

# The Halogeton Problem on Utah's Ranges

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THIS report was prepared by the Committee on the Halogeton problem in Utah, Utah Section, American Society of Range Management.

The poisonous weed *Halogeton glomeratus* was unintentionally introduced into the United States, probably from southern Russia, in about 1930; was first identified in Nevada in 1935; moved into western Utah and southern Idaho in about 1940; and was recognized as a poisonous plant in 1942 (3). It has since invaded California, Oregon, Wyoming, and Montana. Halogeton now occurs in western Utah from Idaho south to Iron County and from Nevada east to the cultivated lands. Focal points are Boxelder and Tooele Counties. Isolated infestations were discovered in 1950 in San Juan, Emery, and Grand Counties in eastern Utah, indicating that the plant had crossed a natural geographic barrier, the Wasatch Mountains, and now threatens millions of acres previously not infested.

Halogeton has caused serious losses in range sheep in Nevada, Idaho, and Utah. In one instance it is reliably known to have killed 1620 sheep, substantially all of one herd in three days. Twelve sheepmen are reported to have left the business because of this weed in southern Idaho. Cattle are less likely than sheep to be poisoned because they are less likely to eat a toxic quantity. Losses are known to occur, however.

Utah's ranchers are only now becoming aware of the danger of Halogeton despite its 10 years residence in the state. Numerous state and federal agencies also

are suddenly fired with determination to fight this invader. As a result, desperation programs are being undertaken by many private land owners and government divisions, some of which are a waste of time and money—in fact, many may actually aggravate the poisoning problem. An example of this latter is spraying or burning, sometimes after the Halogeton, an annual, has cast its seed and died. Such programs may kill perennial shrubs which normally compete with Halogeton, leaving the ground bare and prime for dense growth of Halogeton the following spring.

Because of the confusion which generally exists concerning Halogeton, including such extreme prophecies that it will eliminate the western livestock business, the Utah Section decided to offer its technical services to the state in an attempt to put the true picture before livestock growers and to recommend an action program. In summer of 1950, the section appointed a committee to study the problem and to draw up a proposed program. This program was approved by section officers and released to extension people, federal land management personnel, livestock growers, and to many others such as weed committees, highway commissions, and railroads. It is now the basis of action programs by these groups which may do much to save money and prevent poisoning. This appears to be a good example of how the Range Society sections can serve their areas. The committee report is submitted here because it is believed that it will interest other sections who may want to adopt action

programs on this or similar range problems.

### ECOLOGY OF HALOGETON

Following are a series of ecological facts known about Halogeton which have a bearing upon its control and management.

1. It is an annual plant characteristic of arid regions and adapted to rapid invasion of bare soils (Fig. 1). Its presence indicates disturbance of normal conditions and may result from overgrazing, plowing, scraping or any other action which disturbs or destroys natural vegetation.

2. It produces highly viable seed by the thousands, many of which are attached to wing-like bracts enabling them to be blown rapidly to great distances. They possibly are carried also by livestock. Once it invades an area, the entire range will become seeded in a matter of very few years. Thereafter, the plant will appear on all sites to which it is adapted within the area if competition does not keep it out.

3. The plant is extremely drought resistant, tolerates high soil salt content, and a soil pH of 8.5 or more (6). Soil type and elevation do not appear to limit its distribution. It does not occur, however, in high elevations where precipitation is sufficient to support good density of other plants. Only in dry and, often, alkaline deserts is other vegetation scarce enough to permit abundant growth of Halogeton. Therefore, poisoning is likely to remain a problem largely of desert winter range.

4. The toxic substances are soluble oxalates which occur in concentrations up to about 20 percent (4) and which when consumed cause rapid decline in blood calcium to about 25 percent of normal (5). At maximum oxalate concentration, only 6 to 8 ounces of air-dry Halogeton will kill a 100 pound sheep (5). The concentration present in the

plant decreases with leaching by fall rain and snow to a level which is much less dangerous generally by mid-winter (3). Unusual precipitation may delay this date, however, and late-winter deaths are known to occur.

5. The plant is non-palatable, especially to cattle, if other feed is plentiful. Fall, especially after the first frost and after softening rains or snow, seems to be the period of highest palatability as well as high poison concentration. Salt hunger has been advanced as a factor encouraging animals to eat Halogeton, but research work appears to discredit this theory (4).

6. Feeding experiments have shown that animals with native forage in their stomachs can consume twice the normally lethal dose of Halogeton without injury, therefore, if plenty of good feed is available on the range along with Halogeton, poisoning is unlikely. There appears to be no reliable evidence to substantiate the common opinion that emaciation or abortion result from eating less-than-lethal amounts of Halogeton.

7. Halogeton can be killed by both 2,4-D and 2,4,5-T sprays, but often, repeated spraying is necessary. In Idaho, best kills have been obtained by heavy ester forms applied in mid-summer at 2 pounds per acre (1, 6). These sprays also kill broad-leaved native forage plants, thus removing natural competition against any new Halogeton plants which may invade the area.

8. Halogeton can be controlled by competition from artificially planted grasses in areas not too dry or too saline for grass growth. Several crested wheatgrass plantings near Wells, Nevada, have shown conclusively that only a few dwarfed plants will occur in successfully regressed areas, these being insignificant from the standpoint of being able to cause livestock injury. Adjacent unseeded land pro-

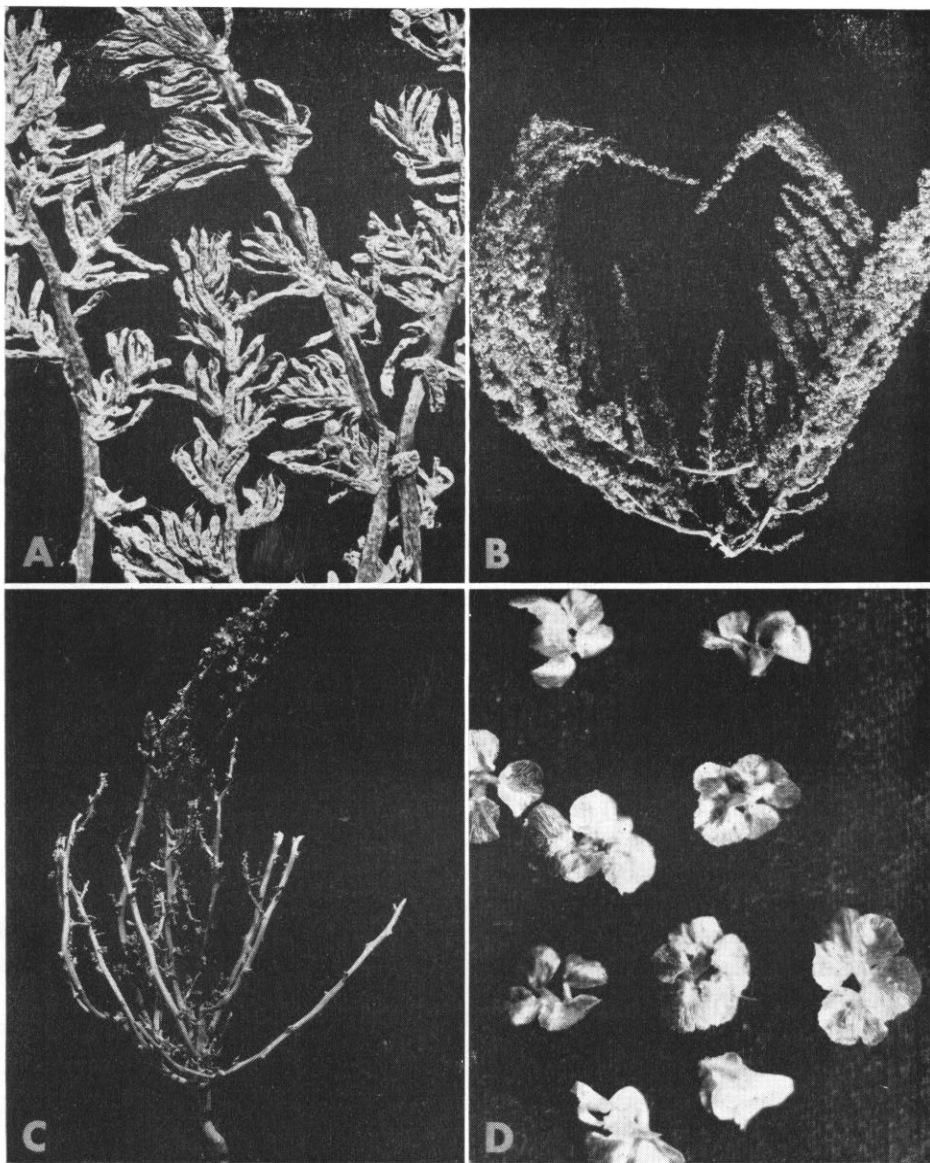


FIG. 1. Halogeton plants and plant parts

A. Immature plant showing growth form, especially hairy tip on leaf. Pitted appearance results from drying. Fresh leaves are smooth and round. B. Mature plant covered with seeds. C. Early winter form, partly grazed and still poisonous. D. Seeds, showing wing-like bracts, generally 5-parted. These are translucent, straw-colored with reddish tinge, amazingly light and easily blown by wind.

duced dangerous quantities of thrifty Halogeton under otherwise identical conditions.

#### CONTROL OF POISONING

Based on these facts and experiences the Utah Section advances the following

as tentative solutions to the Halogeton problem.

1. Support of state and federal legislation for establishment of a research program on all phases of the Halogeton problem, including (a) conditions of poisoning, its causes and prevention; (b) ecology of the plant and its method of propagation; (c) chemical, biological, and mechanical means of eradication; and (d) range management practices discouraging growth of the plant and minimizing livestock losses.

2. Immediate surveys by competent range ecologists to determine extent of isolated invasions such as those in eastern Utah, and in Wyoming and Montana. These should be followed by such action programs as seem desirable, possibly including intensive spraying aimed at complete eradication of Halogeton.

3. Increased emphasis of range seeding within major areas of Halogeton distribution wherever crested wheatgrass is well adapted. Especial emphasis should be given to seeding road-sides and other disturbed areas. Care should be exercised to avoid plowing or disturbing natural vegetation preparatory to grass seeding unless a grass stand can be assured because such mechanical operation spreads and plants Halogeton seed and removes competition. Dense stands of Halogeton are known to result if grass should fail to replace the native vegetation.

4. A program within major areas of infestation to discourage mechanical disturbance of soil and uncontrolled spraying which tend to leave soil bare. This has especial significance along roads and highways where present maintenance practices tend to encourage the spread of Halogeton.

5. A program of improved range management and less intense grazing on areas where Halogeton grows interspersed with native vegetation and where artificial

revegetation is infeasible because of low precipitation or high soil alkalinity. This program will serve (a) to increase natural-vegetation competition and hence reduce Halogeton and (b) to increase palatable native vegetation available to grazing animals and hence reduce Halogeton consumption to such a low level that no one animal will eat an injurious amount.

6. Educate sheep herders so they can recognize Halogeton readily and show them the areas in which it grows so they can avoid roads, trails, and bedrounds which are dangerous. This is especially important between September and January when the plant may be more palatable and when poison is not yet leached from the plant.

7. A program of increased supplemental feeding to prevent hungry sheep from consuming excess amounts of Halogeton. This is of especial importance when trailing or bedding sheep on Halogeton areas and when liberating hungry sheep from corrals, trucks, or shipping cars. Adequate salting of livestock possibly may be of benefit also.

8. A campaign of education to acquaint people of the West with Halogeton identification and ecology. This would include publication of bulletins by State Extension Services, encouragement of talks to rancher groups about Halogeton, and display of the plant in offices of county agents, in store windows, etc. Since this committee report was originally released, bulletins have been issued (1, 2) in Idaho and Nevada. The objectives of this program would be (a) to enable herders to avoid the plant or to practice approved range and livestock management procedures where the plant is present; (b) to encourage people in Halogeton-free areas to recognize the first invasion of the plant and take steps to eliminate it; and (c) to acquaint stockmen and public officials with the dangers of des-

peration measures to eliminate the plant from areas where it is now established.

Halogeton will never be eliminated from the intermountain deserts and solution of the problem is good management of ranges and livestock. Burning, scraping, spraying and other control measures are likely to increase rather than decrease Halogeton and should be attempted only after scientific study of each specific case by a capable ecologist. It is our opinion that the Halogeton problem is a serious one but that there is no foundation for fear that the western livestock business faces destruction. Good management will enable stockmen to combat this problem without insurmountable losses.

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#### TWO BLADES OF GRASS

And he gave it for his opinion, that whoever could make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together.

Jonathan Swift  
*in Gulliver's Travels*