

Landowners should be aware 2020 MAY BE A HIGH GRASSHOPPER

High populations of pest grasshoppers in some areas around towns, crop lands, and rangeland caused problems for Wyoming citizens in 2019.

Seven counties, based on reports of grasshopper damage and data from the 2018 summer grasshopper pest scouting surveys, expected large grasshopper infestations in 2019. These counties ended up protecting over 600,000 acres from high populations of grasshoppers in 2019. Based on grasshopper population surveys in the summer of 2019, different areas of the state may have grasshopper problems this year (Figure 1).

You need to be prepared for grasshoppers if you had them causing damage or were in very noticeable numbers by the end of last summer. These grasshoppers will have produced lots of eggs that overwinter in the soil and will hatch this spring (Figure 2). The females of the major pest species have the potential to produce over 300 offspring each! Even if we have bad weather for them this spring, such as prolonged cold and wet conditions after they have hatched from the ground, you may still end up with damaging populations of grasshoppers.

How many grasshoppers are too many?

Over 120 species of grasshoppers are in Wyoming, but only a dozen

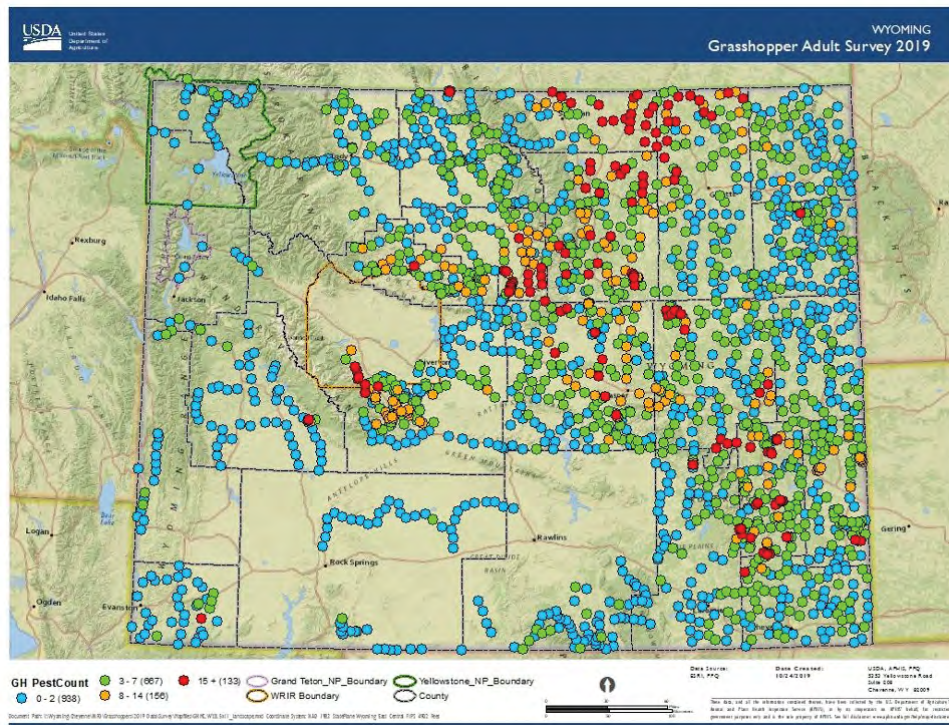


Figure 1. The 2019 adult grasshopper survey map for Wyoming. The red dots mark grasshopper survey points with densities at 15 grasshoppers per square yard or higher. The highest population density surveyed in 2019 was 41 grasshoppers per square yard. USDA APHIS PPQ used the Reduced Agent and Area Treatments method to reduce grasshoppers densities back down below 8 grasshoppers per square yard on over 600,000 acres in seven of the counties or many more red dots would have been marked on the map.

of them are considered important pests (Figure 5). Some species are not considered pests because they have low reproduction rates and never reach damaging population densities. Some grasshopper species eat only undesirable weedy plants and are beneficial (Figure 4).

In the years in between sudden increases, termed outbreaks, grasshopper population densities on rangeland are usually in the range of 1 to 7 per square yard. Research conducted on Montana rangeland

found that during an average grass growth year with a mixture of common species at the density of 14 grasshoppers per square yard, grasshoppers will consume (or make unavailable through clipping) 30 percent of the forage over the growing season. If your livestock need 50 percent of your rangeland's forage, then this grasshopper population is approaching the damaging level when too little forage is left behind for other more desirable wildlife to eat and ensure

YEAR



enough leaf area is left on the plants to support the root growth of the perennial range grasses.

Unlike the common rangeland species, the primary crop and suburban pest grasshopper species concentrate their egg deposition in weedy areas such as fencerows and borrow ditches. In early spring there can be few grasshoppers found in yards, garden, and crop fields. Meanwhile, the pest grasshoppers hatching in the preferred weedy areas can be at densities of over 1,000 per square yard. These pest grasshopper species, such as the large two-striped grasshopper, can spread from this habitat in early summer and cause severe damage to crops, gardens, and yards.

Research has shown a population density of just 10 adult two-striped grasshoppers per square yard can defoliate a field of knee-high corn plants. That population density equates to over 60 pounds of grasshoppers per acre, each capable of eating their body weight daily in green leaves and clipping more leaves than they can consume.

How to scout for hoppers and where to get help

Managing grasshoppers to reduce the damage they cause in the summer starts with scouting for them in the spring when the major pest species start hatching. The exact timing of the hatch varies with the warmth of the spring weather



Figure 2. The number of eggs inside a two-striped grasshopper's eggpod, like this one, ranges from 50 to a little over 100. Both the number and size of egg clutches produced by female grasshoppers, plus the survival of the hatchlings the next spring, determines if there will be an outbreak.



Figure 3. This hatchling migratory grasshopper is about the size of a grain of rice. These little insects are easily overlooked in the early spring vegetation. However, managing grasshoppers early in their life cycle is best as lower rates of insecticide can be used and they will have done little permanent plant damage at this stage.



Figure 4. This adult female *Hesperotettix viridis* is an example of a grasshopper species is considered beneficial because it eats plants with little forage value to livestock such as broom snakeweed. The Reduced Area and Agent Treatment grasshopper management strategy has less impact on species like this.

Figure 5. A display of adult specimens of Wyoming's common pest species of grasshoppers. Also included in the lower left corner are the five progressive developmental stages of a grasshopper, called the nymphal instars. In the lower right corner are two species of grasshoppers that spend the winter as 5th instar nymphs and become adults with colorful hindwings often seen flying in the early spring on rangeland.



**More information
University of Wyoming
grasshopper management
information links**

<http://www.uwyo.edu/entomology/grasshoppers/>

Grasshopper management and identification poster
<http://bit.ly/hopperposter>

Contact information for your weed and pest control district
<http://bit.ly/weedandpestoffices>.

Wyoming's USDA-APHIS-PPQ contact information
<http://bit.ly/wyoaphis>

and the green up of the vegetation they eat. The four major crop pest grasshopper species will start hatching in May and can continue to hatch all the way into early July. This means you can't look for grasshoppers hatching just once or even treat just once if you do find them hatching in damaging numbers.

When grasshoppers hatch from the eggs, they are about the size of a grain of rice and can be easily missed (Figure 3). University extension publications and MP 123

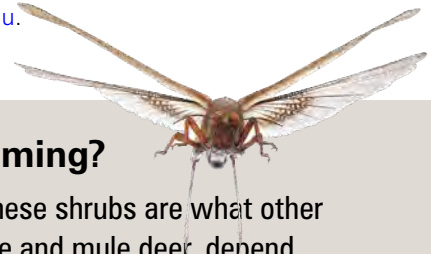
grasshopper management job aid at <http://bit.ly/hopperaid> can explain grasshopper management in more detail than space allows here.

Wyoming's county weed and pest districts can help with grasshopper management through coordinating cooperative treatment programs and through the sales of insecticide properly labeled for the areas infested with grasshoppers.

A branch of the USDA called the Animal and Plant Health Inspection Service (APHIS), Plant Protection

and Quarantine (PPQ) can provide technical assistance on outbreak surveys and treatment advice. PPQ also completes annual grasshopper surveys on federal lands, state lands, tribal lands, and on private lands where the landowners have given permission. These surveys can provide data to help land managers prepare for large outbreaks. (Figure 1).

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Grasshoppers aren't the only Wyoming insect pest **Scott Schell** has on his radar list. He is the University of Wyoming Extension entomologist and can be reached at (307) 766-2508 or sschell@uwyo.edu.



Why are pest grasshopper species outbreaks an issue in Wyoming?

Grasshoppers can easily outcompete livestock and other wildlife for forage. Being small is an advantage for the grasshoppers. They can clip down forage and then eat the grass as it grows from the crown. This prevents the forage from getting tall enough for larger grass-eating animals to grasp with their teeth.

Pest grasshoppers, when their preferred food plants are gone, will then start feeding on shrubs like sagebrush

and mountain mahogany. These shrubs are what other wildlife, such as sage grouse and mule deer, depend on for winter browse. In drought years, when there is little regrowth of grasses and forbs, pest grasshoppers will migrate to find food. When desperate for food, grasshoppers will damage evergreen and deciduous trees and shrubs in shelter belts and ornamental plantings around homes.