Does Your Range Have Wheatgrass Bugs?

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Highlight

Introduced wheatgrasses furnish a considerable amount of forage on western rangelands. An insect, *Labops hesperius* Uhler, commonly called the wheatgrass bug, is attacking wheatgrasses in epidemic numbers in several western states. Early development of satisfactory control measures is essential to assure preservation of wheatgrass stands.

Plantings of various species of wheatgrasses (*Agropyron* spp.) have long enjoyed a unique position in range rehabilitation work. They are well adapted to many different local situations and have aided immeasurably in supplementing native forage species, lengthening the grazing season, or providing supplemental management units. Now, in some areas, this position is being challenged by a wheatgrass bug, *Labops hesperius* Uhler. In epidemic numbers, the bug drastically reduces the herbage production of wheatgrasses, and after repeated attacks it has been known to kill the grass plants.

The most obvious evidence of large numbers of the bug is the appearance of patches up to 20 ft in diameter, usually circular, of yellowish to whitish foliage within an otherwise healthy stand (Fig. 1). These patches are easily recognizable. The insect apparently has been present in the western states for many years, but population upsurges sufficient to cause concern have been reported only recently (Denning, 1948).

Distribution

The seriousness of the problem is amply shown by the roster of states from which it has been reported: Arizona, Colorado, Idaho, Montana, Nebraska, New Mexico, Oregon, South Dakota, Utah, Washington and

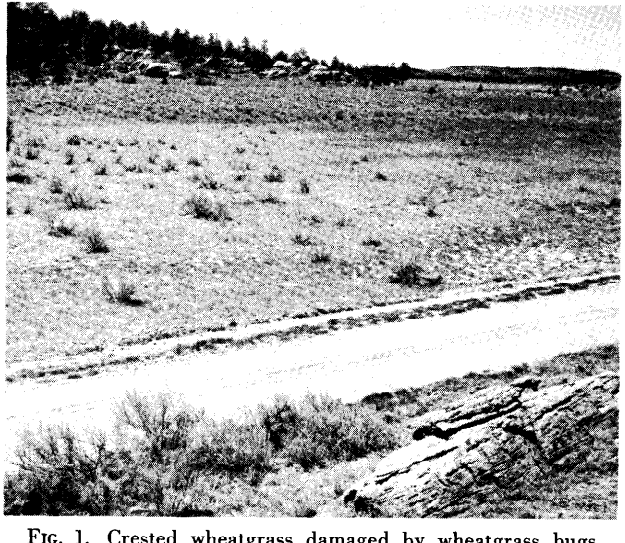

FIG. 1. Crested wheatgrass damaged by wheatgrass bugs.

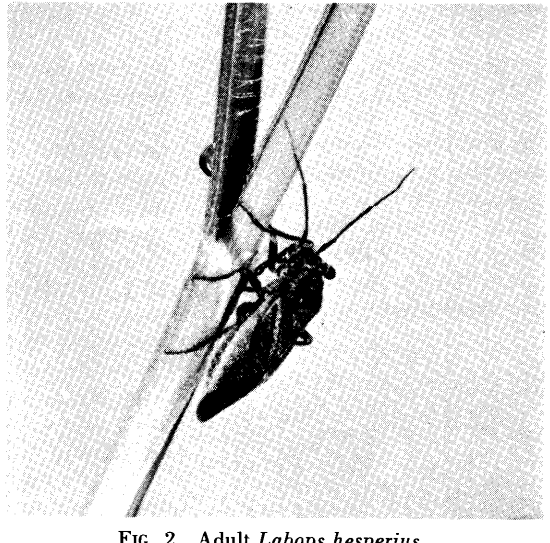

FIG. 2. Adult *Labops hesperius*.

Wyoming. These states include almost all states in which wheatgrass plantings are an important part of the range revegetation program. Canada is also plagued by this pest, with damage reported from Alberta, the Yukon, and British Columbia (U.S.D.A., A.R.S.).

The bug epidemic has been of serious proportions for at least five consecutive years in Utah. In two counties alone, 58,000 acres of crested wheatgrass plantings have been severely damaged (U.S.D.A., A.R.S.). In New Mexico, on the Santa Fe National Forest, 10,000 acres were reportedly attacked by the bug in 1966.[1] The bug was found to infest Montana wheatfields and did much damage in 1938, and again in 1951 and 1952, when it moved into wheat from adjacent crested wheatgrass plantings. Bug damage in Montana was described by Mills (1939, 1941) on grassland on the Crow Indian Reservation in 1938, and on wheat near Bozeman in 1939.

Since reports of damage have appeared only recently, a question might be asked regarding the origin of this insect. Has it been here all along, or was it imported from an outside source? According to Wilford,[2] the wheatgrass bug is probably native. He refers to an 1871 survey in which the bug was described. It was also identified in Colorado and Montana in 1900 (Knight, 1922).

Damage

Why, then, has the wheatgrass bug assumed importance as a dangerous range pest only in the last few years? Probably because in recent years, we have greatly expanded our acreage of seeded range land. These seedings apparently provided an optimum habitat for a native bug, and populations of the insect increased to epidemic proportions in a short time.

The bug increases very rapidly under favorable conditions. On a ranch near Doylesville, Colorado, a 0.25-acre infestation in 1962 expanded to approximately 400 acres in 1963.[2] On the Santa Fe National Forest, a 0.25-acre bug colony first detected in 1962 spread to over 10,000 acres by 1966.[1] Both of these eruptions occurred primarily on crested wheatgrass plantings.

The yellow or whitish patches of vegetation caused by the bug reflect severely depleted vigor and production of the affected grasses. In Utah, losses in production up to 50% have been reported (U.S.D.A., A.R.S.). On the Santa Fe National Forest, a decline in production of 10 to 60% was observed. Hay yields in Wyoming were halved by insect attack. In Colorado, bug-infested plants attained only one-third the height growth of uninfested grass.

Repeated infestation can eventually kill the host plants, and does so even more quickly where other factors, such as drouth or heavy grazing, have exerted depreciating pressures on plant vigor. Plant mortality attributable to the bug has been observed on the Santa Fe National Forest in New Mexico.

Although often called the crested wheatgrass bug, it is known to attack other grass species as well. It has been found feeding on pubescent wheatgrass (*Agropyron trichophorum*), intermediate wheatgrass (*Agropyron intermedium*), and other wheatgrasses, plus various native species. Slater (1954) cites records of the bug feeding on prairie Junegrass (*Koeleria cristata*), Sandberg bluegrass (*Poa scunda*), needleandthread (*Stipa comata*) and others.

Life History

What does *Labops hesperius* look like? The adult grass bug is described by Agricultural Research Service entomologists as being about 0.25 inch long, dull black in color (except for the wing covers, which have a pale yellow streak along the edge). It has pale yellow spots on the head and large black eyes which project to the sides on narrow stalks (Fig. 2). Nymphs are overall pale green in color, shading to darker green and then black as they mature to adulthood. Young nymphs measure about 1/32 inch in length. *Labops hesperius* is a true bug, a member of the order *Hemiptera* and the *Miridae* family. It is a sucking insect, and damages the plant by sucking the plant juices (Fig. 2). Removal of the chlorophyll creates the distinctively discolored grass patches. Whether or not the bug feeds actively throughout its life cycle has not been established.

In all stages, the bug is extremely active and hard to catch. They are easily disturbed while feeding, and when disturbed fall to the ground and disappear into earth crevices or plant debris. This hyperactivity probably should be considered in devising possible control measures.

Very little formal work has been done to describe the life history of the wheatgrass bug. During the spring and early summer of 1966, Charles Brandt of the Santa Fe National Forest conducted a study to collect information on the insect's life cycle. He began field observations on March 16 and made frequent observations until all insects had disappeared, about June 1. Further north, an insect had been collected in Colorado in mid-July, but it was a sole observed survivor of bugs reported to be abundant in early June. In Wyoming, the bug was found to be most plentiful during May and June.

In the 1966 study on the Santa Fe, nymphs were first seen on March 29. As the season progressed, nymphs were repeatedly observed, even after mature adults were reported to be mating on May 6. By May 24, a decline in numbers was noticeable, and by May 31, they had disappeared, except for a few scattered individuals. Attempts to find the location of egg deposition were fruitless. Entomologists state that the grass bug probably over-winters in the egg stage, and that there is only a single generation per year. Both points need further study.

Control

The wheatgrass bug's taste for native grass species certainly must be considered in designing control measures. The earliest report of experimental control efforts in 1948, involved DDT compounds (Denning, 1948). A pilot spraying project was carried out on seeded stands on the Cuba Ranger District of the Santa Fe National Forest in May 1964. A helicopter was used to apply malathion at a rate of 0.5 lb/acre, in a diesel oil carrier, on 900 acres. Spraying was limited to areas where populations were greatest within the

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[1] *Brandt, Charles J., 1966. Crested Wheatgrass Bug Study. Forest Service report. 10 p mimeo.*

[2] *Wilford, B. H., 1963. Crested Wheatgrass Damage, Gunnison National Forest, 1963. Forest Service report. 10 p. mimeo.*

infested area. However, wheatgrass bugs were again found in the treated area the next year.

Increased reporting of wheatgrass bug damage shows not only an expanding problem, but also a wider recognition of the problem. This increased recognition is resulting in an accumulation of knowledge cataloging the strengths and weaknesses of the bug. As an example, the first specific effort to observe and record the bug's life history was made in 1966.[1] It is hoped that dissemination of the limited information obtained in that study will stimulate additional work. This could lead to the development of effective control methods. The wheatgrass bug does, in fact, pose a very serious threat to an important segment of the western range resource. The need for early development of adequate control measures presents a challenge which must be met.

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