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Canada's Independent Agri-Food Think Tank

AN ECONOMIC UPDATE OF THE WILDLIFE IMPACT ASSESSMENT FOR ONTARIO AGRICULTURE[1]

Prepared for: Ontario Soil and Crop Improvement Association

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EXECUTIVE SUMMARY

The purpose of this project was to update the 2000 *Wildlife Impact Assessment for Ontario Agriculture* report based on the current economic data. Historic survey results located in the material provided by OSCIA were used to determine the loss rates for crops and livestock for 1998. Some technical complications were introduced by data collected directly in the 2000 study that could not be directly updated and aggregated consistently with published data. Thus, the 1998 results were recalibrated based on data publicly available today, and then updated for the period 2005 to 2007.

The results showed the following:

- Since 1998, the year the primary survey was undertaken, nominal prices have increased for all horticultural and field commodities and sheep. On average, acreage of major crops has increased.
- The wildlife damage compensation requests for livestock damages to OMAFRA have increased since the time of the original study. While precise and unequivocal data on wildlife population are not available, data on damage rates and harvest are consistent with wildlife populations increasing
- Based on consistent data, wildlife damage in Ontario has increased by about 20% in value since 1998. The table below provides a summary of changes in wildlife damage from 1998 to 2005/2007, based on the loss rates determined by the wildlife damage survey undertaken in 1998, and with average yield/price/acreage data from 2005 to 2007. The table shows that, based on commodities covered in the study, wildlife damage in Ontario costs Ontario farmers approximately $41 million per year.

The results of this study should be understood as conservative. Because a new survey was beyond the scope of this study, the existing loss rate from the 2000 study was used and applied to more recent data. The indication from secondary sources in terms of expenditure on wildlife claims, wildlife harvest levels, and emergence of new wildlife species that damage crops, suggests that the wildlife damage issue is increasing. In addition, some of the vegetable crops included in the 2000 study could not be updated here. Thus, the costs of wildlife damage appear quite material in the current context, and even at that there is rationale to expect that the value of losses estimated for 2005/2007 is conservative.

Change in wildlife damage to selected crops and livestock from 1998 to 2005/2007

Commodity	1998*	2005/2007	Percentage Change
Livestock			
Beef	$1,010,783	$828,812	**-18.0 %**
Sheep	$495,180	$730,505	**47.0%**
Field Crops			
Corn	$13,805,506	$17,220,451	**24.74%**
Soybeans	$5,290,917	$5,833,636	**10.26%**
Wheat	$506,021	$979,171	**93.50%**
Forages (Hay)	$6,684,159	$8,491,312	**27.04%**
Fruit			
Apples	$1,988,756	$1,642,583	**-17.40%**
Grapes	$1,831,888	$2,443,179	**33.37%**
Blueberries	$319,191	$157,326	**-8.84%**
Strawberries	$102,613	$112,979	**10.10%**
Tender Fruit	$1,992,794	$2,330,806	**16.96%**
Vegetables			
Sweet corn	$217,344	$151,329	**-30.30%**
Total	**$34,245,153**	**$40,922,089**	**19.50%**

*Recalibrated based on current data availability

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1. Introduction

In 2000, a *Wildlife Impact Assessment for Ontario Agriculture* was initiated by the Ontario Soil and Crop Improvement Association (OSCIA, 2000). The study intended to investigate the economic impacts of wildlife on agriculture in the province. A partnership was established to draw on the advice and experience of a wide range of selected experts and to build cooperation in working toward solutions. The partnership included farm organizations, academics, wildlife conservation groups, government and government-directed organizations. The research examined wildlife-related losses to different field crops, fruits, vegetables and livestock. The study was based on surveys of farmers, logs of documented damage, and on-site assessments to collect information on the positive and negative impacts of wildlife as well as commodity specific information on wildlife losses.

1.1 Purpose and Objectives

The purpose of this project is to update the 2000 *Wildlife Impact Assessment for Ontario Agriculture* report based on the current economic data.

The specific objectives of this project are:

1.1.1 To review the *Wildlife Impact Assessment for Ontario Agriculture* in order to identify how losses were determined, and areas where economic information can be updated to reflect the current situation.
1.1.2 To collect recent economic data and trends on wildlife.
1.1.3 To calculate a revised cost estimate of wildlife damages in Ontario based on current economic data.
1.1.4 To update the investment in the abatement of wildlife damages based on the 2000 report and current economic data.

1.2 Organization of the Report

First, the report *Wildlife Impact Assessment for Ontario Agriculture (2000)* is reviewed to assess how losses were estimated in the 2000 study. This is followed by an overview of changes to economic and wildlife population data in the last decade. Crop and livestock damages due to wildlife are re-estimated based on loss rates determined in the 1998 survey. The report concludes with a section on potential options for mitigating wildlife-caused losses.

2. Review: Wildlife Impact Assessment for Ontario Agriculture.

The following section reviews the methods used in the OSCIA report *Wildlife Impact Assessment for Ontario Agriculture*. The purpose of the review is to assess how loss estimates were determined, and areas where economic information could be updated to reflect the current situation and help to understand the analysis, findings and recommendations contained within the 2000 report.

2.1 Estimation of wildlife damage to crops and livestock

In the OSCIA (2000) study, a survey was undertaken to estimate the economic damage of wildlife to cash crops, fruits, vegetables and livestock. The survey was developed in 1999 and split into a spring and fall survey and a summer logbook to record wildlife damage. A random sample of 900 farms was collected. Some groups were over-represented (strawberry and blueberry growers) and results were weighted appropriately.

In the spring survey, producers were asked to indicate the wildlife losses that occurred in 1998, and the changes over the last 5 years. The 1999 survey was aimed at collecting information on the damages that occurred in 1999. In 1999, 250 log books were distributed to producers so that they could actively record the damage that occurred, with the help of AGRICORP and OMAFRA field staff. Figure 1 shows the method used to determine the impact of crop damage, from respondents surveyed.

The average county yield where the survey respondent operated his/her farm was multiplied by the respondent's acreage and the percentage of the yield loss reported. The resulting lost volume through wildlife damage was then multiplied by the dollar value of the crop in the given year. The volume of loss was then multiplied by the dollar value of the crop in the year 1998.

The estimation of livestock damage was based on the losses and dollar values recorded by livestock producers. An attempt was undertaken to use publicly available market pricing and average weight from the OMFRA website. However, only the survey results were used to calculate the losses

Figure 1 Method used to determine economic impact for crop damage

From survey respondents in 2000

1.

Average County Yield	X	Respondent # of Acres in Crop	X	% Yield Loss Reported	=	Respondent Volume of Loss

2.

Volume of Loss	X	$ Value of Crop	=	$ Value for Crop per Respondent

2.2 Data Availability

In the 2000 study, a survey was conducted to establish loss rates due to damage. This provided a snapshot of what happened in 1998. The data collected directly from survey responses, by nature cannot be updated, and the identity, location, and demographics associated with respondents are protected by confidentiality. Technical challenges were also observed in aggregating responses from the survey to the provincial level, particularly in fruits and vegetables.

These technical issues, related to data and aggregation, prevented an exact extrapolation of the survey results from 2000. To bridge the gap, the results from the 2000 study for 1998 were recalibrated, given the loss rates from the sample, and acreage, yield, and price data publicly available today. In many crops, this resulted in little change. In other cases, notably in fruits in vegetables, this resulted in some adjustments; in particular, data for certain crops were not available and had to be dropped. Given these technical challenges, the recalibrated 1998 values are lower than those reported in the 2000 study.

3. Update of data - 1998 to 2005/2007

In order to update the economic value of wildlife damage since 1998, the following data were gathered:

- Changes in yield, prices and acreage for crops
- Changes in number of livestock and livestock prices
- Changes to wildlife trends

The 2000 report used values from 1998. In updating the data, to correct for annual fluctuations in acreage, populations, market prices and yield, an average of three years is taken. In Table 1, data from 1998 are compared with the average prices, yields and acres data based on a 2005/2007 three-year average.

Table 1 Crops - Changes in yield, prices and volumes marketed from 1998 vs. 2005/2007

	% change in yield/acre	% change in acres	% change in price
Corn	11.10	-4.90	18.06
Soybeans	-2.44	6.68	5.94
Wheat	20.95	15.02	39.09
Apples	16.64	-31.09	2.76
Grapes	-0.75	9.23	23.03
Blueberries	-0.66	25.67	25.16

Source: http://www.omafra.gov.on.ca/english/stats/crops/index.html

Table 1 shows that prices have, on average, increased for all commodities. The price has increased more than 20% for wheat, grapes and blueberries. Wheat stands out, as the yield per acre increased by an average of 20% and acreage increased by 15%. The yield per acre has increased by 16% for apples. However, this has been balanced out by a decrease in acreage of 31%.

Table 2 shows the changes in the livestock sector from 1998 to 2005/2007. The change focuses on sheep and beef cattle as these were the livestock the survey was concerned with. The number of livestock, overall, decreased from 1998 to 2005/2007, except for lambs. All numbers refer to July values. Referring to Table 2, nominal prices for sheep and calves and breeding heifers increased from 1998 to 2005/2007.

Table 2 Changes in number of animals marketed and prices from 1998 to 2005/2007

	% change in inventory from 1998 to 2005/2007	% change in prices from 1998 to 2005/2007
Beef Cull Cows	-9.9	-32.2
Beef Bulls	-8.0	-25.2
Beef Breeding Heifers	-33.8	6.1
Beef Calves	-15.2	24.4
Sheep	-32.3	13.0
Lambs	39.6	13.5

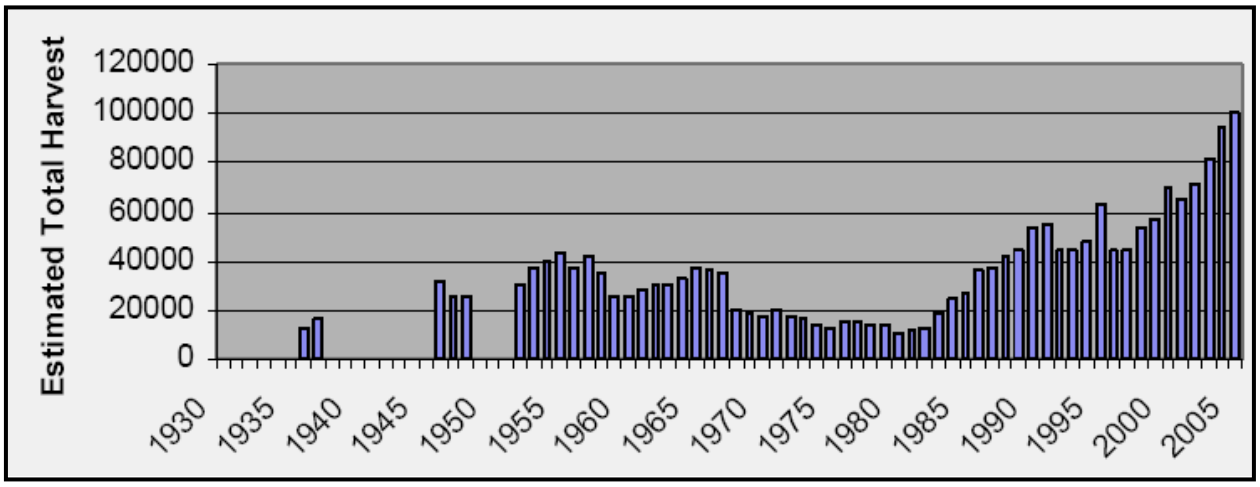
Source: http://www.omafra.gov.on.ca/english/stats/livestock/index.html, July values

Wildlife population trends

Inventory on wildlife is not readily available. According to the Ontario Ministry of Natural Resources (Wildlife Section, Fish and Wildlife branch), no estimates regarding the coyote and raccoon populations are available. The most commonly used method to identify trends in wildlife population for deer and geese is to look at the number of animals hunted or harvested.

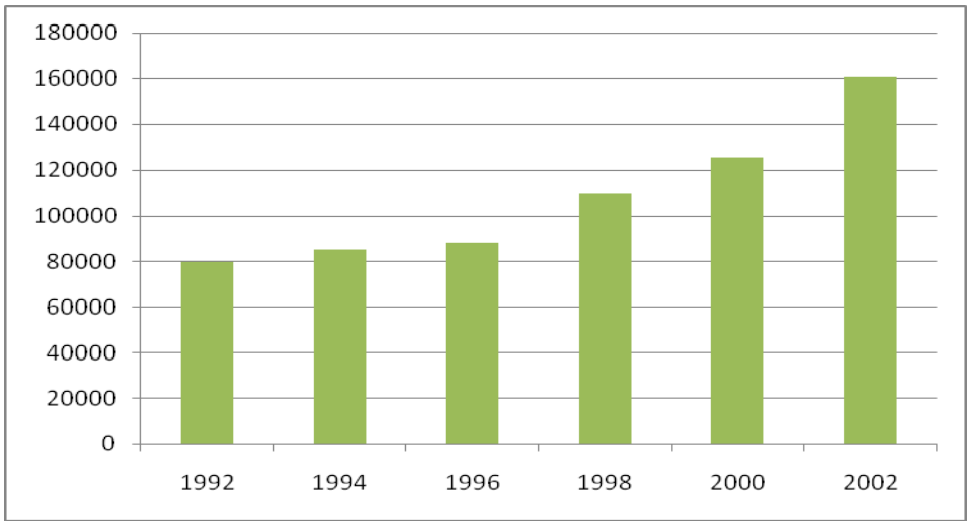
Figure 2 shows the development of deer harvest since the 1930's. In 1980, the harvest amounted to approximately 10,000 deer annually. However, this number has increased dramatically over the last two decades, with deer harvest of up to 100,000 deer a year (Government of Ontario). According to Environment Canada (2004), harvest for Canada Geese has been on the rise. Figure 3 shows the harvest estimates for Ontario from 1992 to 2002. The number of harvested geese has nearly doubled in this decade.

Figure 2 Estimated White-tailed Deer Harvests in Ontario, 1930-2005



Source: Ministry of Natural Resources: http://www.mnr.gov.on.ca/244545.pdf

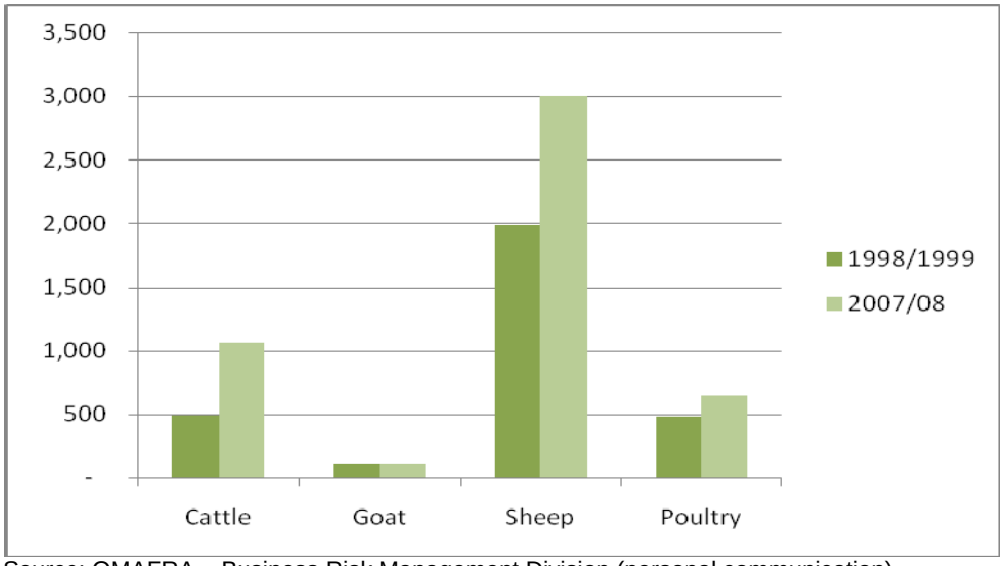
Figure 3 Canada Goose Harvest Estimates for Ontario



Source: Environment Canada, 2004

Figure 4 shows the number of injured or killed animals claimed under OMAFRA's Livestock, Poultry and Honey Bee Protection Act. The number of claims has increased by 92% for cattle (from 493 killed/injured animals to 948 animals) and for sheep by 55% (from 1990 killed/injured animals to 3076 animals).

Figure 4 Registered injured/killed animals due to wildlife in 1998/99 and 2007/08 in Ontario



Source: OMAFRA – Business Risk Management Division (personal communication)

Thus, for all commodities, in comparison to the 2000 study of wildlife damage, the marketed volume of all commodities under study has increased, as have the nominal prices. Wildlife number estimates could not be obtained for all species, but for deer and Canada geese the population trend appears to be markedly increasing. Furthermore, the number of injured and killed animals claimed through the protection of livestock and poultry act has increased significantly from 1998 to 2008.

4. Assessment of current value of wildlife damage in Ontario for selected crops and livestock

In this study, we revise estimates of the magnitude of the cost of wildlife damages in Ontario, based on the losses identified in the 2000 report and current economic data. Since the collection of new survey data on estimated losses was beyond the scope of this update, the loss rates are obtained using the survey values, and applied to updated crop and livestock data for the period of 2005/2007. First, the update of wildlife damage for field and horticultural crops is presented, followed by the estimation for livestock.

4.1 Field and Horticultural Crops

4.1.1 Estimation of loss rate

The following procedure was employed to estimate loss rates due to wildlife damage in crops. Loss rates can be interpreted as the average percentage of volume lost in crops due to wildlife damage. Based on the 2000 survey, the total crop volume lost due to wildlife damage was divided by the total acreage reported by survey participants. This value was then divided by the average yield in 1998. The survey values were retrieved from summarized 1998 survey results, which were provided by OSCIA. The historical yield data were retrieved from OMAFRA. The approach is illustrated in Equation 1 below.

$$Percentage\ of\ volume\ lost = \left(\frac{Survey\ value: volume\ lost}{Survey\ value: acres\ in\ the\ sample}\right) / avg\ yield\ 1998) \quad [1]$$

Based on the approach defined by equation 1, the loss values for field crops presented in Table 3 were obtained. For forages, hay acreage and yields were applied. The results show a loss rate due to wildlife damage of 0.4-1.9%. These values are used to extrapolate the past and current values of damage, which will be illustrated in the next section.

Table 3 Percentage of volume lost in Ontario's crop sector (1998)

Commodity	Unit	Percentage of volume lost in 1998 (survey results)
Corn	bu	1.94 %
Soybeans	bu	0.81 %
Wheat	bu	0.35 %
Forages (Hay)	ton	1.45 %

Table 4 presents the percentage of volume lost for horticultural crops for Ontario in 1998. The category of tender fruit was composed of apricots, sweet cherries, nectarines, peaches, pears and prunes. The average marketed production, area harvested, price, and the following percentage loss per acre were determined with OMAFRA data. Losses for vegetables, except sweet corn, presented in the 2000 report could not be traced back and were, therefore, excluded.

Table 4 Percentage of volume lost in Ontario's horticultural sector (1998)

Commodity	Unit	Percentage of volume lost in 1998 (survey results)
Fruit		
Apples	lbs	2.33 %
Grapes	lbs	4.28 %
Blueberries	lbs	13.50 %
Strawberries	lbs	0.58 %
Tender Fruits	lbs	4.50 %
Vegetables		
Sweet corn	lbs	2.84 %

4.1.2 Re-calibration of the values in the 2000 report

The loss rate, as determined in the previous section, is applied to the provincial average yield and prices from 1998 for the respective field crops and horticultural crops to re-calibrate the values from the 2000 report.

To determine the total damage to crops in Ontario, the loss rate was multiplied by the average yield per acre (2). The volume lost in Ontario was then multiplied by average price per bushel or pound (3).

$$Volume\ lost\ in\ \ Ontario = percentage\ yield\ loss\ per\ acre * avg.\ yield\ per\ acre \quad [2]$$

$$Total\ damage\ in\ Ontario = Volume\ lost\ in\ Ontario * average\ price \quad [3]$$

Table 5 shows the results of the recalibration of the 1998 losses as indicated in the study, based on the available information. For field crops, specific dollar values were mentioned in the original report, whereas values for fruits and vegetables are combined into one value.
The last column indicates the percentage difference, where available, of the study and the recalculated value.

As described above, the 2000 study definition of forages was imprecise; in this study, hay is used to represent forages, and the table shows that this creates some discrepancy relative to the 2000 study results. Similarly, the recalibrated value for wheat is 22% lower than was mentioned in the original report. The reason for this discrepancy could not be determined.

Table 5 Recalibration of survey values for field crops

Commodity	1998 Results Reported in the 2000 Study	Recalibrated 1998 values	Percentage difference
Field Crops			
Corn	$ 14,629,972	$ 13,805,506	- 6.55 %
Soybeans	$ 5,290,917	$ 5,687,087	7.49 %
Wheat	$ 621,546	$ 506,021	- 22.83 %
Forages (Hay)	$ 5,242,745	$ 6,684,158.60	27.49 %

Table 6 shows the recalibrated total damage to horticultural fruits in Ontario in 1998. The recalibrated value of total damage to fruit was $6,235,243. However, the 2000 report lists $11,626,886 as total damage to fruits, which is an 86% difference. This difference can be attributed to the broader range of crops for which data were collected in the 2000 study, and the manner in which damage to horticultural crops was aggregated. For the purpose of the update in Table 6, the data were aggregated based on acreage.

Table 6 Recalibrated 1998 values for horticultural crops

Commodity	Recalibrated values
Fruit	
Apples	$ 1,988,756.34
Grapes	$ 1,831,888
Blueberries	$ 319,191
Strawberries	$ 102,613
Tender Fruit	$ 1,992,794.68
Vegetables	
Sweet corn	$ 217,344

4.1.3 Application of the loss rate to 2005/2007

Section 3 showed that yield and price data have varied significantly over time. In order to provide a longer term picture of wildlife damage, data for the commodities whose loss function could be traced back were averaged from 2005 to 2007. The total damage in Ontario was calculated by using the approach explained before for the re-estimation of the 1998 values. Average yield, acreage and price data from 2005 to 2007 were retrieved from OMAFRA.

The next table shows the results of the calculation. The second column of Table 7 shows the recalibrated values for 1998 as they were listed in Table 5 (field crops) and 6 (horticultural crops). The third column of the table shows the results of the calculation when the 1998 loss rate was applied to 2005/2007 average yield, price and acreage data. The last column of Table 7 shows the percentage difference between the re-estimated values from 1998 and the estimated values from 2005/2007, to give an indication of crops for which the economic values of wildlife damage have increased or decreased.

For example, the damage to corn has increased by almost 24.8% and for soybeans by 10.3%. The biggest change occurred for wheat, which is mainly based on the increased acreage planted and the increased commodity price. The same is true for sweet corn and corn. The wildlife damage for apples was estimated to have decreased by 17%. This is based on the decrease in acreage by 31% in 2005/2007 as compared to 1998 (see Table 1).

Table 7 Estimation of the value of wildlife damage

Commodity	1998*	2005/2007 Results using 1998 loss rate	Percentage change 1998 -2005/2007
Field Crops			
Corn	$ 13,805,506	$ 17,220,451	24.74 %
Soybeans	$ 5,290,917	$ 5,833,636	10.26 %
Wheat	$ 506,021	$ 979,171	93.50 %
Forages (Hay)	$ 6684159	$ 8491312	27.04 %
Fruit			
Apples	$1,988,756.00	$1,642,583.00	-17.4%
Grapes	$1,831,888.00	$2,443,179.00	33.37%
Blueberries	$319,191.00	$157,326.00	-8.84%
Strawberries	$102,613.00	$112,979.00	10.10%
Tender Fruit	$1,992,794.68	$2,330,806.23	16.96%
Vegetables			
Sweet corn	$ 217,344	$ 151,329	47.47%

*Recalibrated based on current data availability

4.2 Livestock

The following section shows the method used to recalibrate the survey values, in order to update the economic losses for livestock losses due to wildlife. The valuation of killed and lost livestock was captured directly in the original study survey, as reported directly by farmer-participants. Thus, the 1998 results were recalibrated based on Ontario livestock statistics.

4.2.1 Sheep and Lambs

In the survey, a total of 151 adult sheep and 688 lambs were claimed as being lost to wildlife. The total number of sheep owned by farmers who participated in the survey was 22,325. Hence, the probability of loss for adult sheep was 0.68% and for lambs 3.08%. On average, farmers valued the sheep and lambs they lost at $183 and $105 respectively.

It is unclear how this was aggregated to the provincial level in the 2000 study; however, if we assume that total sheep and lamb populations were 148,800 and 100,200 respectively in 1998 in Ontario, the total value of sheep and lamb lost through wildlife in Ontario in 1998 would have been $508,618.

Table 8 presents recalibrated results for sheep and lamb kills. The last column gives the recalibrated value with the 1998 determined loss values. The start weight of lambs is 65 pounds and finishing weight is 90 pounds. Hence, an average weight of 77 pounds was assumed. For sheep, a weight of 140 pounds was assumed. Prices were retrieved from the OMAFRA statistics. The recalibrated value for lost sheep, assuming the loss rate determined in the 1998 survey due to wildlife in 1998, was $495,180.

Table 8 Recalibration of Wildlife losses in Sheep and Lambs with 1998 values

Sheep	# head lost	Livestock # in Survey	Loss %	Valuation Survey per head	survey loss	Population in 1998	Losses in Ont. in 1998	Survey value of kills in Ont. in 1998	Avg. Prices in 1998	Value of losses in Ont. in 1998
Adult	151	22,325	0.68	183	27,582	148,800	1006	$ 183,842	176.3	$177,465
Lambs	688		3.08	105	72,362	100,200	3088	$ 324,776	102.9	$317,714
Total	839	22,325				249,000		$ 508,618		**$495,180**

Table 9 shows the application of the loss function from the 1998 survey values to average prices and livestock numbers for 2005/2007. Compared with recalibrated 1998 survey values, the wildlife loss in sheep and lambs increased by 47% in 2005/2007 compared to 1998.

Table 9 Wildlife losses in Sheep and Lambs

Sheep	Loss %	Avg. Pop. 2005/2007	Avg. Price/animal 2005/2007	# of animals lost	Value of animals lost
Adult	0.68	168,667	199	1141	$227,358
Lambs	3.08	139,833	117	4309	$503,147
Total		**308,500**		**5450**	**$730,505**

4.2.2 Beef Cattle

The survey results showed that farmers in the 1998 survey owned a total of 14,942 head of beef. In the survey, a total of 2 adult animals and 68 calves and newborns were reported as killed, missed or aborted. The actual numbers of cows, bulls, heifers and calves/newborns the survey participants owned was not available. To facilitate the classification, bulls one year and over, beef cows and beef heifers for breeding were included in the adult category, and feeder calves in the calves and newborns category. Dairy cows, dairy heifers, steers and heifers for breeding were excluded in this analysis as these animals are kept in confinement and are not commonly subjected to wildlife damage.

The loss rate for adult beef cattle, according to the survey, was 0.013%, and for calves and newborns 0.46%. Market prices were not used in the original survey. For the recalibration, the following prices (Table 10) were retrieved from OMAFRA enterprise budgets, the survey and OMAFRA price lists. For the calf category, feeder calf prices were used to value calf and newborn mortalities. For the adult category, an average price of slaughter cows, bulls and cattle was used.

Table 10 Valuation of Beef – 1998 values

Beef	Age Definitions	Average Weight (kg)	Price $/100kg
Adult	greater than 2 years	635	128.85
Calf	1-6 months	227	233.18
Newborn	less than one month	45	233.18

The actual value of beef cattle losses due to wildlife in Ontario in the original report (OSCIA, 2000) was $1,334,394. The calculations followed the same procedure as in the section above for sheep losses. The recalibrated losses for 1998 amounted to $1,010,783 (see Table 11).

Table 11 Recalibration of Wildlife losses in Beef with 1998 values

Beef	# of Livestock lost	# of Livestock in Survey	Loss %	Valuation Survey per head	Survey Loss	Livestock Population in 1998	Lost in Ont in 1998	Survey value of kills in Ont. in 1998	Avg value of animal in 1998	Value of kills in Ont. in 1998
Adult	2	14942	0.013	850	1700	532000	71	$60,527	$818	$58,263
Calves and newborns	68	14942	0.455	282	19193	660000	3004	$847,770	$317	$952,520
Total								$908,297		**$1,010,783**

The update of wildlife losses in beef for the 2005/2007 period is presented in Table 12. Applying 1998 loss rates to the 2005/2007 data, the wildlife loss in beef decreased 18% in 2005/2007, compared to 1998. The difference is based on the price difference between the two periods and the decrease in beef cattle populations.

Table 12 Updated wildlife losses in Beef

Beef	Loss %	Avg. Pop. 2005/2007	# of animals lost	Avg. Price/animal 2005/2007	**Value of beef lost in Ont. with 2005/2007 values**
Adult	0.013	460833	60	$717.00	$42,954.28
Calves and Newborns	0.455	559767	2547	$308.55	$785,857.82
Total					**$828,812.10**

5. Updates to the investment in the abatement of wildlife damages- COFSP

The Canada - Ontario Farm Stewardship program (COFSP) provides incentives for farmers to improve management of agricultural land. The following data were provided by OSCIA. Category 23 of the 2008 Project Eligibility Guidelines for COFSP provides incentives for farmers to help reduce crop, livestock or property damages caused by certain wildlife species (deer, geese, bear, coyotes and songbirds). Preventive measures aimed at controlling damage from varmint species such as raccoons, woodchucks and mice are not eligible for cost share.

There are three practice codes in category 23 that serve to group the types of preventative measures implemented:

2301 **Forage Buffer Strips**- Convert cropland to forage buffer strips of tall grasses around wetlands where geese cause recurring damage;

2302 **Fencing or Netting**- specialized predator-proof fencing or netting to protect stored feed, concentrated livestock, high value crops, drip irrigation systems, and other critical agricultural activities;

2303 **Scaring and Repellent Systems and Devices**- could include the use of electronic devices, noise, guard animals, and chemicals. All devices must be approved and currently registered for use by regulatory agencies.

The Project Eligibility Guidelines also identify ineligible practices and costs within category 23.

Table 13 reflects the activities in Category 23 from April 2005 through to September 12, 2008:

Table 13 Claims for preventative measures (COFSP)

Practice Code	Claims Paid to Date	Total Sum of Federal Claims Paid	Gross Project Costs	Number of Unique farm Businesses
2301	3	$1,520.	$4,093	3
2302	165	$598,978.	$2,072,205	150
2303	44	$42,167	$141,354	44
Totals	**212**	**$642,665**	**$2,217,652**	**197**

Source: OSCIA, 2008

6. Potential options to minimize the impact of wildlife-caused losses

The following section will provide an overview on the current status of federal, provincial and municipal programs that address the wildlife damage problem. However, most policies have not changed since the 2000 report. Nevertheless, some updated numbers on insurance payments will be provided.

Update on the Status of Policies in Ontario Addressing Nuisance Wildlife

The Ministry of Natural Resources collaborates with other ministries and municipalities to help resolve issues around crop damage caused by wildlife. According to the Fish and Wildlife conservation act, during the open season, farmers or immediate family members of a farmer are allowed, without a license, to hunt game birds and hunt and trap game mammals, except black bear, white-tailed deer, moose, caribou and elk. In a release from September 2008, the Ministry of Natural Resources informed municipalities south of the French and Mattawa Rivers of current changes in the Fish and Wildlife Act regarding Sunday hunting. As of the release date, of 230 municipalities, 167 requested Sunday hunting. The Migratory Bird Convention Act changed in that hunting of migratory birds (geese, ducks, etc.) will be also allowed in municipalities on Sundays, where Sunday hunting is allowed (MNR, 2008).

Compensation payments

OMAFRA provides payments to farmers who have experienced livestock damage.
The following numbers are payments made under the Livestock, Poultry and Honey Bee Protection Act Part I and Part ll (Protection of livestock and poultry – Wolf, Coyote predation) and Order in Council (Bear damage to livestock compensation program). The values provided in Table 14 show that the payments, based on wolf/coyote damage in 2006/07, were significantly higher for cattle and sheep than in 1998/99 (the time of the original wildlife damage survey).

Table 14 Wolf/Coyote Predation compensation program

	1998/1999		2006/2007	
Livestock	claimed # Injured/Killed	Payment $ - adjusted 2007	claimed # Injured/Killed	Payment $
Cattle	493	258,075	948	479,057
Goat	111	12,156	91	11,494
Horse	2	1,190	7	3,500
Sheep	1,990	323,040	3,076	448,671
Poultry	478	9,393	442	7,953

Table 15 Bear Damage to Livestock compensation program

	1998/1999		2006/2007	
Livestock	# Injured/Killed	Amount $ - adjusted 2007	# Injured/Killed	Amount $
Cattle	11	6816	39	24,949
Horse	1	476	3	1,250
Sheep	9	1249.5	4	599

7. Observations and Conclusions

The purpose of this study was to update the 2000 *Wildlife Impact Assessment for Ontario Agriculture* report based on the current economic situation of farmers in Ontario, where possible. Historic survey results located in the material provided by OSCIA were used to determine the loss rates for crops and livestock for 1998. Some technical complications were introduced by data collected directly in the 2000 study that could not be directly updated and aggregated consistently with published data. Thus, the 1998 results were recalibrated based on data publicly available today.

Table 16 presents a summary of changes in wildlife damage from 1998 to 2005/2007 in total volume lost, based on the loss rates determined by the wildlife damage survey undertaken in 1998, and with average yield and acreage data from 2005 to 2007. The volume lost was calculated by multiplying the average yield loss per acre times the number of acres in Ontario for the respective time period. Hence, the percentage change is heavily influenced by the change in number of acres over the years.

Table 17 provides a summary of changes in wildlife damage from 1998 to 2005/2007, based on the loss rates determined by the wildlife damage survey undertaken in 1998, and with average yield/price/acreage data from 2005 to 2007. The table shows that, based on commodities covered in the study, wildlife damage in Ontario costs Ontario farmers approximately $41 million per year. This represents about a 20% increase relative to consistent data measuring losses in 1998.

The results of this study should be understood in the following context. First, because a new survey was beyond the scope of this study, the existing loss rate from the 2000 study, which is representative of 1998, was used and applied to more recent data. By nature, wildlife inventory is difficult to obtain, but the indication from secondary sources in terms of expenditure on wildlife claims and wildlife harvest levels suggest that the wildlife damage issue is increasing, perhaps markedly. Moreover, while most of the major Ontario crops are considered here, there is a range of minor crops not considered, which collectively could increase wildlife damage estimates significantly. Finally, there are new wildlife populations such wild turkey, elk, and sandhill cranes that damage farm products in the growing phase, which are not accounted for here. Thus, the loss rate from the 2000 study is probably conservative, which probably makes the 2005/2007 results conservative.

Second, because of the technical issues related to updating survey-collected estimates in the 2000 study with secondary, published data sources, some vegetable commodities had to be excluded. This exclusion is unfortunate, and leads to another source of understatement in the results. Clearly, if all the crops included in the 2000 study could have been included in this update, the damage estimates would be significantly higher. Thus, the costs of wildlife damage appear quite material in the current context, and even at that there is rationale to expect that the value of losses estimated for 2005/2007 is conservative.

7.1 Recommendations

Wildlife in Ontario is publicly held, and managed in trust for its citizens by the Province. At the same time, throughout eastern, central, southern and southwestern Ontario, much of the wildlife habitat is provided by private landholders who are farmers. The provision of this wildlife habitat comes at a cost.

Based on the data that we have available today, we can track crop and livestock losses due to wildlife at approximately $34 million in 1998 and $41 million in 2005/2007. Different data

available in 2000 showed wildlife damage values of $41 million even in 1998. If the same full range of data from the 2000 study was available now, estimated losses for 2005/2007 would clearly be higher.

Wildlife damage and the attempts to prevent it affect many interest groups such as farmers, taxpayers, consumers and wildlife conservation groups. Ideally, a new survey should be undertaken and structured in such a way that it can be easily updated from year to year. This would serve to identify the actual volume of wildlife damage, to evaluate the effects of prevention measures and to assess the costs incurred through wildlife damage to evaluate compensation schemes to farmers. Responsibility for such an activity should be shared by farm organizations, wildlife conservation groups and government.

Table 16 Change in volume lost due to wildlife damage for selected crops and livestock from 1998 to 2005/2007

Commodity	Unit	1998	2005/2007	Percentage Change
Livestock				
Beef (adult)	#	71	60	**-15.5**
Beef (calves and newborn)	#	3004	2547	**-15.2**
Sheep (adult)	#	1006	1141	**13.4**
Sheep (lambs)	#	3088	4309	**39.5**
Field Crops				
Corn	bu	4,617,226	4,390,824	**-4.9**
Soybeans	bu	698,010	744,642	**6.7**
Wheat	bu	156,179	217,271	**39.1**
Forages (Hay)	ton	67,517	87,578	**29.7**
Fruit				
Apples	lbs	11,767,789	9,458,253	**-19.6**
Grapes	lbs	4,457,149	4,831,599	**8.4**
Blueberries	lbs	203,306	253,798	**24.8**
Strawberries	lbs	114,014	89,007	**-21.9**
Tender Fruit	lbs	490836	488400	**29.7**
Vegetables				
Sweet corn	lbs	3,563,009	2,151,591	**-39.6**

Table 17 Change in wildlife damage to selected crops and livestock from 1998 to 2005/2007

Commodity	1998*	2005/2007	Percentage Change
Livestock			
Beef	$1,010,783	$828,812	**-18.0 %**
Sheep	$495,180	$730,505	**47.0%**
Field Crops			
Corn	$13,805,506	$17,220,451	**24.74%**
Soybeans	$5,290,917	$5,833,636	**10.26%**
Wheat	$506,021	$979,171	**93.50%**
Forages (Hay)	$6,684,159	$8,491,312	**27.04%**
Fruit			
Apples	$1,988,756	$1,642,583	**-17.40%**
Grapes	$1,831,888	$2,443,179	**33.37%**
Blueberries	$319,191	$157,326	**-8.84%**
Strawberries	$102,613	$112,979	**10.10%**
Tender Fruit	$1,992,794	$2,330,806	**16.96%**
Vegetables			
Sweet corn	$217,344	$151,329	**-30.30%**
Total	**$34,245,153**	**$40,922,089**	**19.50%**

*Recalibrated based on current data availability

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