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December 1975

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## MUSKRAT DAMAGE CONTROL

by

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Muskrat control, like any type of vertebrate pest control, is not an easy task. It requires not only practical effective methods, but a diligent effort, as well. When speaking of muskrat control, we are not implying total eradication, because, first of all, it would not be possible, and secondly, in most areas other than agricultural croplands, they are not considered a pest.

Presently our surveys indicate that muskrat damage within the rice growing areas of Arkansas is approaching \$1,000,000 each year with damage increasing periodically. Survey estimates in 1966 placed the amount of damage at \$801,426. This figure covers 16 counties. In 1967, the amount had risen to \$892,455 and was taken from 20 counties, illustrating a \$91,029 increase in one year and damage spreading into four additional counties. From these estimates we can obtain an idea of what to expect from our increasing muskrat populations unless some effective control measures are utilized.

### Recommendations for Damage Control.

Habitat is the most important factor affecting muskrat populations. If ideal habitat is available during the entire year, muskrats can be expected to build up a population until the habitat will not support the numbers. Then, either some will leave or the population will tend to exist in a somewhat stable condition with just enough young being tolerated to replace those that die or are removed.

Therefore, habitat reduction can be a very important factor in reducing muskrat populations. In Arkansas construction of reservoirs, fish ponds, and drainage ditches coupled with changing rice acreage and irrigation systems have subsequently added more and more desirable habitat for muskrats. With any type of construction for irrigation systems, you have a corresponding increase in aquatic vegetation. This, of course, provides the muskrat with the essentials for a prosperous life--stable water supplies and plentiful food.

If a landowner has borrow pits and ditches adjacent to levees, rice fields, canals, reservoirs or ponds which retain standing water during the year, these should be eliminated if no longer needed. If necessary as a water supply, they should be drained as low as possible during the winter months. The vegetation, such as cattails, bulrush, etc., should be eliminated. If this type of overwintering habitat is eliminated, the muskrats that were there will also be eliminated. If such areas cannot be eliminated, they should at least be kept as low and clear of vegetation as possible during the winter months to avoid a build-up of overwintering muskrats. Remember habitat is the key to removing or retaining a high muskrat population just as it is with other wildlife.

In a majority of the rice growing areas in Arkansas, there is no way to eliminate all ideal muskrat habitats. In these areas, it is important then to reduce the population every year to lessen or eliminate the damage they do. Trapping is an old method, but one that can be highly effective. In years past when muskrat pelts were bringing a good price, the population was held low because the incentive to trap removed large numbers each winter. When the price of pelts declined, so did trapping and muskrats began to increase along with complaints of damage. Therefore, trapping can be a very effective tool

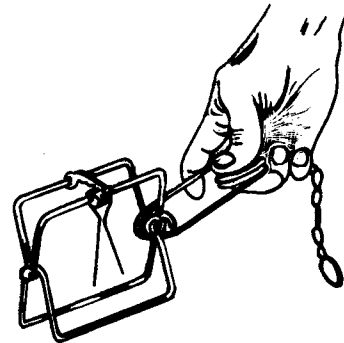
in removing muskrats and holding down the populations.

Trapping is about the only method that is effective once the muskrats have moved into the field. If one is reasonably skilled in trapping and can spend an hour or two each day running traps, he could definitely reduce the muskrat population. With two or three dozen traps, a skilled trapper could catch a large majority of the muskrats on most farms during the winter months. Traps should be run at least every other day, removing muskrats as long as each set continues to catch one; then, moving the trap to a new burrow. Present laws on muskrat trapping give Arkansas landowners the opportunity to trap year-round, if they are causing damage on his property. However, if the pelts are to be sold, the trapper must purchase a trapper's license.

### Traps

Regarding the types of traps to use, there are several traps that will catch muskrats, such as steel traps, box traps, barrel traps, etc. However, the two most practical types are the steel trap Size 1 or 1 1/2 and the Conibear trap Size 110. These traps are fairly small, easy to set and easily transported. The steel trap, of course, catches the muskrat by the foot or leg and should be staked in deep water so the weight of the trap will cause drowning. This type of trap has been widely used and is quite effective if properly set and staked.

The Conibear trap is more desirable in many cases because it catches the muskrat on the body, causing death very shortly and is practically escape proof. The Conibear is easy to set and has the advantage of being equally effective in shallow or deep water; whereas, the steel trap frequently allows escape in shallow water when the muskrat twists the foot or leg off. The Conibear trap is easily the most desirable trap to use in the rice field because the water is shallow and this trap can be placed in a run or burrow entrance into the levee or around flood gates.



### Toxic Baits

The use of toxic baits in muskrat control has been somewhat slow to catch on because generally most of the muskrats killed with baits are not found. Because of their underwater burrow entrances and usually shy habits, they tend to head for the burrow as soon as sickness begins. However, there have been many attempts by both trained and untrained persons to find some bait and toxicant that will effectively kill muskrats. One of the great drawbacks has been that previous baits used for muskrats can also kill desirable wildlife and domestic animals. Therefore, it is absolutely necessary to utilize some form of bait, baiting method or toxicant that is selective for muskrats.

One of the earliest used baiting methods that proved effective was zinc phosphide treated apples. This method is still effective and can safely be used if proper precautions are taken in mixing, handling, and in placing the bait where nothing but muskrats can ingest it. Recommendations for use of this material can be obtained through the County Extension Agent or the Fish and Wildlife Service. Additional recommendations are that best results can be expected by pre-baiting and, if possible, this bait should either be placed directly in the burrow or den or it should be placed on a floating platform out in the water to prevent other animals from getting the bait.

In recent years the use of anticoagulant baits for all types of rodent control has proven to be not only cheap but highly effective and safe. It can be safely mixed with the hands and is more selective than other more toxic materials. The anticoagulant baits depend on return feeding; therefore, making it more selective than other toxic baits. With this type of toxicant, there is no danger of bait shyness; therefore, once the

muskrat begins to feed on this bait, he returns nightly to feed until he becomes sick and death occurs.

When using anticoagulant baits, the two most effective methods are the lollipop and the floating bait box. Both baits use a cereal grain base; the lollipops have paraffin added to form the bait.

After many trial demonstrations and reports from people throughout Arkansas who have used one or both of these methods, it is felt that the proper use of anticoagulant baits is one of the most effective tools available for controlling muskrats. However, it has also been concluded that any type of baiting program to be effective must be used during the winter months from mid-October to the middle of April. This time period is important because of several factors.

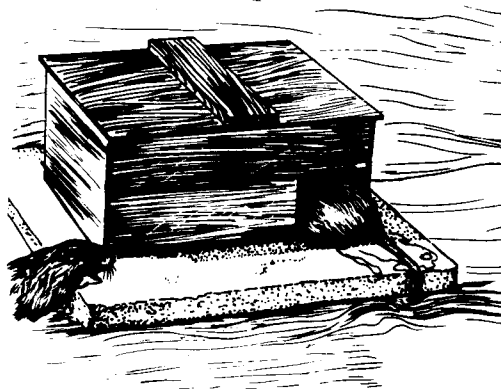
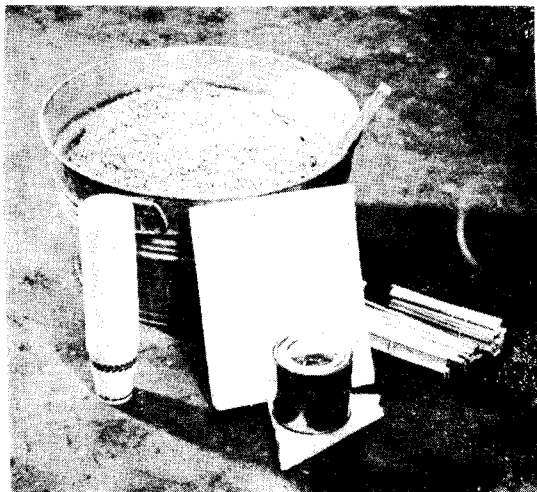
1. The muskrats have usually left the rice fields after harvest and have returned to the areas where they will spend the winter.
2. They are then concentrated in ditches, canals, reservoirs, etc.
3. Their natural food supply of green vegetation is shortest during the winter months.
4. They are actively searching for food and will readily take any available bait properly presented to them during this period.

The most effective formulas for using the anticoagulant baits are:

#### Floating Bait Box Formula

Rolled oats (crushed)	14 pounds
Vegetable oil (warm)	16 ounces
Anticoagulant concentrate (0.5%) Pival	1 pound

Combine and mix anticoagulant thoroughly with dry grain; add oil and mix thoroughly again. A washtub is a handy container for mixing this material.



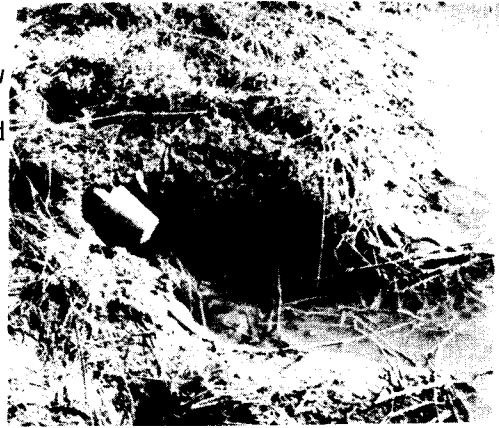
#### Lollipop Formula

Rolled oats (crushed)	10 pounds
Paraffin	6 pounds
Anticoagulant concentrate (0.5%) Pival	1 pound

Combine grain and anticoagulant in a container, such as a washtub. Heat until grain is evenly warmed. Melt paraffin in a double boiler or suitable container until in a liquid form; let cool slightly and pour over warmed grain and Pival mixture. Stir the combined mixture thoroughly with a stick until all the grain mixture is coated with paraffin. Then, while mixture is still

warm, pour or ladle into a paper cup, add an eight-inch stick for handle, and tamp down tightly. Using nine-ounce paper cups, this mixture will usually fill approximately 50 cups. These lollipops, after cooling, can be removed from cups and are ready to use.

Bait placement as with trap placement is important. If lollipops are used, they should be located near burrow entrances, slides and other fresh muskrat signs. If houses of vegetation can be seen, lollipops can be placed directly on the house. Lollipops could also be used in the floating bait boxes if desired and when used in this manner are absolutely selective. If the floating bait box is used, it should be placed within two to ten feet from the bank adjacent to burrow entrances, slides, or other fresh muskrat signs for best results.



### Reasons for Control Failures

The greatest reason for control failures with either trapping or baiting for muskrats can usually be traced to either a lack of diligent effort or not enough information before beginning. The muskrat can be controlled if the right methods are used--trapping, baiting, and habitat reduction. Also, to accomplish control of anything, a lot of effort must be expended, using the correct methods at the right time of the year and in the proper places.

Control failures with anticoagulant baits are usually related to one or more of the following practices:

1. The period of baiting time was too short and baiting stations were not serviced regularly; thereby, not providing readily available bait to muskrats for three to seven consecutive days.
2. Sufficient amounts of bait were not available for the number of muskrats using the baiting station.
3. Bait was not properly placed and not enough baiting stations or places of presentation were used simultaneously which allowed reinfestations from surrounding areas.
4. In many places there was an abundance of natural food left during the winter, i.e., honeysuckle and cattail near or in the water.

One factor to remember when using anticoagulant baits is that you cannot expect to put bait out one day and see dead muskrats immediately. Dead muskrats are not readily found when using any toxic bait because they usually die out of sight within the burrow and they must eat the bait three or four times before death occurs. One way to determine if you are killing muskrats with the anticoagulant baits is that if a muskrat eats the bait for three to seven days and then quits, you can be sure that he is dead.

### Conclusions

The most active breeding periods for muskrats in Arkansas are in March-April and again in October-November. Therefore, if you can do your control work from October through April, you will be destroying muskrats while they are most vulnerable as well as reducing the breeding population. Remember also that each female muskrat can potentially produce from 20 to as many as 50 young per year.

Habitat removal or reduction is an important method of reducing muskrat populations. Destruction of ideal muskrat habitat is also a great aid in removal of any muskrats that remain.

Trapping of muskrats is easily learned and is an effective method of removing muskrats. However, remember that if the pelts are to be sold, the trapper must purchase a trapper's license, and the pelts can only be sold during the authorized fur season.

The use of toxic baits for muskrats has been proven to be the most effective way of controlling muskrats, if properly utilized during the winter months. For the majority of people with muskrat damage to their croplands, the destruction or removal of overwintering habitat plus the proper use of toxic baits will enable them to eliminate this costly damage.



