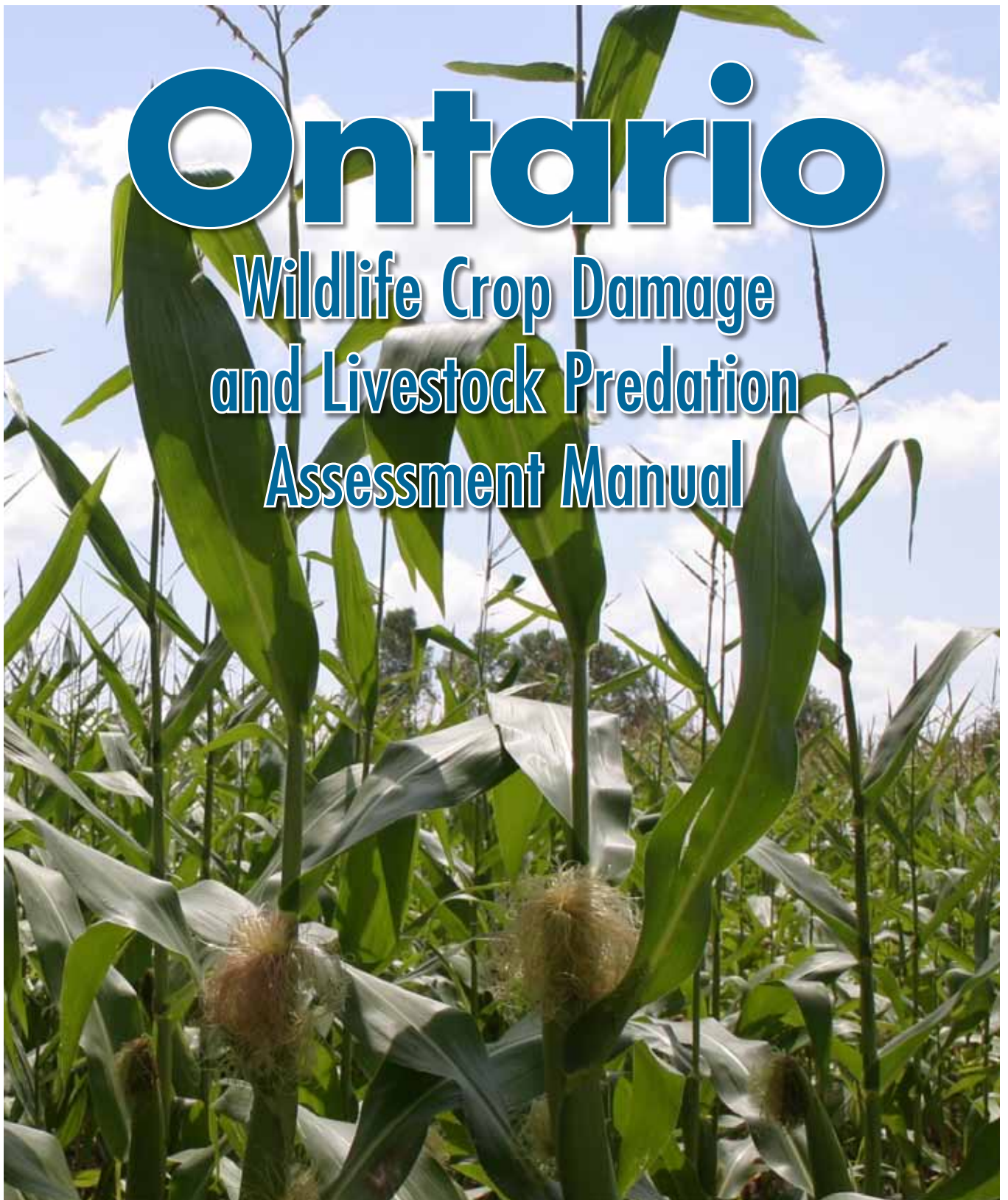


# Ontario

## Wildlife Crop Damage and Livestock Predation Assessment Manual



Produced by:



with the support of OFAH members, agricultural producers and many partners in agricultural and wildlife agencies.

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## Introduction

Public wildlife resources are highly valued by Ontario citizens. Recreational use and enjoyment of wildlife alone generates close to \$3 billion in sustainable economic benefits annually, including the creation of some 48,000 person years of employment. At the same time public wildlife can and does come into conflict with private agricultural production.

Wildlife damage to agricultural crops is estimated by the Ontario Soil & Crop Improvement Association (OSCIA) to cost farmers approximately \$41 million in crop and livestock losses annually. Livestock depredation claims to the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), have been increasing steadily. In the fiscal year 2010-2011, OMAFRA payments totalled \$1.56 million for livestock, poultry and honey bee losses. The direct cost of wildlife damage to producers is small compared to indirect costs, which include an estimated \$7.5 million in annual abatement expenses (e.g. fencing, deterrents, livestock guard animals, etc.) as well as increased management and labor cost, and stress.

Balancing the relationship between stewardship and conservation of public wildlife resources and reducing conflicts with agricultural production depends on accurate identification of wildlife damage. With that in mind, this manual has been created by the Ontario Federation of Anglers and Hunters and the Victoria Stewardship Council to assist Ontario producers, landowners, hunters and others in identifying the probable causes of agricultural damage.

### Wildlife Crop Damage – A Perspective on Species

In its comprehensive assessment of provincial wildlife damage to crops, OSCIA determined that raccoons accounted for most damage to corn—more than 50%. White-tailed deer and geese caused 40-50% of the damage to forages and wheat, and deer caused 45% of soybean damage attributed to wildlife.

Similarly, an intensive survey of species use and crop depredation by Purdue University found that raccoons and white-tailed deer caused 95% of damage in surveyed crop fields; squirrels, groundhogs, crows and other species inflicted the remaining damage. Although wild turkeys were believed by many producers to cause damage (because they are so often observed in fields in daylight) the Purdue University study concluded that wild turkeys were not responsible for any significant crop damage.

### Wildlife Crop Damage – Social Valuation & Tolerance

Where wildlife damage is concentrated by a combination of high numbers, timing, and habitat, some producers experience more significant losses than most. Some

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farms experience significant damage only occasionally, while the frequency of extensive damage on other sites can be expected annually.

OSCIA (2000) found that 90% of Ontario field crop producers reported some loss due to wildlife damage; 28% considered the losses significant. OSCIA also learned that producer tolerance of damage depends very much on the species involved—damage by socially valued & managed species such as white-tailed deer is tolerated more than damage by hunted but overabundant species such as Canada geese, which in turn are tolerated more than unmanaged species such as blackbirds.

### **Crop Damage: Other Natural Causes**

Wildlife damage is often a localized impact, especially when compared to the damage that weather events and other natural phenomena or factors can inflict. On pages 22 and 23 of this manual, brief descriptions of nonwildlife crop losses and damage are included—things like wind, rain storms, insects, equipment failure, and flooding, to name a few.

#### **Elk Restoration, Management and Conflict Prevention**

Although white-tailed deer currently outnumber elk in Ontario by a factor of more than 500:1, it is important to include a note on elk restoration, management and farm conflict prevention.

The restoration of native elk into suitable habitats in Ontario has been underway since 1998 in four areas of the province that were chosen for their habitat suitability. Major agricultural areas were excluded from elk restoration at the outset. As elk populations have grown and dispersed, however, some conflict with producers has occurred in Bancroft and Blind River areas.

As with white-tailed deer and other hunted species, regulated hunting of elk should prove to be the most effective means of reducing and preventing elk conflicts with farmers, and for nurturing wild animals that are wary of people and our facilities and farm enterprises.

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## Thank you

The Ontario Federation of Anglers and Hunters and the Victoria Stewardship Council gratefully acknowledge the Division of Wildlife, Ohio Department of Natural Resources (ODNR) for the resources they allowed us to use in the making of this manual.

Much of the information and many photographs from the 2002 ODNR publication entitled *Wildlife Crop Damage Manual* were used in this Ontario-specific publication.

Front cover photo: Jay Callaghan/OFAH and back cover photo, Wilma Mol/OSCA

# Wildlife Crop Damage & Livestock Predation



**Crop:** Corn (seedlings)

**Wildlife Species Causing Damage:** Small mammal

**Description:** Raccoons, skunks, squirrels, chipmunks, and mice feed on the developing seed of corn seedlings. Damage appears as a row of small holes where corn seedlings are planted. This can begin immediately after the seed is planted and continue through early development of the plant when the seed disappears from the seedling.

This damage is most frequently limited to the edges of fields with heavy brush or woody cover, and in Ontario is not a major cause of corn seedling damage.



ODNR

Wild turkey like to forage in newly plowed and cultivated fields so many producers assume they are digging the holes and eating the corn seed and seedlings. There is no scientific evidence to indicate that wild turkeys cause this kind of damage.

**Crop:** Corn (seedlings)

**Wildlife Species Causing Damage:** Small mammal

**Description:** Chipmunks and squirrels dig holes that are two to five inches in diameter and the soil is often pulled in one direction. They dig down to the seed, eat it, and many times leave the top of the plant behind.

Raccoons and skunks may dig holes that are similar in appearance. Raccoons sometimes dig a continuous trench along the row searching for seeds.



Jim Magee



unknown

**Crop:** Corn (seedlings)

**Wildlife Species Causing**

**Damage:** Small mammal

**Description:** Small mammal damage in seedling corn can result in reduced stand density where the damage occurred. This type of damage might often be found in cornfields adjacent to good squirrel habitat.



ODNR

**Crop:** Corn (seedlings)

**Wildlife Species Causing**

**Damage:** Crow

**Description:** Like small mammals, crows like to eat the plant seeds in cornfields. They dig around the stem of the seedling with their beak and try to pull the seedling and attached seed out of the ground. In wet sandy soils, this works moderately well. In dry or heavy soils, the seedlings often break off at the stem just above the roots. Neither crows nor mammals appear to eat the plant.

# Wildlife Crop Damage & Livestock Predation



**Crop:** Corn (early vegetative stage)

**Wildlife Species Causing Damage:** White-tailed deer

**Description:** Deer will occasionally bite off the tops of corn less than one foot high. This example shows the normal tearing exhibited along the leaf blades. Grazed stalks may recover and mature, but will be stunted.



John Jones

John Jones

**Crop:** Corn (early vegetative stage)

**Wildlife Species Causing Damage:** Canada goose

**Description:** Severe grazing of early vegetative stage corn by Canada goose. Droppings will usually be present.



Wilma Mol/OSCA



Andrew Graham/OSCA

**Crop:** Corn (early vegetative stage)

**Wildlife Species Causing Damage:** Canada goose

**Description:** Geese pose very few problems when feeding on the waste grain found in harvested fields in the fall. However, in spring they will graze on corn and soybeans as they first emerge and the stalks are tender. Intensive or repeated grazing will destroy the yield potential of the plants. Often witnessed within sight line to a pond or wetland.



Photos: Mike Kerper/Purdue University

**Crop:** Corn (milk stage)

**Wildlife Species Causing Damage:** Raccoon

**Description:** Raccoons pull husks open with their teeth and claws to expose the kernels. Husks will have a shredded look, and cobs will appear masticated with many torn seed coats remaining on the cob.



Claw marks may not result in measurable damage; but when used as a clue to diagnose the gnawing on kernels, the culprit can be exposed.

# Wildlife Crop Damage & Livestock Predation



**Crop:** Corn (milk stage)

**Wildlife Species Causing Damage:** Raccoon

**Description:** Ontario has an abundance of raccoons compared to many northeast U.S. states. Raccoons are a major source of damage. Stalks are knocked down in isolated areas in efforts by the animal to retrieve the cobs. The location of the damage alongside fence rows and woodlots often signals raccoon pressure.



Steve Sickle

**Crop:** Corn (milk stage)

**Wildlife Species Causing Damage:** Raccoon

**Description:** Once corn reaches the milk stage, raccoons will dramatically increase their rate of feeding in that field each night. Raccoons may initially feed on ears located many rows into the field from the wooded edge, and work outward with the progression of corn development toward the edge of the field.

Some raccoon damage is characterized by downed stalks along a two to three row band.



Brian J. MacGowan/Purdue University



ODNR

**Crop:** Corn (milk stage)

**Wildlife Species Causing**

**Damage:** Raccoon and woodchuck

**Description:** Woodchucks and raccoons especially, will climb up cornstalks to reach the ears. This kind of damage almost always occurs during the milk stage of ear formation. Healthy mature corn plants may support the weight of small raccoons and woodchucks. Larger animals will cause the cornstalk to break and fall. The red arrow indicates the mud on the husk and leaves of the standing plant and the masticated corncob on the ground.



ODNR

**Crop:** Corn (milk stage)

**Wildlife Species Causing**

**Damage:** White-tailed deer

**Description:** White-tailed deer prefer to eat the ears of field and sweet corn plants. Usually, deer do not cause measurable economic losses by only eating the leaves and stems of mature corn plants. Typically, deer take one or two bites from individual ears and move on to another ear. Deer will eat corn beginning when the ears first form, until the crop is harvested. Peak damage usually occurs while the ears are in the milk stage. This photograph illustrates an ear bitten by a deer. This is fresh damage.

Once the protective husk is removed, the cob quality is compromised. This is particularly true for sweet corn.

# Wildlife Crop Damage & Livestock Predation



**Crop:** Corn (milk stage)

**Wildlife Species Causing Damage:** Blackbird

**Description:** During the milk and later stages bird damage is indicated by pecked out kernels, leaving a cup-shaped shell.



Mike Kerper/Purdue University

**Crop:** Corn (milk stage)

**Wildlife Species Causing Damage:** Black bear

**Description:** In some areas black bears may concentrate in corn fields during the milk stage, when it is soft and easily digestible, from early to late August. Bear damage is typically concentrated in patches deeper inside the crop, where bears may spend extended periods feeding on, and flattening, corns or other grains. Several bears in one corn field have been known to destroy five or six acres in a month.



Brent Shirley

**Crop:** Corn (milk stage)

**Wildlife Species Causing Damage:** Black bear

**Description:** Black bear damage is shown. The scat is full of corn and bear tracks are present.



Brent Shirley



ODNR

**Crop:** Corn (late vegetative stage)

**Wildlife Species Causing Damage:** White-tailed deer

**Description:** This photograph shows an ear of corn where the tip of the ear was bitten off (probably one bite). The ear shows some new growth after the damage occurred. This ear will produce corn if the damage occurred after germination was complete. The damage exposes the ear to weather and other kinds of wildlife and insect pests. This recent damage probably occurred three to five days before the photograph was taken.



ODNR

**Crop:** Corn (late vegetative stage)

**Wildlife Species Causing Damage:** White-tailed deer

**Description:** This photograph shows an ear of corn where the tip was bitten off just as the ear began to form. After the damage, the ear continued to grow as indicated by the staggered husk. The outer husk stopped growing while the inner husks continued to grow with the ear. This ear will likely be smaller than normal and may not develop kernels. This is old damage.

# Wildlife Crop Damage & Livestock Predation



**Crop:** Corn (reproductive stage)

**Wildlife Species Causing Damage:** Crow

**Description:** Crow damage in corn mostly occurs in the outer three or four rows of a field. Ears display the classic “firecracker” look exhibited when birds pull back the husk in strips to expose the kernels.



ODNR

**Crop:** Corn (mature)

**Wildlife Species Causing Damage:** Bird (various)

**Description:** The ear of this corn illustrates bird damage, typical of crows, red-winged blackbirds, common grackles, and starlings. Similar results can be seen after deer have browsed on the cob.

Blackbird damage to corn is more likely to occur in the interior of the field. Compared to the larger crow, blackbirds have little problem penetrating the canopy of a mature corn crop.



Mike Kerper/Purdue University

**Crop:** Corn (mature)

**Wildlife Species Causing Damage:** Squirrel and small mammal

**Description:** This damage to mature corn is typical of squirrels and small mammals. It may occur while the stalk is still standing, but often occurs after the stalk is knocked over by wind or other wildlife (e.g. deer, raccoon).



ODNR



Wilma Mol/OSCIA

**Crop:** Corn (mature)

**Wildlife Species Causing Damage:** Black Bear

**Description:** These two photos depict black bear damage.

Bear damage to standing corn, oats, and barley can be significant and severe. Bears will flatten stalks.

If black bear populations exceed the average annual natural carrying capacity, and in years where natural berry crops fail, bears may concentrate in agricultural field crops from miles around.



Lisa Wessels



Wilma Mol/OSCIA

This bear was spotted in the corn field in the late morning.



Wilma Mol/OSCIA

**Crop:** Corn (mature)

**Wildlife Species Causing Damage:** Black bear

**Description:** A survey of Minnesota farms indicated that white-tailed deer damage exceeded that of bears, but producers were less tolerant of bear damage. Targeted hunting of depredating black bears was viewed by survey respondents as the most effective prevention and reduction measure.

# Wildlife Crop Damage & Livestock Predation



**Crop:** Corn (mature)

**Wildlife Species Causing Damage:** White-tailed deer

**Description:** This photograph shows an example of deer damage that occurred after the ear stopped growing. Note how the inner husks did not grow after the damage, indicating the ear had stopped growing. (Rarely, cattle and horses can also cause damage that looks like this, and they would, of course, leave obvious tracks.)



John Jones

**Crop:** Corn (mature)

**Wildlife Species Causing Damage:** White-tailed deer

**Description:** Several fresh deer tracks were found at the base of the corn plant in this photograph.

Deer can easily remove portions of the dry husk and bite off the loose dry kernels.



ODNR



ODNR

**Crop:** Corn (mature)

**Wildlife Species Causing Damage:** Beaver

**Description:** Corn fields planted near rivers, large streams, wetlands, and lakes are susceptible to damage from beavers. Beaver damage usually begins as the ears develop on the stalk, and may continue through harvest. Clean angular cuts are conclusive for beaver damage, and the height of the cut can be an indicator of the beaver's size. They will often drag the stalk to their lodge, near water or other cover, to begin to feed. Stalks may also be utilized in dam construction.

Beavers may also be attracted to fruit trees planted near their habitat. Damage to trees can set production back for many years.



Jody Scheifley

**Crop:** Corn (mature)

**Wildlife Species Causing Damage:** Wild turkey

**Description:** Corn left standing through winter is susceptible to damage and use by many species of wildlife. Some producers willingly leave a row or two for wildlife to utilize through the winter.

# Wildlife Crop Damage & Livestock Predation



**Crop:** Winter Wheat

**Wildlife Species Causing Damage:** White-tailed deer

**Description:** All three photographs show a partial view of a winter wheat field taken from the same vantage point on three different occasions. Grazing was heaviest immediately adjacent to wooded areas and virtually absent from the center of the field. The upper photo shows moderate grazing in late January.



ODNR

**Description:** This photo shows the same view of the same field taken in late March. New grazing was extremely light and there was no obvious difference in the wheat plants when comparing the previously grazed and ungrazed areas.



ODNR



ODNR

**Description:** The photo (left) is the same view of the field, taken in early July. The previously grazed areas appeared just as healthy and vigorous as the ungrazed areas. In most instances, winter wheat can withstand moderate grazing without impacting the yield. Heavy grazing in conjunction with severe cold and no snow cover can damage winter wheat stands.

Brian J. MacGowan/Purdue University



**Crop:** Soybean

**Wildlife Species Causing Damage:** Japanese beetle

**Description:** July is a peak time for complaints about turkeys and soybean damage in Indiana, however; this period coincides with Japanese beetle outbreaks. Many other insect species upon which turkeys feed are in soybean fields during the same period.

Although wild turkeys are often seen in growing and mature soybean fields where they are usually foraging for insects, they seldom cause any damage to late vegetative or reproductive stage beans.

Photos: ODNR



The left photo shows a turkey dusting area in a soybean field which turkeys used regularly. The right photo shows the contents of a turkey gizzard which staff with the Ohio Division of Wildlife observed apparently feeding in a soybean field. Lab analysis found waste grain from the previous growing season, Japanese beetles and wild plant seeds. As well, Japanese beetles were seen clinging to the underside of the soybean plant leaves in the immediate study area.

Felix Barbetti



**Crop:** Corn and soybean

**Wildlife Species Causing Damage:** Unknown

**Description:** Wild turkey are often blamed for crop damage because they are present in the field. In fact, most complaints of turkey crop damage in corn and soybeans are actually caused by other species or elements.

# Wildlife Crop Damage & Livestock Predation



**Crop:** Grapes (fruit)

**Wildlife Species Causing Damage:** Bird (various)

**Description:** Wild birds, including song birds, can be a significant cause of damage to grapes and berry crops. Birds damage bunches by pecking at fruitlets or ripened fruit, opening the bunch up to further secondary damage by bacteria, insects or mold.



Felix Barbeti

**Wildlife Species Causing Damage:** White-tailed deer

**Crop:** Grape (vine)

**Description:** Deer may feed on the tender shoots and individual leaves of the grape vine, usually at the height of one meter.



Felix Barbeti

**Crop:** Fruit tree

**Wildlife Species Causing Damage:** White-tailed deer

**Description:** Deer can be a problem in Ontario orchards. Serious damage occurs when dormant browsing of the top terminal buds causes uncontrolled growth. During the growing season, deer browse on foliage, buds, young shoots and fruit. Heavy deer pressure can seriously impact overall crop production.

Repellents and controls will provide some temporary relief from deer damage. Deer fencing (at least 2.5 meters high) is effective, but it is expensive.



Greg Cull

Jody Sheffley



**Crop:** Fruit tree

**Wildlife Species Causing Damage:** Rabbit/vole

**Description:** Rabbits/voles can be responsible for girdling trees and roots when their normal food supply is limited. Rodents chew through the inner bark's vascular tissue known as the cambium layer, severing the process of the leaves transporting sugar to the roots, which subsequently kills the tree.

Girdling by voles primarily occurs beneath the snow and goes undetected until spring, this damage is often extensive and incorrectly blamed on rabbits. Properly installed tree protectors can negate this damage.

Tony Jackson



Tony Jackson



**Crop:** Strawberry

**Wildlife Species Causing Damage:** White-tailed deer

**Description:** Producers may experience damage due to wild birds, small mammals, or white-tailed deer. Ripened fruit may attract large flocks of robins, starlings, finches, waxwings or turkeys which can quickly cause significant losses.

Deer are attracted to the evergreen leaves of strawberries in late fall when other vegetation is scarce. Browsing of leaves doesn't usually set spring vigor back, however deer foraging on succulent spring leaves is a cause of lost production.

Where the production of branch crowns is required in the fall, deer feeding can seriously damage plasticulture planting of strawberries.

**Crop:** Broccoli

**Wildlife Species Causing**

**Damage:** White-tailed deer and other mammals

**Description:** Leaves browsed from young market garden plants, such as broccoli, may indicate deer damage. Deer tracks will usually be evident. Groundhogs and rabbits are other possible culprits.

Pumpkins have proven to be a favorite of deer.



Brian Bell/OMAFRA

**Crop:** Peas

**Wildlife Species Causing**

**Damage:** White-tailed deer

**Description:** In summer, deer will browse on a wide variety of green leaves and flowers, usually a leaf here, a flower top there. When managed through hunting, within reasonable densities (less than 10 deer per square kilometer) deer conflicts with human activity are greatly reduced.



Brian Bell/OMAFRA



Wilma Mol/OSCI/A

**Crop:** Soybean

**Wildlife Species Causing**

**Damage:** Canada goose

**Description:** The young soybean plants in this field have been devastated by grazing geese. The majority of soybean damage cases involve young, tender plants located next to ponds or golf courses that are intensively mowed. Geese prefer to reside during the growing season in both circumstances.



Wilma Mol/OSCI/A

**Crop:** Soybean

**Wildlife Species Causing**

**Damage:** Canada goose

**Description:** This is another vantage point of the same location showing extensive goose damage to maturing soybeans, especially closer to the pond. Geese typically stay within sight of their refuge (pond) for safety.



John Jones

**Crop:** Soybean

**Wildlife Species Causing**

**Damage:** Canada goose

**Description:** Succulent leaves and stems are browsed by geese. Only lightly grazed plants may recover from goose grazing.

**Crop:** Soybean

**Wildlife Species Causing**

**Damage:** Wild turkey

**Description:** Studies of crop depredation across wild turkey ranges have generally found turkeys are not a cause of any crop damage, however, large flocks foraging in ripe beans can be a source of Ontario producer complaints where the physical movement of birds shatters large numbers of dry pods.

Turkey use of ripe soya may be a learned behavior that is best deterred when first noticed.

Fall hunting of Ontario turkeys was introduced, in part, to help keep birds wary and prevent conflicts with people and producers.



Randy Therrien

**Crop:** Hay (baled and wrapped)

**Wildlife Species Causing**

**Damage:** Crow and vulture

**Description:** Rolled bales of hay that are wrapped in airtight plastic are sometimes damaged by crows and turkey vultures. Decaying hay or possibly dead animals trapped in these bales emit enough odor to attract vultures and occasionally crows, which will peck holes and tear away sections of the plastic in search of a meal. The holes allow moisture and air into the bales, which can deteriorate the hay and cause spoilage. Because of the similarity in size, vultures are often mistaken as wild turkeys.



Brian Bell/OMAFRA

Brian Bell/OMAFRA



**Crop:** Hay (baled and wrapped)

**Wildlife Species Causing Damage:** Various

**Description:** Keeping air and moisture out of baleage is necessary to maintain aerobic conditions and high quality. Bale wrap can be punctured by poor handling, coarse stems, crows, vultures, foxes or coyotes, scavenging rodents, cats, dogs, deer or goats. Good heavy wrap, careful storage in a good location and regular inspection and repair are necessary to ensure high quality baleage.

ODNR



**Crop:** Hay (baled)

**Wildlife Species Causing Damage:** Wild turkey

**Description:** This is a view showing the extent of the damage to the ends and tops of the bales. This type of damage can make it difficult to lift and haul each bale without it falling apart. It should be noted that this damage wasn't noticed until after a heavy snowfall.

**Crop:** Hay (baled)

**Wildlife Species Causing Damage:** Wild turkey

**Description:** Some wild turkey flocks learn that bales can become a winter food source, especially in area or winters with significant snow accumulations. Turkey damage to bales is a main cause of damage in some areas of the province.

Damage mitigation includes storage away from winter turkey habitat, and early intervention to deter wild turkey use of bales before they become habituated.

ODNR



**Crop:** Oats

**Wildlife Species Causing Damage:** Black bear

**Description:** Oats and corn crops are sometimes damaged by feeding and loafing black bears. Large, localized areas of flattened plants or stalks show where bears have fed in oat or corn fields. Bears eat the entire corn cob, whereas raccoons strip the ear from the stalks and chew the kernels from the ears. Black bears prefer corn in the milk stage.



Claire Venne/OSCIA

**Crop:** Spring grain and corn

**Wildlife Species Causing Damage:** Sandhill crane

**Description:** Where sandhill cranes are present and abundant, they can damage newly planted corn or small grains. Corn seedlings are susceptible to damage for about two weeks after they emerge. Seed treated with an effective bird repellent can prevent damage to corn seedlings, compelling cranes to forage for waste grain and insects instead.

Large staging flocks of cranes in September are attracted to swaths of ripe small grains (wheat, oats, barley and rye waiting to be combined), so they can be a particular problem if wet conditions postpone the harvest.



Murray Cochrane/OSCIA

As long as sandhill crane populations continue to expand in number and range, and not be subjected to hunting in Ontario, agricultural crop damage can be expected to increase. Damage is occurring in an expanding area from Sault Ste. Marie to Manitoulin Island. Sandhill cranes are now increasingly being seen in Durham and Peterborough counties.

**Examples of nonwildlife crop damage:** weather can play a role in crop losses.



Dave Allen

## Wind damage

Wind, heavy rain, and hail damage in mature grain crops is relatively common.

High winds, rain, and hail cause individual plant stems to severely bend over or break under the weight of ripening grain. Harvest is hindered and yields can be reduced.



ODNR

## Water and rain damage



Dave Allen



ODNR

## Seeder malfunction

This photograph shows an area in a soybean field where the seed drill malfunctioned and failed to drop seeds. Equipment malfunction can sometimes appear as wildlife damage.



ODNR

## Crop residue

Harvesting machines can sometimes leave piles of crop residue in fields. When minimum and no-till planting practices are followed for the next crop, piles of old residue can retard the growth of the new crop. In many instances the seeds will germinate and the plants will eventually grow normally. In late March, this winter wheat field in Ohio had a noticeable area of soybean crop residue. By early July, Ohio Division of Wildlife employees couldn't find any indication that the crop residue had impacted the plants.

# Wildlife Crop Damage & Livestock Predation



**Examples of nonwildlife crop damage:** Not all crop damage is related to birds or mammals. Closer investigation may confirm more familiar insect pests.

## Japanese beetle

Japanese beetles begin feeding on maturing sweet corn by clipping off the silk and working down to the kernels. Note the cluster of beetles at the top of this cob. The silk is usually found laying on the ground or on the leaf as shown here.

Deer are sometimes blamed for this type of damage to sweet corn. Again in the second photo, note the silk laying next to the ear.



ODNR

## Japanese beetle

Wild turkeys feeding among field crops and fruit are apt to be foraging for insects, including harmful invasive species, such as Japanese beetles. In this instance the turkeys are not looking for seeds to devour.



Felix Barbetti

## Wireworm

Wireworm damage to corn is most common in May and June in muck soils or soils that contain high amounts of organic matter. Wireworms damage corn by hollowing out the seeds before they germinate and by drilling holes into the base of the plant. Wireworms attack both the seeds and the seedlings.



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## Corn borer

Corn borers feed in the whorls and joints of maturing corn plants. They embed into the stalks as the tassels begin to emerge. This photograph shows how corn borers feed inside the stem joint weakening the plant at that joint. Storms and high winds often cause the plant to break off at the weakened joints. Note the dark stains around the edge and the small hole in the middle of the stem - telltale signs of corn borer.



ODNR



Al Whitlam



Allison Brown



Chris Gaebel

## Wildlife Species Causing

**Damage:** Coyote

**Livestock:** Sheep

**Description:** Coyotes typically bite adult sheep and goats on the throat just behind the jaw and below the ear. Death commonly results from suffocation and shock; blood loss is usually a secondary cause of death. Careful removal of the skin from around the neck will reveal the tooth puncture marks.

On small prey, such as young lambs and kids, coyotes may kill by biting the head, neck or back, causing massive tissue and bone damage.

Coyotes normally begin feeding in the flank or just behind the ribs. Feeding on the hindquarters is also common.

Predation on livestock in Ontario, primarily by coyotes, more than doubled (to \$1.4 million) from 2004 to 2009, not including the stress damage on the whole flock or herd, or the additional costs of trying to prevent such losses.

## Wildlife Species Causing

**Damage:** Black bear

**Livestock:** Sheep

**Description:** A distinctive characteristic of black bear predation is its habit of peeling the hide from its prey – in this case almost separating the sheep-skin from the carcass. Black bear often kill from behind, leaving claw marks on the back of its prey.

# Wildlife Crop Damage & Livestock Predation



## Wildlife Species Causing

**Damage:** Coyote

**Livestock:** Sheep (lamb)

**Description:** Small livestock such as lambs, may be entirely consumed or dragged away from the kill site.



Jim Mogee

## Wildlife Species Causing

**Damage:** Cougar (suspected)

**Livestock:** Cattle (steer)

**Description:** This 800lb. steer was believed to be killed by a single large predator in Haldimand County. The only damage to the animal was to the neck, as shown, which is not typical of dogs, coyotes or wolves.

Coyote predation on cattle is usually limited to newborns and calves. On cattle, there will typically be damage on the hind quarters, hocks and nose, and the belly cavity will be opened and fed upon. Several suspected cougar attacks on livestock were reported in the Niagara Peninsula in the summer of 2007.



Brian Armstrong

## Wildlife Species Causing

**Damage:** Coyote

**Livestock:** Cattle (calf)

**Description:** Not much remains of a calf after two nights of feeding by coyotes. Daily monitoring minimizes the risk that scavenging obscures or eliminates evidence of predation.



Jim Mogee



Chris Gaebel

## **Wildlife Species Causing Damage:** Black bear

**Livestock:** Cattle (calf)

**Description:** This calf was mauled by a black bear.



Jody Sheriffley

## **Wildlife Species Causing Damage:** Black bear

**Livestock:** Apiary

**Description:** Damage to beehives can be a significant economical problem. A bear that encounters an unprotected apiary can destroy or badly damage hives. Some bears are especially fond of larval bees and honey. Consequently, beehives should be located as far away from forested cover and travel routes as possible.

Electric fencing has been shown to be almost 100% effective in controlling bears in apiaries.

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# Wildlife Crop Damage & Livestock Predation

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## Request for Ontario-based photos

One of the challenges of producing this manual was finding photographic reference to illustrate Ontario-based wildlife crop and livestock damage. Where possible, supplied photos were used, however; in many instances we have resorted to using the low resolution images that were published in the 2002 Ohio (digital) version of the manual. Over time, we hope to replace these "originals" with high resolution, "Ontario grown" photographs. Please consider submitting digital crop damage photos for use in future versions of this manual. Photos may be sent as an attachment via email to [ofah@ofah.org](mailto:ofah@ofah.org), with the subject line "Crop Manual Photos" or may be sent via mail to the Ontario Federation of Anglers and Hunters, PO Box 2800, Peterborough, ON K9J 8L5.

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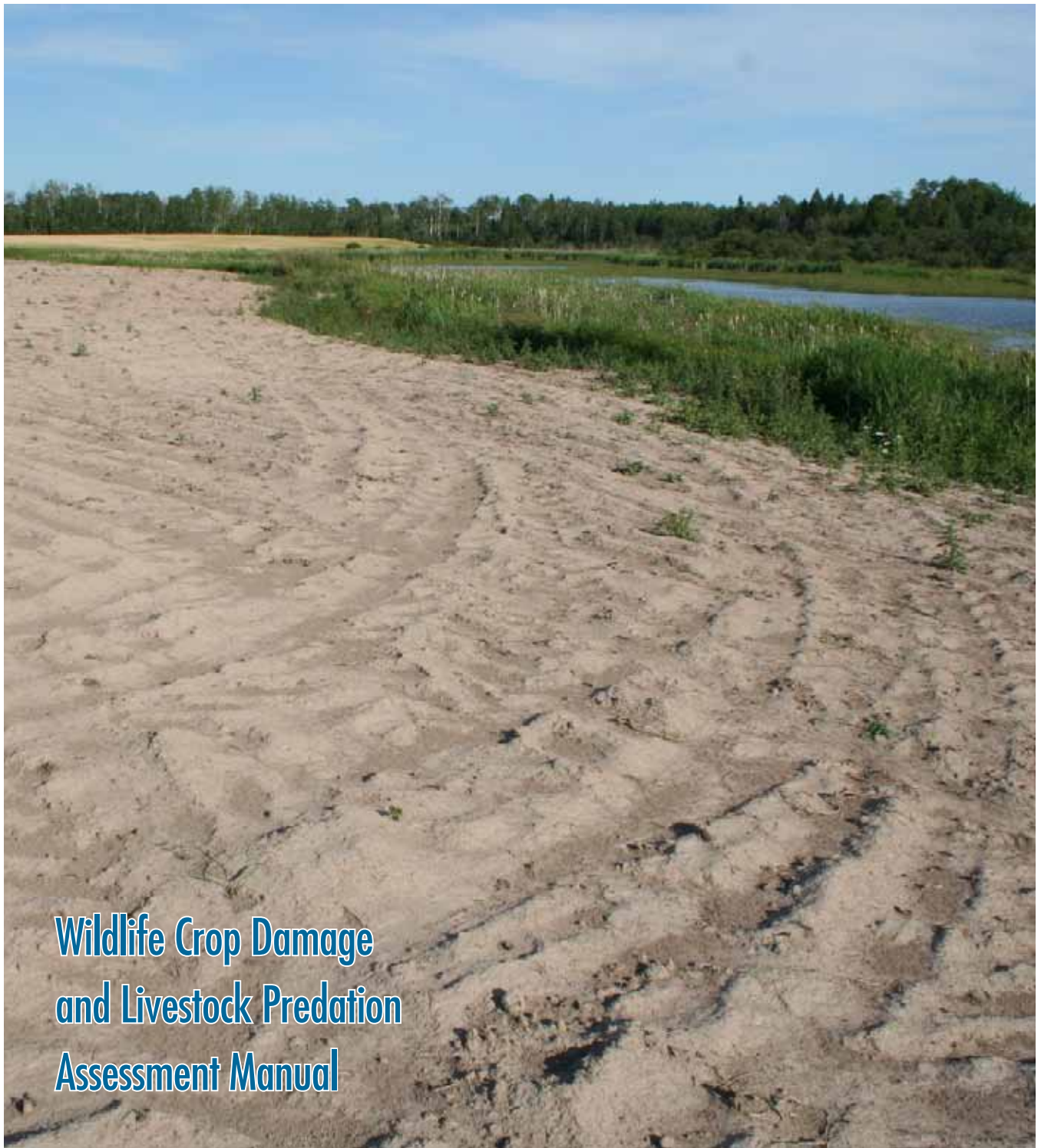


Photo: Wilma Mol/OSCIA

## Wildlife Crop Damage and Livestock Predation Assessment Manual

This document is also available for download in PDF format at **[www.ofah.org/cropmanual](http://www.ofah.org/cropmanual)**

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