled over the stump of the tree in case the beaver gnaws it down. When suspending the loop, a secure platform, branch, log, or other object must have the loop firmly attached so the loop is immediately drawn tight upon contact with the beaver's body. Failure to secure the loop will result in several snares being knocked down by the beaver. Advantages of snares are: (1) they are inexpensive, (2) light in weight so many can be carried on the person, (3) they are versatile and lend themselves to creative sets, (4) nontarget animals can be released unharmed, and (5) can be used successfully during times of high water levels if trails can be found. Disadvantages are: (1) they are not as escape-proof as conibear traps, (2) they are sometimes knocked down, and (3) they must be checked more often than conibear traps. When beaver escape, they usually kink the cable, causing it to fray. They generally do not use their teeth on it. About 5% of the beaver are taken by this method, but increased use is anticipated.

Shooting is the last method of control. Random shooting while working in beaver areas is rare, accounting for less than 1% of the total. The spotlighting method has come into great favor in the northeastern part of the state, accounting for more than 30% of the beaver taken.

Spotlighting, in favorable areas, is the quickest way to lower beaver populations. In many cases, more beavers can be removed in 1 night than in 2 weeks of trapping. Selection and preparation of the hunting site is all-important when using this method. If possible, the beaver lodge must be located and a determination must be made if the area is suitable for hunting. If not, traps and snares may be employed. Under certain conditions, traps and snares cannot be used and spotlighting is the only method available. If the lodge cannot be hunted, success will probably be much less. Secondary hunting sites are beaver dams or bridges crossing streams where beavers are active.

Site selection will determine the location the hunter will sit in relation to the lodge or dam. The hunter should not sit on the same side of the creek as the lodge. The beavers seem to detect movement in the ground and are more hesitant to come out. If no suitable place is found on shore, then a boat may be employed. The boat or the land hunting site should not be closer than approximately 30 yards. Hearing is the most acutely developed sense of beaver and silence must be maintained. This is very difficult in a boat and proximity to the lodge is an important consideration. Talking or metallic sound cannot be tolerated, but gun fire does not seem to overly disturb them. This phenomenon is also known with other species. Boats should be tied or anchored at both ends and cushioning placed in the bottom to muffle sound. After dark, boats moving in beaver areas away from the lodge are not particularly avoided by beaver and some are shot while returning to shore after a night's hunt.

Site selections for dam hunting can be somewhat more flexible than for lodge hunting, but 30 yards is still a good rule of thumb. This distance allows more freedom of movement from sounds emanating from clothing, equipment, etc. A location of good visibility should be chosen at the beaver dam site and the dam should be broken at a favorable distance from the hunter. The animals can be shot when they come to repair the dam. This method is not as thorough as lodge hunting, but it is sometimes the only action that can

be taken. A favorite site for riflemen is a high bluff or creek bank above the lodge. The hunter is very difficult to detect and wary beavers can sometimes be taken in this manner when other methods fail.

Preparation of the selected site is crucial to success. Intervening weeds, limbs, vines, and even trees must be removed for visibility at night. One night hunt will be all that is necessary to convince the novice hunter of the importance of proper brush clearing. Selection and preparation of the site should be done in the morning and the site left undisturbed until the hunt that evening.

Beaver, if undisturbed, normally come out of lodges from an hour before sunset to about 2 hours after sunset. Occasionally, they will wait until quite late in the night to exit *the lodges*, but usually this behavior indicates that they have been harassed by people. As a rule, the hunter should be on site about an hour before dark and stay about 3 hours. This time spent can vary greatly depending on local circumstance and condition. The approach to the site should be silent.

Scent can sometimes be used to position beavers at a favorable shooting distance or angle. Liquid beaver castor is sometimes placed on a stump or limb to draw the beaver to a better or nearer location within range of the shotgun. In order to be effective, castor should be placed no more than 30-40 feet from the lodge. The beavers ignore the scent if placed too far away. The wind direction should be considered. Castor can be placed at either end of the boat sometimes causing the beavers to circle the boat repeatedly and making the shooting of them easier.

Equipment used can vary somewhat, but basically consists of a spotlight of about 200,000 candle power with a red or blue cap placed over the lens. Beavers, being color blind, are usually not disturbed by the light if it does not shine directly on them. If a beaver is seen in the light, the main beam should not shine on the head until the moment of the shot. The spotlights can be powered by a vehicle, marine battery, or power-pacs. If the area is suitable for stalking along the bank, the power-pacs are mandatory because of their light weight. A few extra animals may be taken in this manner. The white light can be used to survey a distant shoreline for possible rifle shooting.

Other equipment needed can vary. A comfortable chair is very important. Common, folding lawn chairs are used not only because they are light in weight, but comfortable during the hours of sitting. Arm rests on these chairs are used as rifle rests for the elbows. A can of insect repellent should be carried and the immediate vicinity of the chair, as well as the hunter's boots, can be dusted with carbaryl for ticks, chiggers, and other pests. Warm, comfortable clothing is essential and a good pair of rubber boots are invaluable. Clothing should be darkly colored.

Firearms used are 12 ga. shotguns and high velocity .22 caliber center-fire rifles. Automatic shotguns are arms of choice because of the difficulty in manipulating manually operated arms while holding the light on target. Sometimes 2 hunters will hunt together, one holding the light. Size of shot is either #4 buckshot or BB shot. Most shotguns pattern BB's more effectively, not leaving large holes in the pattern as buckshot often does. Most beaver are shot between 20 and 40 yards away. The use of the shotgun is mandatory in a boat because of the constant movement.

The high velocity rifle has increasingly come into use within the last 5 years. While some of the beaver often may be out of shotgun range, few are out of rifle range. Offhand shooting is not possible for most situations and arm rests, tree limbs, or shooting sticks are employed for an absolutely steady rest. Telescopic sights are a boon for night

shooting if the scope is of high quality and has good light-gathering ability. When fully utilized, the rifle can add another 30% to the total take of beaver from that which would have gotten away. If the rifle is to be used, it must be kept well maintained and in constant zero because of the small moving target a beaver provides. Handloading is preferred over purchasing commercial ammunition for achieving utmost accuracy and safety. A word about safety. No ricochet has ever been experienced when using high velocity .22 caliber center-fire rifle ammunition loaded with frangible super-explosive bullets. The same cannot be said regarding the shotgun.

When shooting beaver during spotlighting, some error exists in estimating the number of beaver hit or missed. After experience is gained, it is usually quite easy to distinguish between a hit or a miss by sound and by sight. Most beavers do not float when shot, so counting floating beaver in no way indicates the number of beaver shot. Disadvantages of spotlighting: it is generally not thorough and a follow-up trapping effort is needed. Some states prohibit hunting at night Advantages are: while it generally (though not always) is not thorough, it greatly lessens trapping time at a given location. Many man-hours and gallons of gasoline can be saved by not having to keep trapping equipment out so long. No traps are left out to present any hazard to nontarget animals. Spotlighting can be very quick, resolving some damage problems overnight.

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