

tubes in the burrows that catch many muskrats at one setting.

Armoring the Shore

The pond shore can be reinforced to deter muskrat burrowing in one of the following ways:

- Line with a foot-thick layer of rocks (called riprap) at least 6 inches in diameter from 3 feet below the *low* water line to one foot above the *normal* water line.
- Use soil cement in the top 6 inches of earth from a foot above normal water level to 4 feet below low water line.
- Line with chicken wire or hardware cloth of 2-inch mesh or less from slightly above normal water line to 3 feet below low water level.

Repellents and Poisons

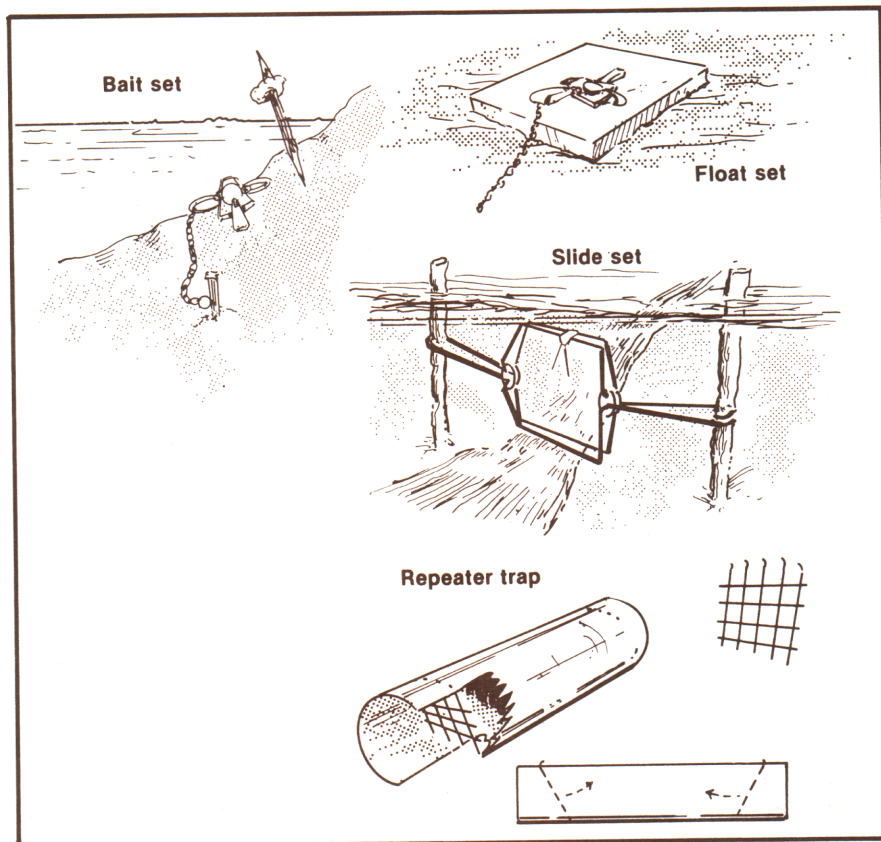
Repellents aren't effective against muskrats, but poisoned baits can be used. Contact a U.S. Fish and Wildlife Service agent for instructions. Permits to poison muskrats must be obtained from the Michigan DNR.

Moles

Mole burrows can destroy patches of sod on dams or pond banks resulting in erosion. Control by trapping, burrow fumigants, or EPA-registered soil insecticides. Apply traps and fumigants to burrows that are in active use. To see if a burrow is active, gently flatten it. If in use, the ridge will be raised again within 24-40 hours. Applying soil insecticides kills the food supply of the moles.

Birds

Several kinds of fish-eating birds may reduce fish populations in ponds. Kingfishers, large herons, mergansers, and domestic muskvy ducks are notable predators. All of these can be scared away by noise-making devices, such as gas exploders and "scare" shotgun shells. To use these devices requires a federal permit. Exploders must be moved often and the firing interval changed, or birds become accustomed to the noise.



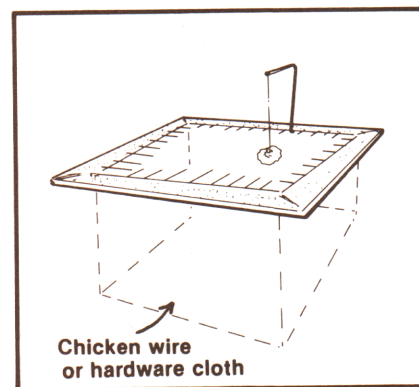
Various types of trap sets for removing muskrats and woodchucks.

Most effective in many cases are 12-gauge shotgun "scare" shells that detonate in the air near the birds. They have especially great effect when used in conjunction with gas exploders. They may be the only way to deal with herons and mergansers.

Floppy scarecrows, large rubber snakes, and owl or hawk decoys can also be used to scare birds away. They must be positioned imaginatively and moved often.

Discourage herons by deepening pond edges to form rather steep underwater side slopes. Three feet of horizontal distance per foot of drop is the maximum slope recommended for safety. It may also work (but be unsightly) to erect wire strand fencing or lengths of chicken wire along shallower parts of the pond edge.

Discourage kingfishers by removing all perches such as posts and dead tree limbs close to the pond. If muskvy ducks are kept at the pond, confine them to a small part of it.



Turtle trap.

Herons and other migratory birds are protected by federal law. Contact a U.S. Fish and Wildlife Service agent about regulations.

Turtles

Turtles often eat fish and fish eggs. They can also steal bait from hooks and fish from stringers. Snapping turtles are especially voracious fish predators.