

Suggestions for Reducing Crop Damage by Wildlife

ARTHUR S. EINARSEN



Oregon State System of Higher Education
Agricultural Experiment Station
Oregon State College
Corvallis
and
United States Fish and Wildlife Service
Cooperating

Suggestions for Reducing Crop Damage by Wildlife

By

ARTHUR S. EINARSEN

Leader, Oregon Cooperative Wildlife Research Unit*

INTRODUCTION

BECAUSE of the unusual demand for food for domestic and war purposes it is more than ever important to protect agricultural crops from possible damage. In certain parts of Oregon pheasants, like rodents such as ground squirrels, pocket gophers, field mice, and others, have been somewhat destructive of certain crops in certain seasons.

The pheasant, however, unlike the rodents, has tangible, economic, and unmeasurable values. The present available pheasant crop, if harvested (1943), would provide about 3,000,000 pounds of meat on a statewide basis. Because of the present and increasing meat shortage due to war demands, this becomes a supplemental meat source of importance. This poundage of meat is approximately equivalent to that provided by 2,000 hogs, 3,000 veal, or 5,000 lambs.

Because of the reports of pheasant damage to newly seeded peas, corn, and other crops, the Oregon Cooperative Wildlife Research Unit and its co-operators have carried on field investigations since 1940 to determine the causes and extent of damage. While not wholly conclusive, these investigations point to certain methods of reducing losses.

In these investigations the causes of the damage to crops have been detected by various means. Most animals doing damage leave some evidence by which their identity may be established. For example, the Douglas ground squirrel (*Citellus beecheyi douglasii*) commonly known as the "gray digger," excavates a small hole and in doing so throws the earth between its forelegs, leaving a small mound. Crows and pheasants will often leave a similar hole, but the mound is absent. (See Figures 1 and 2.) Field investigators studied each case of damage. If evidence of the cause was not conclusive, they concealed themselves near the field and watched until the offending pest appeared.

Damage has been reported to corn, peas, tomatoes, and melons. In most instances the damage has consisted in digging up the newly planted seed. In some cases, young corn plants have been uprooted.

Fence rows, thickets, or knolls are favorable sites for gray digger colonies. From the vantage point of a nearby cover, both gray diggers and pheasants watch newly planted crops and feed upon them when not disturbed. (See Figure 3.) Eternal vigilance is the price that farmers must pay to control the ground squirrel to a degree that will reduce crop losses.

It is quite possible and easy to mistake the cause of damage to certain crops as indicated in the following two examples.

* United States Fish and Wildlife Service, Oregon Agricultural Experiment Station, Oregon State Game Commission, American Wildlife Institute and Agricultural Research Foundation, cooperating. Field assistants, Donald C. Dickey and Wayne A. Young and A. V. Meyers, Field Biologist of the Oregon State Game Commission, assisted in this work.

On one farm about 3 miles east of Corvallis, 2 acres of sprouting corn were destroyed in a 10-acre corn field. Pheasants were believed responsible until field observations revealed the culprits to be gray diggers.

On a Kiger Island farm, the landowner was sure the pheasants were digging up his corn. A representative of the Research Unit appeared on the scene before daybreak and went into hiding, remaining all day. During the day a single pheasant cock appeared but did not molest the corn, but several crows flew in and proceeded to uncover the seed. Numerous similar examples could be cited.

PHEASANT FEEDING HABITS

Pheasants may be destructive to farm produce unless precautions are taken when crops are planted. There was a comparatively small number of complaints in Benton County in 1942 when compared to total acreage of pheasant favored crops grown. The actual damage was more annoying than it was economic and was found to occur on small garden plots more often than on field crops. The



Figure 1. Pheasants unearth the corn kernel from one side, scattering the soil in the process, but leaving no mound. Oregon State Game Commission photograph. A. V. Meyers.

pheasants' normal feeding habits, however, may be beneficial to some farm lands.

From a laboratory analysis of 51 pheasant stomachs and gizzards and 1,385 droppings, the latter collected daily over a period of 1 year, pheasants in this area were found to take normally about 50 varieties of food. The analyses



Figure 2. Douglas ground squirrel (*Citellus beecheyi douglasii*), commonly known as the "gray digger," works entirely from one side of the plant and piles the earth between its forelegs, leaving a mound that is usually on the side of the plant nearest its burrow. Oregon State Game Commission photograph. A. V. Meyers.

showed these foods to consist primarily of green material, seeds, weeds, and grain. Of this group, 85.2 per cent was made up of noncrop plants of no economic importance to the farmer and many were noxious weeds, of which wild mustard constituted 7.5 per cent of the total food eaten; 14.8 per cent consisted of cultivated grains, such as corn, oats, wheat, vetch, and barley, but most of these, according to the records, are taken as harvest wastage.

There is experimental evidence to show that pheasants also eat harmful insects and larvae, including such species as the wire worm, the 12-spotted cucumber beetle and certain other crop pests.

Damage to crops is ordinarily heaviest at planting time. This period rarely exceeds 14 days for corn and peas, so that preventive measures need be effective only for this short period, unless successive plantings are to be made. The following suggestions are offered in the hope that they may prove valuable in areas where depredations are normally a problem.

SUGGESTIONS FOR REDUCING LOSSES

There are two methods of reducing crop loss caused by wildlife: first, selecting feasible and practical planting sites not directly menaced by animals

or game birds; and second, use of repellents. In the case of rodents and moles direct control of numbers is the chief remedy.

Selecting planting sites. Where possible it is usually better to prevent rather than to repair damage. For example, certain crops such as corn, peas, and beans, if planted near good bird or mammal cover, will be more readily and easily attacked than the same crop will be if planted at a distance from such cover. (See Figure 4.) On many farms this adjustment may not be possible because of field arrangement and farm operating programs. Where feasible, however, planting some distance from cover will be found beneficial.

An examination of 20 plantings from which crop damage complaints had been received by the Research Unit, showed that the average distance of dam-



Figure 3. Gray digger or Douglas ground squirrel (*Citellus beecheyi douglasii*). U. S. Fish and Wildlife Service photograph. Frank Stanton.

aged plantings from good game and mammal cover was 11 feet. The distances ranged from 4 to 20 feet. The crops 20 feet away from cover were damaged less than those nearer cover. On the basis of this evidence the planting of a border strip about 20 feet in width to a later maturing crop such as beets, carrots, or potatoes on those farms where a choice may be exercised and where feasible and practical may be found useful in reducing losses in the favored

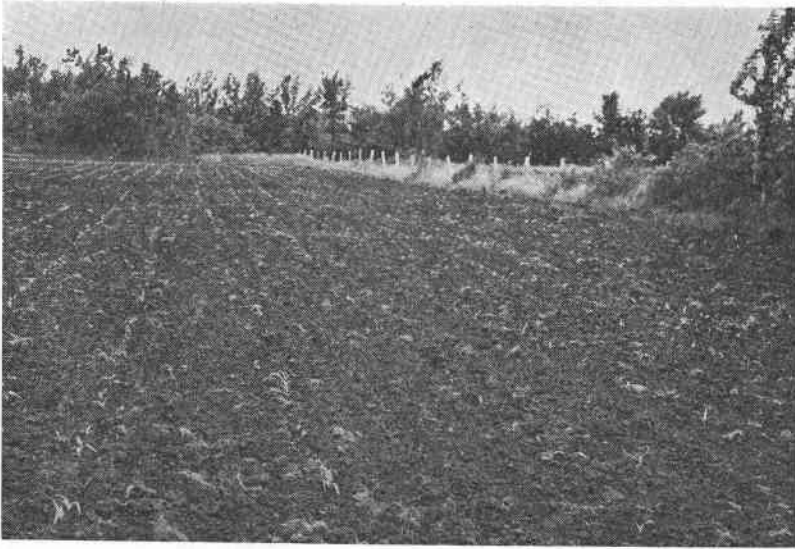


Figure 4. This cornfield is surrounded by excellent cover for wildlife. Douglas ground squirrels destroyed nearly 10 per cent of this field. U. S. Fish and Wildlife Service photograph.

crop. This procedure will also serve to protect the crop from ground squirrels, since in crossing open ground, squirrels sense danger from hawks and other birds of prey.

In the case of gardens planted on small tracts or suburban lots there may be little choice in location. In some instances fencing may be helpful.

There is no approved method of treating newly sprouted seeds such as corn and peas to prevent pheasants and song birds from feeding on the succulent shoots. Losses are often reduced, however, by covering the rows with a light hay or straw litter, an aid in reducing temptation.

In seasons when moisture is limited, game birds, including ring-necked pheasants, quail, and Hungarian partridges, will attack such succulent truck crops as tomatoes, grapes, and melons. Again investigations of complaints have shown that the situation is aggravated where such crops are placed close to wildlife cover.

Use of repellents. Where conditions are such that crop isolation from cover as heretofore described is not feasible or practical, the use of a coal tar repellent may be helpful, particularly with corn and peas. Experiments show that game birds have a fine sense of discrimination, sorting out experimentally

treated seed from untreated seed even though the outward appearance of the seed is the same.

In treating seed with coal tar, the following procedure is recommended:

1. Immerse the seed in water that has been heated to about 80° F.
2. Heat coal tar product to about the same temperature as the seed, 80° F. Heat in water or outside a building as the coal tar is inflammable.
3. Remove the immersed seed; drain and spread out to dry in a warm place.
4. When seed is fairly dry add 1 pint of warm coal tar to 2 bushels of seed or for smaller quantities in proportion of 1 ounce of coal tar to 6 pounds of seed. For areas where ground moisture is low this proportion may be reduced to $\frac{1}{2}$ ounce of coal tar to 6 pounds of seed.
5. After the grain is thoroughly mixed with the coal tar it should be spread out on gunny sacks or trays where the volatile oils evaporate and excess tar will drain off.
6. Before planting pour seed into a paper bag or other container and shake thoroughly with gypsum, fine sawdust, or dry road dust so that the kernels will separate and pass through the planter readily. Seed should be planted the same day it is treated.

Artificial baiting often disappointing. Farmers often scatter corn adjacent to planted fields in the hope that it will keep the birds from damaging the growing crops. This practice rarely brings the desired results as it usually attracts the Douglas ground squirrel, other pests, or greater numbers of pheasants.

RODENT LOSS REDUCTION

As previously indicated, the most efficient method of reducing crop losses from rodents is to decrease rodent numbers. Methods of controlling rodents and other small animal pests are fully described in Extension Bulletin 553 issued cooperatively by the United States Fish and Wildlife Service and the Oregon State College Extension Service. This bulletin may be obtained from Oregon State College, Corvallis, or from any County Agent's office in the state. Ready mixed poison baits or formulae for mixing may be obtained through the County Agents.

The practice of placing poison bait inside the burrows of the Douglas ground squirrel has been found to be less effective than that of scattering small amounts (a teaspoonful or less) at intervals on a trail or under the edge of bushes adjacent to the fields. Care should always be taken to use poison baits in such small quantities that domestic livestock will not be attracted to it.