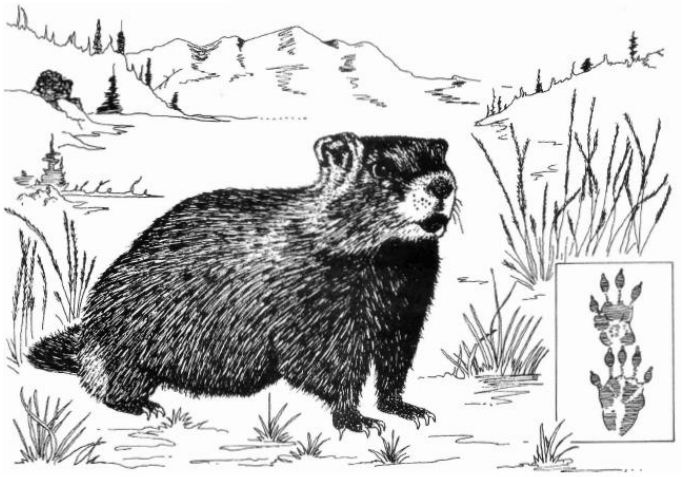
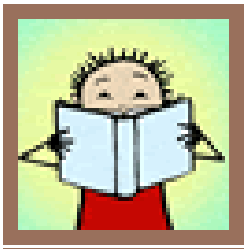
BIOLOGY, LEGAL STATUS, CONTROL MATERIALS, AND DIRECTIONS FOR USE

Marmot

Marmota flaviventris

Family: Sciuridae

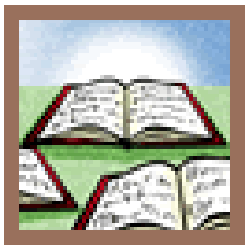




Introduction: Marmots are rodents, closely related to both ground squirrels and prairie dogs. There are currently 14 recognized species of marmot; these include woodchucks (groundhogs), each species have broad similarities. In the Western United States the most commonly found marmot is the yellow bellied marmot.

Identification: Marmots are large rodents about the size of the average housecat. Their fur is long and coarse. Their total body length ranges from 20 to 30 in. Male marmots are slightly larger and heavier than females. Tail length ranges 5 to 9in. They also have a thumb stump with a nail.

Yellow bellied marmots have distinct yellow speckles on the sides of their necks, white between the eyes, and yellow to red-yellow bellies, and yellow-brown to tan, straight hair with white tips.

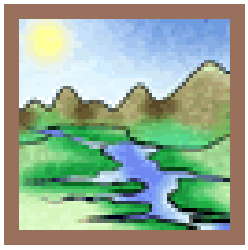


Legal Status: Marmots are classified as nongame mammals by the California Fish and Game Code. Nongame mammals which are found to be injuring growing crops or other property may be taken at any time or in any manner by the owner or tenant of the premises. They may also be taken by officers or employees of the Department of Food and Agriculture or by federal or county officers or employees when acting in their official capacities pursuant to the provisions of the Food and Agricultural Code pertaining to pests.

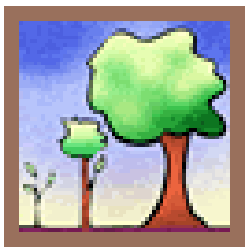
Damage: Alfalfa, legumes, grasses. It hosts the tick that carries Rocky Mountain spotted fever.

Range: Sierra Nevada and northeastern California.

Marmot



Habitat: Rocky situations, talus slopes, valleys and foothills, up to 12,000 feet elevation



Biology: Marmots are chiefly active by day (diurnal). They seem to enjoy lying on flat rocks in the sun. Most of the yellow-bellied marmots live in rock slides bordering green meadows where they are protected from badgers and wolverines which might dig them out. The den is usually near a large boulder which is used as a lookout post. Individuals spend most of their lives in a burrow with several entrances, which they excavate in well drained soil. The burrows are approximately 3 ft in depth, but hibernation burrows may be 16-22 feet deep. Tunnels may be 30 to 200 feet in length. Marmots accumulate layers of fat instead of making food caches before they become dormant. The time spent in dormancy depends on the location and elevation. Some of them go into estivation in late June, while others remain active until early October. Hibernation is apparently similar to that described by Ingles for the Mojave ground squirrel; the animal may awaken and become active for a few hours or days, but even in the presence of food, it will again soon become inactive. The animal may emerge from hibernation from late February to April.

Marmots breed soon after emerging from hibernation. The gestation period is about a month. The single litter per year may have from three to eight young, usually four to six. The young emerge from the den at about 30 days of age.

Marmots are generally plant feeders although caterpillars and other invertebrates are eaten. Their native food is green vegetation and it includes tender grasses, clovers, vetch and sedum. Marmots relish alfalfa and they are serious pests when they live nearby. Badgers, coyotes, eagles, horned owls, large hawks, and wolverines are known to feed on marmots. The marmot signals danger by emitting a loud whistle.

Damage Prevention and Control Methods

Exclusion: The use of fencing where marmots are living adjacent to orchards, gardens, and agricultural fields (alfalfa) can help reduce damage. However, marmots are good climbers so any fencing needs to be used in conjunction with electric wire.

Fencing needs to be a minimum of 3 feet high, 2 inch mesh wire. Since marmots burrow very well, fencing should be buried 10 to 12 inches with the bottom edge bent 1 to 2 inches in an 'L' shape. The top edge of the fence should be bent outward at approximately 45 to prevent climbing. Keep the area immediately close to the fence clear of vegetation to enhance inspection.

Frightening: Not recommended.

Toxicants: None registered.

Fumigants: The use of fumigants to control Marmot is effective. Two forms of control exist; the use of aluminum phosphide tablets (Restricted Use Material) and gas cartridges (carbon monoxide).

Aluminum Phosphide

Place 2 to 4 tablets per burrow opening

Directions for Use

Various forms of tablet are available commercially.

Aluminum Phosphide tablets interact with moisture in burrows creating hydrogen phosphide gas.

Place the label recommended amount (usually 2 to 4 tablets) as far in each active burrow opening as possible. Seal tightly by shoveling dirt over the entrance after first packing the opening with crumpled newspaper. This will prevent soil from covering the tablets. Use lower rates in small burrows or under moist soil conditions and higher rates in large burrows or when soil moisture is low. Check treatment area after 48-72 hours and re-treat as before all opened burrows.

Follow all labeled directions for use closely. Do not use within 15 feet of occupied buildings or where gases could escape into areas occupied by other animals or humans.

Gas Cartridges (carbon monoxide)
Gas cartridges are mixtures of active ingredients and sawdust compressed into a tube. When ignited by a fuse, they give off smoke and toxic gases that are effective if confined in burrows.

With a nail or sharp object about the diameter of a pencil, puncture cartridge cap end at marked points. Rotate nail to loosen material inside. Insert fuse in one end using one of the center holes. Light fuse and insert cartridge into active burrow entrance as far back as possible. Quickly seal burrow opening with earth and tamp tightly. Close nearby connected burrows where smoke is seen escaping. Well established burrows usually require two cartridges.

CAUTION: Smoke coming from cartridges occasionally ignites. Do not use where a fire hazard exists.

NOTE: Cartridges absorb moisture readily so they must be kept dry at all times. Do not store in damp places.

These are commercially available and are specially designed cylinders filled with slow-burning chemicals. Ignite after placing in burrow systems. Once the cartridge starts to smoke, push it down into the burrow with a shovel handle or stick. All burrow entrances should be sealed, as the cartridges burn they release toxic gas lethal to marmot.

Always read and follow specific label instruction carefully. Be especially careful not to use them in burrows located near or under buildings or other combustible material because of fire hazard. The cartridges are usually ignited by lighting a fuse and if handled correctly should not explode. Have firefighting equipment (water, blanket) nearby should they become necessary.

Treatment of burrows can be conducted at any time although it will be most effective in the spring before young emerge and when soil moisture is relatively high.

To treat a burrow system with gas cartridges:

1. Locate main entrance and other associated secondary entrances.

2. Dig a square of nearby sod or loose soil and place over each entrance, leaving one spare next to the main entrance.

3. Prepare and ignite the gas cartridge and place as far as possible inside the main entrance. Immediately seal the main entrance and check area for smoke leaks from entrances. Seal these with loose soil.

4. Observe site for about 5 minutes.

5. Repeat these steps for other burrow systems. Identification of burrows where marmots have dug out is necessary when using fumigants. Check treatment area after 48-72 hours and retreat as before all opened burrows.

Dig outs by marmots have been reduced by placing a crumpled wad of newspaper into the burrow immediately after dispensing the fumigant and before sealing the burrow entrance with earth.

Fumigants are most effective when soil contains enough moisture to hold the gas within the burrow system.

As with all pesticides, follow label directions for use, storage and disposal.

Acrolein - Magnicide "H"

No information on this material is available for marmot control. This is a Restricted Use Material and requires specific use practices.

Place nozzle applicator device as far into the active burrow entrance as possible. Shovel soil onto the applicator device and the burrow entrance to create a seal that will prevent loss of gas. Dispense fumigant at the rate of 20 cc per burrow. Withdraw application device and seal burrow opening by tamping it tightly.

Repellents: Not applicable

Trapping: In California body grip trapping (steel or padded leg hold traps etc) in nearly all circumstances are illegal. Very specific guidelines exist in the California Fish and Game Code Section 3003.1. For those cases where trapping is allowed check carefully to comply with laws and regulations. Be aware that should a protected animal be trapped inadvertently this may render you liable to prosecution.

Live trapping may be acceptable if the animal is euthanized in a humane manner. However it can sometimes prove difficult. Live traps can be self built, or purchased from commercial sources. Place the traps at main entrances to the burrows. 'Funnel' the pathway from the burrow entrance to the trap by placing several logs on either side of the marmot travel lane. This will help guide the marmot to the trap bait. Bait the traps with sliced apple or carrots and lettuce. Check traps twice a day and replace bait daily.

Other Methods

Shooting: Rifles with telescopic sights are effective in the control of marmots where shooting can be accomplished safely. Landowners and hunters should agree on hunting arrangements prior to initiating any shooting activities. Always check with your local Fish and Game authority for compliance issues with local as well as State and Federal ordinances.

REFERENCES AND ADDITIONAL READING

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