

Protecting U.S. Rangeland From Grasshoppers and Mormon Crickets



Adult male grasshopper (*Melanoplus sanguinipes*); this species is considered to be one of the most damaging rangeland grasshoppers.



Mormon cricket (*Anabrus simplex*)

Rangelands in the Western United States are valuable agricultural resources for livestock production and provide essential wildlife ecosystems. Grasshoppers and Mormon crickets are native insects found in rangelands; however, their populations periodically reach outbreak levels and cause economic and ecological losses to rangeland forage necessary for feeding livestock and wildlife, especially during periods of drought. Nearly 400 grasshopper species inhabit the Western United States, but only a small number of them (12 species, in particular) are considered pests, with varying numbers and combinations of species found in each rangeland ecosystem. The Mormon cricket (*Anabrus simplex*) is the only katydid species known to reach outbreak-level populations in the United States.

When outbreaks of these pests threaten rangeland forage, you can request help from the U.S. Department of Agriculture (USDA) to suppress their populations.

Grasshoppers and Mormon Crickets

Grasshoppers and Mormon crickets belong to the insect order Orthoptera. Rangeland grasshoppers are ground-dwelling insects with powerful hind legs that enable them to escape from threats by leaping vigorously. Most species also have wings that allow them to fly relatively long distances. They are sometimes referred to as "short-horned" grasshoppers to distinguish them from katydids with much longer antennae (such as Mormon crickets, which are flightless, shield-backed katydids). Although they do not fly, Mormon crickets walk or jump in large

groups made up of millions or billions of individual insects and can migrate great distances.

Both grasshoppers and Mormon crickets damage grasses and other vegetation by consuming plant stems and leaves, harming plant growth and seed production. This reduces valuable livestock forage and can lead to other environmental effects, including soil erosion and degradation, disruption of rangeland nutrient cycles, interference with rangeland water filtration, and potentially irreversible changes in the rangeland ecosystem. In addition, some populations that develop on rangelands can invade adjacent cropland where the value of traditional crop plants is often much higher than that of rangeland grasses.

USDA Rangeland Grasshopper and Mormon Cricket Suppression Program

Through the Rangeland Grasshopper and Mormon Cricket Suppression Program, USDA's Animal and Plant Health Inspection Service (APHIS) surveys rangeland grasshopper and Mormon cricket populations in 17 Western States: Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming. We also provide technical assistance to landowners and managers, deliver public outreach programs, and may work with landowners and managers to suppress grasshopper populations when direct intervention is needed.

APHIS only treats grasshoppers or Mormon crickets upon written request of the landowner and after assessing several factors to determine if treatment will be effective. These factors include, but are not limited to, grasshopper and Mormon cricket densities per square yard, the pest species and its life stage, treatment timing and options, and other ecological considerations. Landowners may also start cooperative local programs and request our assistance when surveys show the potential for large grasshopper or Mormon cricket populations.

Cost Sharing for Suppression Treatments

Federal agencies own or manage approximately 43 percent of U.S. rangeland. The principal managers of these rangelands include the U.S. Department of the Interior's Bureau of Land Management, the Bureau of Indian Affairs or individual Tribes, and USDA's Forest Service. Federal rangelands eligible for cooperative grasshopper or Mormon cricket suppression treatments from APHIS include areas with: widespread outbreaks in progress; developing or incipient populations of grasshoppers or Mormon crickets, that, if treated, would prevent wider outbreaks; and Federal or Trust land borders that, if treated, would prevent economically threatening populations of grasshoppers and Mormon crickets from moving to adjacent private agricultural lands.

When funding is available, APHIS shares the costs of providing suppression treatments on rangelands, per Section 7717 of the Plant Protection Act. On Federal and Tribal Trust rangelands, we pay 100 percent of treatment costs. On State lands, we provide 50 percent of the treatments costs and the State provides the remaining funds. On private lands, we cover 33 percent of the treatment costs, with the State and/or private landowner responsible for the remainder. Cost shares are only available if APHIS conducts the treatments.

APHIS does not have the authority to conduct grasshopper suppression treatments on private croplands. However, we conduct rangeland suppression treatments in areas where federally managed rangeland is immediately adjacent to private croplands. This protects rangeland forage and prevents grasshoppers and Mormon crickets from moving into adjacent crops. In these circumstances, APHIS only treats the adjacent rangeland, and the crop owner is responsible for treating their croplands, if desired. If small amounts of croplands (typically less than 10 percent of the treatment area) are interspersed in a rangeland treatment area, we might treat the entire area to maintain the continuity of the treatments. The insecticide, however, must be labeled

for use on that crop. In such cases, the private landowner would pay 100 percent of the cost for treatments conducted on their cropland.

Treatment Options

In 2019, APHIS updated the [Rangeland Grasshopper and Mormon Cricket Suppression Program Final Environmental Impact Statement \(EIS\)](#). The EIS evaluates three options for suppressing grasshopper and Mormon cricket populations in Western States. This document is available on the APHIS website at www.aphis.usda.gov (search for "grasshopper EIS").

APHIS' preferred suppression option is using reduced agent area treatments (RAATs). This option treats less land area overall and uses insecticides at lower rates and volumes. RAATs alternate between treating and skipping (untreated) swaths of rangeland. Skipped swaths often total 50 percent or more of a given area. In this scenario, the insecticide suppresses grasshopper or Mormon cricket populations in the treated swaths while conserving their predators and parasites, as well as other nontarget arthropods, in the skipped swaths.

We have the option to use four insecticides in our grasshopper program: carbaryl, diflubenzuron, malathion, and chlorantraniliprole. A suppression treatment consists of a single application in a given year of one of these insecticides. Each insecticide is registered for use and labeled by the U.S. Environmental Protection Agency (EPA) for sufficient management of rangeland grasshoppers. The insecticide APHIS chooses depends on several factors, including outbreak density, species, population age, climate, weather, forage conditions, economics, and environmental risks.

Each insecticide is very effective and safe for people, animals, and the environment when properly applied. We conduct and post public environmental assessments in each State before taking any actions. We follow all insecticide label directions, along with conditions outlined in the EIS, the environmental assessments, program guidelines, and the treatment request letter.

More Information

Learn more about APHIS' [Rangeland Grasshopper and Mormon Cricket Suppression Program](#) on our website or contact your [State Plant Health Director](#) (www.aphis.usda.gov/planhealth/sphd).