USDA

United States Department of Agriculture

Animal and Plant Health Inspection Service

Veterinary Services

National Animal Health Monitoring System

July 2016

Cervid 2014

Health and Management Practices on U.S. Farmed Cervid Operations, 2014

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Cover photograph courtesy of Keith Weiler, ARS.

Items of Note

For the purposes of this study, cervid operations were divided into three types: deer operations, which exclusively raised deer (including white-tailed deer, mule deer, black-tailed deer, fallow deer, and reindeer); elk operations, which exclusively raised elk, red deer, sika deer, or their hybrids; and combination operations, which raised deer and elk (including red deer, sika deer, or their hybrids). We recognize that there may be management differences between the different species; however, sample size limitations prevented further breakdown of data by species.

Inventory

About two-thirds of all cervid operations were deer operations, and approximately one-fifth were elk operations, which for the purposes of this study included elk, red deer, sika deer, or their hybrids.

A higher percentage of operations in the West region than in the South and Northeast regions were elk operations.

Over three-fourths of deer operations had white-tailed deer.

On-site hunter harvest, private sales for game-farm hunting, and private sales for breeding stock were the three animal-removal methods used by the highest percentages of all operations.

Of operations that removed cervids off the operation, about one-fifth of deer operations and just over one-fourth of elk operations moved cervids out of State.

Deaths

Just over half of all operations had at least one cervid die from July 1, 2013, through June 30, 2014. Nearly one of five operations reported cervid deaths related to trauma or fighting.

More than 5 percent of cervids died from July 1, 2013, through June 30, 2014.

Reasons for keeping farmed cervids

Producers on over 50 percent of operations indicated that breeding was a reason for keeping cervids. Meat production/slaughter was a reason for keeping cervids on over 50 percent of elk operations and on less than 20 percent of deer operations.

Number of years with farmed cervids

The highest percentage of operations had raised cervids for 11 to 20 years. Over 20 percent of elk operations had farmed cervids for over 20 years.

Acreage used for hunting

Of operations that kept cervids for game ranching/hunting, over three-fourths placed cervids on over 100 acres for hunting purposes; nearly 20 percent hunted on over 1,000 acres; over one-third of operations in the South region used over 500 acres for hunting; nearly one-fourth of operations in the West region used over 1,000 acres for hunting; and over one-fourth of operations in the Northeast region used less than 10 acres for hunting purposes.

Future plans

The highest percentage of operations planned to maintain their current herd size for the next year.

Over 20 percent of operations with fewer than 20 cervids planned to get out of the cervid business in the next year. Less than 2 percent of operations with 200 or more cervids planned to get out of the business in the next year.

About two-thirds of operations had facilities specifically designed for handling cervids.

Cervids moved onto the operation

Nearly 20 percent of operations added new cervids to their herd. A lower percentage of elk operations introduced new cervids to the herd compared with deer operations and combination operations.

Over 80 percent of all cervid additions were sourced from private sales.

Approximately 25 percent of operations that brought cervids onto the operation sourced new additions from out of State.

Of operations that added new cervids, just over half always required that the animals' herd of origin be tuberculosis accredited. In addition, about three-fourths of operations always required that the source herd be enrolled in a chronic wasting disease herd certification program, and about half always required the herd of origin be certified brucellosis free.

Contact with wild animals

White-tailed deer were the wild animals seen along the operations' perimeter fence by the highest percentage of operations. Producers on over half of operations reported seeing wild white-tailed deer near their perimeter fence.

The highest percentage of operations used woven wire for perimeter fencing, followed by high-tensile wire.

Only 1 percent of operations that used electric fencing as a component of their perimeter fence had one or more animals escape.

Less than 8 percent of operations reported that another cervid operation was within 1 mile of their operation.

Breeding

About two-thirds of operations bred cervids on the operation.

Over half of operations with 200 or more cervids used artificial insemination as a breeding practice.

Fawns and calves

On deer operations, over 80 percent of bred females gave birth to a live fawn. On elk operations and combination operations about three-fourths of bred females gave birth to a live fawn or calf.

On deer operations, about 80 percent of fawns survived and were successfully weaned. On elk operations, over 90 percent of offspring survived and were successfully weaned.

About one-third of all operations vaccinated any cervids. Nearly twice the percentage of deer operations than elk and combination operations vaccinated any cervids.

Chronic wasting disease

About half of operations participated in a CWD herd certification program.

Over 40 percent of operations that participated in a CWD herd certification program began participating from 2001 to 2005, and about 40 percent began from 2006 to 2013.

Over half of operations were not concerned about the potential transmission of CWD to their herds.

On July 1, 2014, one-third of operations had a TB Accredited herd or were in the process of becoming TB Accredited.

Almost half of operations in the Northeast region either had or were obtaining TB accreditation. A lower percentage of operations in the South region than in the other two regions either had or were obtaining TB accreditation.

Outreach

Over half of all operations were members of a farmed-cervid or wildlife organization. About one-fourth of elk operations were members of the North American Elk Breeders Association. Just over one-fourth of deer operations were members of the North American Deer Farmers Association.

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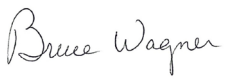
Acknowledgments

The Cervid 2014 Study was a cooperative effort between two U.S. Department of Agriculture (USDA) agencies: the National Agricultural Statistics Service (NASS) and Veterinary Services' National Animal Health Monitoring System (NAHMS) within the Animal and Plant Health Inspection Service (APHIS).

We would like to thank the NASS telephone enumerators who contacted the cervid producers and collected the data. Their hard work and dedication were invaluable.

We also especially thank the cervid producers whose voluntary efforts made the Cervid 2014 study possible.



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Suggested bibliographic citation for this report:

USDA. 2016. Cervid 2014, “Health and Management Practices on U.S. Cervid Operations, 2014” USDA–APHIS–VS–CEAH–NAHMS. Fort Collins, CO #698.0716

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Feedback
Feedback, comments, and suggestions regarding Cervid 2014 study reports are welcomed. You may submit feedback via online survey at: http://www.aphis.usda.gov/nahms (Click on “FEEDBACK on NAHMS reports.”)

Further information on NAHMS studies and reports is available online at: http://www.aphis.usda.gov/nahms

Introduction

The Cervid 2014 study was conducted jointly by the USDA's National Agricultural Statistics Service (NASS) and its National Animal Health Monitoring System (NAHMS). NAHMS is a nonregulatory animal-health-information gathering and disseminating organization within USDA's Animal and Plant Health Inspection Service (APHIS). NAHMS is designed to help meet the Nation's animal-health information needs. The Cervid 2014 study is first time that NASS and NAHMS have conducted a survey of the farmed-cervid industry.

The purpose of the NAHMS program is to collect and analyze animal health data to provide scientifically sound and current information on the health status of U.S. livestock and poultry. Special emphasis is placed on obtaining valid estimates of management practices, production levels, and the disease status of the national herd being studied.

The NAHMS program is not designed to detect, regulate, or eradicate major epidemic diseases, but rather is tasked with identifying health problems, possible disease risk factors, and food safety and quality issues. As the food animal industry grows more sophisticated and production becomes more concentrated in large, confined facilities, demand increases for information about how these factors impact animal health. These problems are often related to animal genetics, management practices, environmental factors, and exposure to infectious disease agents. The NAHMS program endeavors to measure the occurrence of these conditions and report findings to the food industry as well as the general public. Additionally, as the livestock industry addresses concerns with food quality and safety, it needs valid information on which to base management decisions.

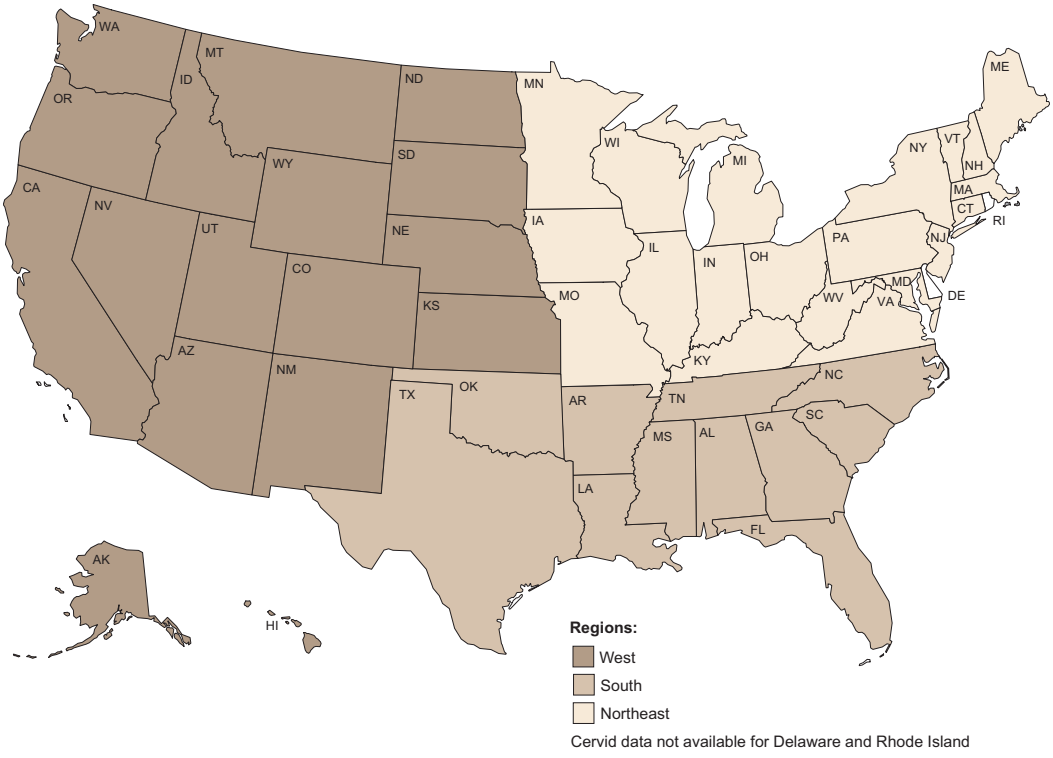
In 2013, NAHMS asked stakeholders in the farmed-cervid industry to identify the most important information needs regarding animal health and production management. To meet these information needs, the Cervid 2014 study identified the following objectives:

- Provide a baseline description of the U.S. farmed-cervid industry, including inventory, species, operation size, and operation type.
- Describe current U.S. farmed-cervid production practices and challenges, including animal identification, fencing, animal care and handling, trade and movement, and disease testing.

- Describe the producer-reported occurrence of epizootic hemorrhagic disease (EHD) and the management and biosecurity practices important for controlling EHD on cervid farms.
- Describe health management and biosecurity practices important for the control of infectious diseases on cervid farms.

The methods used and the number of respondents in the study are provided in the Methodology section at the end of this report.

NAHMS Cervid 2014 regions



Terms Used in This Report

Auction barn: A location where livestock are bought and sold.

Biosecurity: Specific practices and procedures used by an operation to limit disease spread. Requiring visitors to shower or use a footbath before entering animal production areas are both examples of biosecurity practices.

Broker: An agent or buyer that purchases farm products for further processing and/or resale.

Brucellosis: A contagious disease of ruminant animals that also affects humans. Although brucellosis can affect other animals, its main threat is to cattle, bison, cervids, and swine. The disease is also known as contagious abortion or Bang's disease and is caused by a group of bacteria in the genus *Brucella.*

Cervid: A mammal of the deer family (*Cervidae*). Common examples include deer, elk, moose, and reindeer. Moose were not included in this study.

Chronic wasting disease (CWD): A contagious neurological disease belonging to a group of diseases known as transmissible spongiform encephalopathies (TSEs). CWD affects deer, elk, and moose, causing a characteristic spongy degeneration of the brain of infected animals, which results in emaciation, abnormal behavior, loss of body functions, and death.

Data collection: The process of completing interviews or field counts.

Deer species: For this study, all cervids except moose, elk, red deer, sika deer, and their hybrids are considered deer species (including white-tailed deer, mule deer, black-tailed deer, fallow deer, and reindeer).

Distributor: (See Broker.)

Elk species: For this study, elk, red deer, sika deer, and their hybrids are considered elk species.

Epizootic hemorrhagic disease (EHD): A viral, hemorrhagic disease spread by a biting midge. Clinical signs and the severity of disease vary from mild to fatal. White-tailed deer are especially susceptible.

Extension agent/service: A person or service provided by a State entity or local university in association with the USDA's National Institute of Food and Agriculture, which provides agricultural production expertise to producers on a regular basis or upon request.

Game/ranch hunting: For this study, a game farm is a location used for the commercial hunting of cervids.

Isolate (isolation of animals)**:** For this study, isolate means to prevent nose-to-nose contact and to prevent the sharing of feed, drinking water, and equipment with other animals already present on the farm.

Livestock: Cattle, poultry, goats, sheep, swine, horses, other equids, aquaculture, bees, and other farm animals raised for home use and/or sale (e.g,. farm-raised cervids).

National Agricultural Statistics Service (NASS): USDA agency responsible for collecting, estimating, and publishing statistics on the Nation's agriculture.

Operation: The overall business and top-level management unit for a cervid farm. For this study, an operation was defined as a group of farmed cervids managed on one or more premises or sites. For example, a single operation might consist of both a breeding facility and a hunting facility (game farm).

Pasture: An enclosed area of untilled ground covered with vegetation and grazed by animals.

Population estimates: Estimates in this report are provided with a measure of precision called the standard error. A 95-percent confidence interval can be created with bounds equal to the estimate plus or minus two standard errors. If the only error is sampling error, the confidence intervals created in this manner will contain the true population mean 95 out of 100 times. An estimate of 7.5 with a standard error of 1.0 results in limits of 5.5 to 9.5 (two times the standard error above and below the estimate). An estimate of 3.4 with a standard error of 0.3 results in limits of 2.8 and 4.0. Alternatively, the 90-percent confidence interval would be created by multiplying the standard error by 1.65 instead of 2. Most estimates in this report are rounded to the nearest tenth. If rounded to 0, the standard error was reported as (0.0). If there were no reports of the event, no standard error was reported (—).

Regions:

West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Kansas, Montana, North Dakota, Nebraska, New Mexico, Nevada, Oregon, South Dakota, Utah, Washington, Wyoming

South: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas

Northeast: Connecticut, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Vermont, Virginia, West Virginia, Wisconsin

Sales barn: (See Auction barn.)

Taxidermy: The art of preparing and mounting the skins and/or antlers of animals for display.

Tuberculosis (TB): An infectious disease, in many cases fatal, caused by various strains of mycobacteria, usually *Mycobacterium bovis*. Tuberculosis typically attacks the lungs but can also affect other parts of the body.

Venison: The meat from a game animal, especially deer.

Wholesaler: (See Broker.)

Section I: Population Estimates

Note: For the purposes of this study, deer species include white-tailed deer, mule deer, black-tailed deer, fallow deer, reindeer, and others. Elk species included elk, red deer, sika deer, and hybrids. We recognize that there may be management differences between the different species; however, sample size limitations prevented further breakdown of data by species.

Note: Where appropriate, column or row totals are shown as 100.0 to aid in interpretation; however, estimates may not sum to 100.0 due to rounding.

A. Inventory

1. Cervid categories

In total, 65.6 percent of operations were deer operations, and 21.2 percent were elk operations. The percentage of deer operations was roughly equivalent across all herd sizes, whereas the percentage of elk operations generally decreased as herd size increased.

A.1.a. Percentage of operations by type of operation and by herd size:

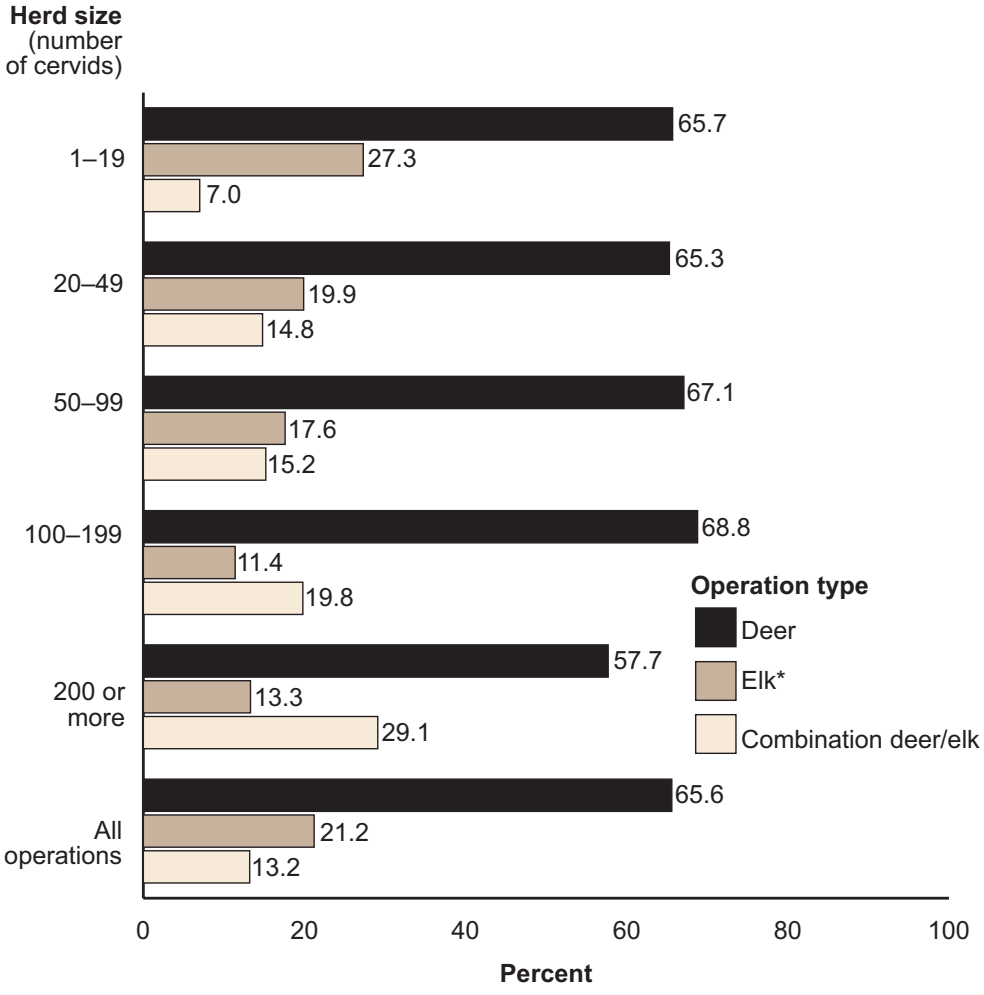
Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more		All operations	
Operation type	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Deer	65.7	(2.0)	65.3	(2.4)	67.1	(2.5)	68.8	(2.8)	57.7	(3.2)	65.6	(1.0)
Elk*	27.3	(1.8)	19.9	(1.9)	17.6	(1.9)	11.4	(2.0)	13.3	(2.3)	21.2	(0.9)
Combination deer/elk	7.0	(1.1)	14.8	(1.9)	15.2	(1.9)	19.8	(2.4)	29.1	(3.0)	13.2	(0.8)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Percentage of operations by operation type and by herd size



*Includes elk, red deer, sika deer, and hybrids.

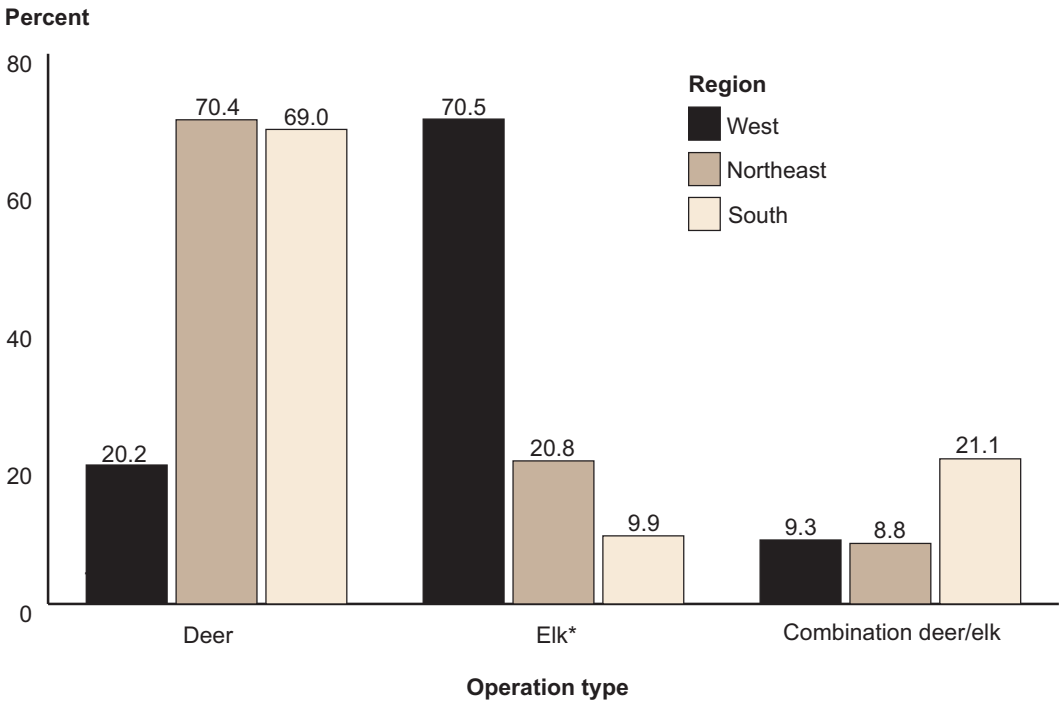
A higher percentage of operations in the West region than in the other regions were elk operations. The percentage of deer operations was nearly equal in the Northeast and South regions at approximately 70 percent; in the West region, 20.2 percent of operations were deer operations. Combination operations were most prevalent in the South region.

A.1.b. Percentage of operations by type of operation and by region:

	Percent Operations					
	Region					
	West		Northeast		South	
Operation type	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Deer	20.2	(1.9)	70.4	(1.3)	69.0	(1.9)
Elk*	70.5	(2.4)	20.8	(1.2)	9.9	(1.2)
Combination deer/elk	9.3	(1.6)	8.8	(0.8)	21.1	(1.7)
Total	100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Percentage of operations by type of operation and by region



*Includes elk, red deer, sika deer, and hybrids.

Less than one of five operations kept cervids at more than one location.

A.1.c. Percentage of operations that kept cervids at more than one location, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
15.5	(1.2)	18.2	(2.1)	23.4	(2.8)	17.1	(1.0)

*Includes elk, red deer, sika deer, and hybrids.

Over 75 percent of operations had just one cervid species on-hand on July 1, 2014. The South region had a higher percentage of operations that had three or more cervid species than the other two regions. Almost 5 percent of all operations had no cervid species on July 1, 2014; however, these operations were still eligible to participate in the study because they had cervids present at some time during the study period (July 1, 2013, through June 30, 2014).

A.1.d. Percentage of operations by number of cervid species on-hand July 1, 2014, and by region:

Percent Operations

Number of cervid species	Region							
	West		Northeast		South		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
0	7.9	(2.1)	5.4	(0.9)	2.4	(0.6)	4.5	(0.6)
1	79.5	(2.7)	83.6	(1.3)	62.1	(2.1)	75.6	(1.1)
2	9.5	(1.9)	8.2	(0.9)	19.4	(1.8)	12.3	(0.9)
3 or more	3.1	(0.9)	2.7	(0.5)	16.1	(1.5)	7.5	(0.6)
Total	100.0		100.0		100.0		100.0	

Of the 78.8 percent of operations with any deer, 76.0 percent had white-tailed deer and 25.4 percent had fallow deer. Axis deer accounted for the majority of deer in the “other” category.

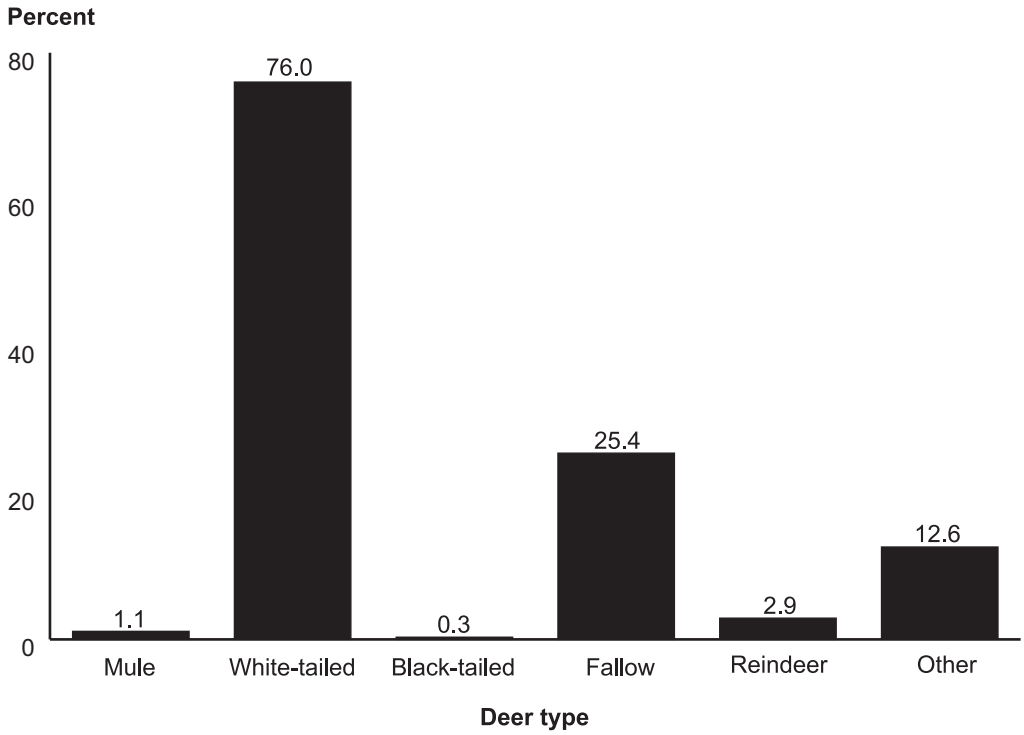
A.1.e. For the 78.8 percent of operations with any deer (table A.1.a), percentage of operations by type of deer and by herd size:

Percent Operations

Herd Size (number of deer)

	1–19		20–49		50–99		100–199		200 or more		All operations	
Deer type	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Mule	0.8	(0.5)	0.5	(0.4)	1.3	(0.5)	2.1	(0.9)	3.0	(1.3)	1.1	(0.3)
White-tailed	64.5	(2.9)	76.4	(2.8)	87.2	(2.1)	84.7	(2.3)	90.4	(2.2)	76.0	(1.4)
Black-tailed	0.5	(0.4)	0.0	(—)	0.0	(—)	0.8	(0.6)	0.0	(—)	0.3	(0.2)
Fallow	28.0	(2.7)	22.1	(2.7)	17.6	(2.5)	32.7	(3.2)	31.2	(3.4)	25.4	(1.3)
Reindeer	5.2	(1.4)	2.6	(1.1)	1.2	(0.8)	0.7	(0.5)	0.0	(—)	2.9	(0.6)
Other	6.6	(1.4)	14.1	(2.3)	18.3	(2.7)	14.0	(2.3)	21.5	(3.0)	12.6	(1.0)

For the 78.8 percent of operations with any deer, percentage of operations by type of deer



Of the 78.8 percent of operations with any deer, a higher percentage in the West region than in the other regions raised fallow deer. The highest percentage of operations in the Northeast and South regions (84.2 and 68.5 percent, respectively) had white-tailed deer; in the West region, the highest percentage of operations (58.6 percent) had fallow deer. In the South region, 27.1 percent of deer operations listed a deer type of "other," and axis deer were the "other" deer specified on 84.2 percent of these operations.

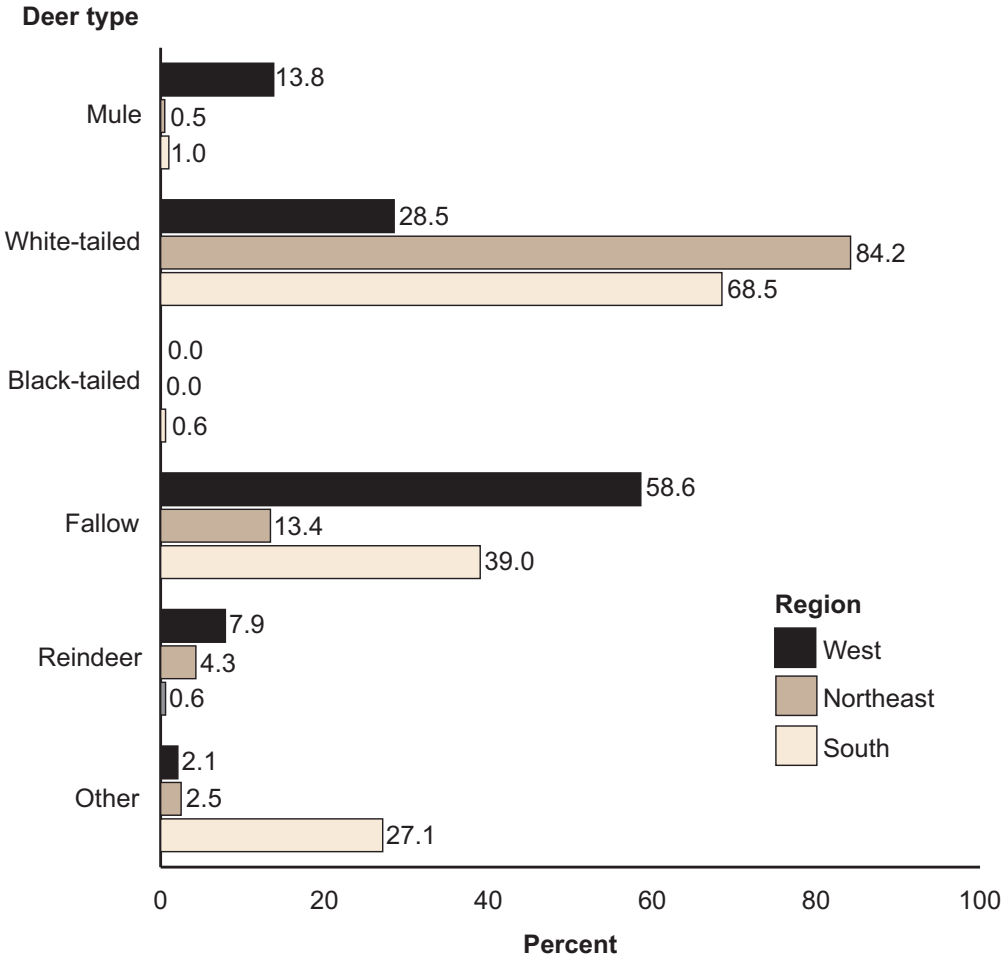
A.1.f. For the 78.8 percent of operations with any deer (table A.1.a), percentage of operations by type of deer and by region:

Percent Operations

	Region					
	West		Northeast		South	
Deer type	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Mule	13.8	(4.4)	0.5	(0.4)	1.0	(0.3)
White-tailed	28.5	(4.7)	84.2	(1.8)	68.5	(2.3)
Black-tailed	0.0	(—)	0.0	(—)	0.6	(0.4)
Fallow	58.6	(5.5)	13.4	(1.6)	39.0	(2.4)
Reindeer	7.9	(3.2)	4.3	(1.1)	0.6	(0.4)
Other	2.1	(1.3)	2.5	(0.7)	27.1*	(2.1)

*84.2 percent of these operations specified axis deer.

For the 78.8 percent of operations with any deer, percentage of operations by type of deer and by region



Of the 78.8 percent of operations with any deer, nearly 95 percent had adult deer.

A.1.g. For the 78.8 percent of operations with any deer (table A.1.a), percentage of operations with adult deer (1 year and older), by gender and by type of deer:

	Percent Operations			
	Gender			
	Male		Female	
Deer type*	Percent	Std. error	Percent	Std. error
Mule	0.9	(0.3)	1.0	(0.3)
White-tailed	71.8	(1.5)	72.3	(1.5)
Black-tailed	0.3	(0.2)	0.1	(0.1)
Fallow	21.7	(1.3)	22.8	(1.3)
Reindeer	2.4	(0.6)	2.6	(0.6)
Other	12.5	(1.0)	11.6	(0.9)
Any adult deer (1 year or older)	94.1	(0.9)	94.8	(0.8)

*Some operations reported more than one deer type.

Of operations with any deer, about two-thirds had deer less than 1 year of age.

A.1.h. For the 78.8 percent of operations with any deer (table A.1.a), percentage of operations with young deer (less than 1 year), by gender and by type of deer:

	Percent Operations			
	Gender			
	Male		Female	
Deer type*	Percent	Std. error	Percent	Std. error
Mule	0.6	(0.2)	0.7	(0.2)
White-tailed	52.4	(1.6)	53.6	(1.6)
Black-tailed	0.0	(—)	0.0	(—)
Fallow	13.7	(1.0)	13.9	(1.0)
Reindeer	0.9	(0.3)	1.3	(0.4)
Other	8.7	(0.8)	8.4	(0.8)
Any young deer (less than 1 year)	66.5	(1.6)	68.2	(1.6)

*Some operations reported more than one deer type.

Of operations that had any elk, red deer, sika deer, or hybrids, nearly three-fourths had elk. Just over one-fifth had red deer, and just under one-fifth had sika deer. Percentages were similar across herd sizes.

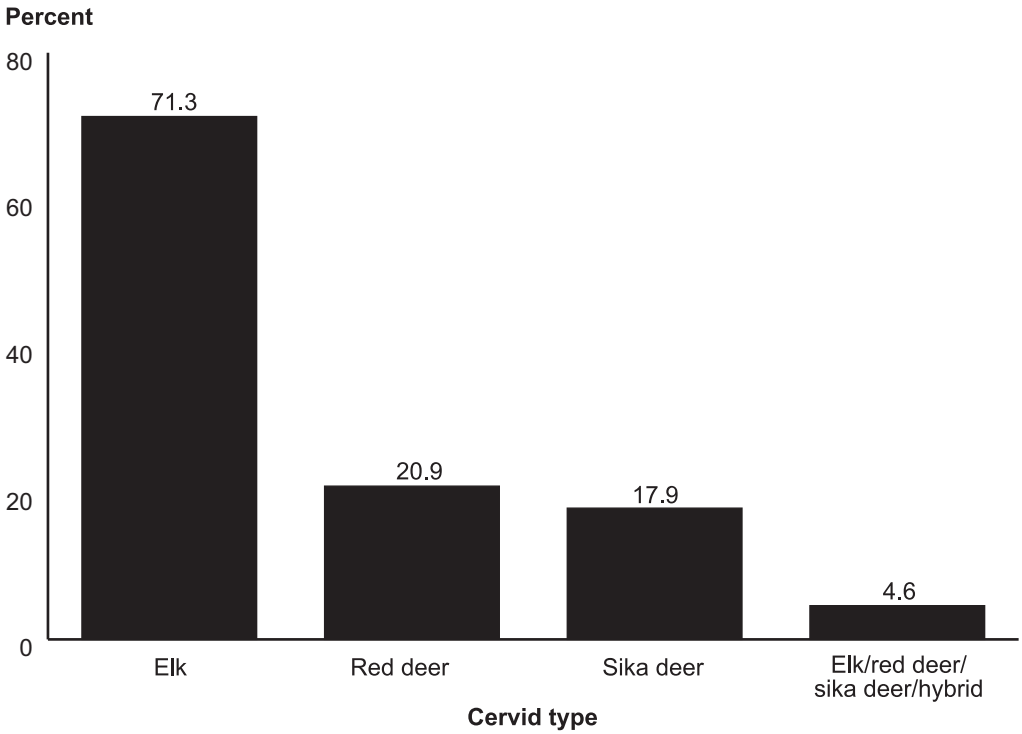
A.1.i. For the 34.4 percent of operations with any elk, red deer, sika deer, or hybrids (table A.1.a), percentage of operations by type of cervid and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more		All operations	
Cervid type	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Elk	71.7	(3.7)	66.0	(4.5)	77.0	(4.2)	72.6	(4.9)	72.6	(4.7)	71.3	(2.1)
Red deer	15.7	(3.2)	24.2	(4.1)	19.8	(4.0)	29.2	(5.0)	29.4	(4.8)	20.9	(1.9)
Sika deer	16.8	(3.1)	19.2	(3.8)	18.2	(4.0)	18.2	(4.1)	18.8	(4.1)	17.9	(1.8)
Elk/red deer/ sika deer/ hybrid	4.7	(1.7)	6.2	(2.2)	1.2	(0.9)	3.9	(2.0)	6.8	(2.8)	4.6	(0.9)

For the 34.4 percent of operations with any elk, red deer, sika deer, or hybrids, percentage of operations by type of cervid



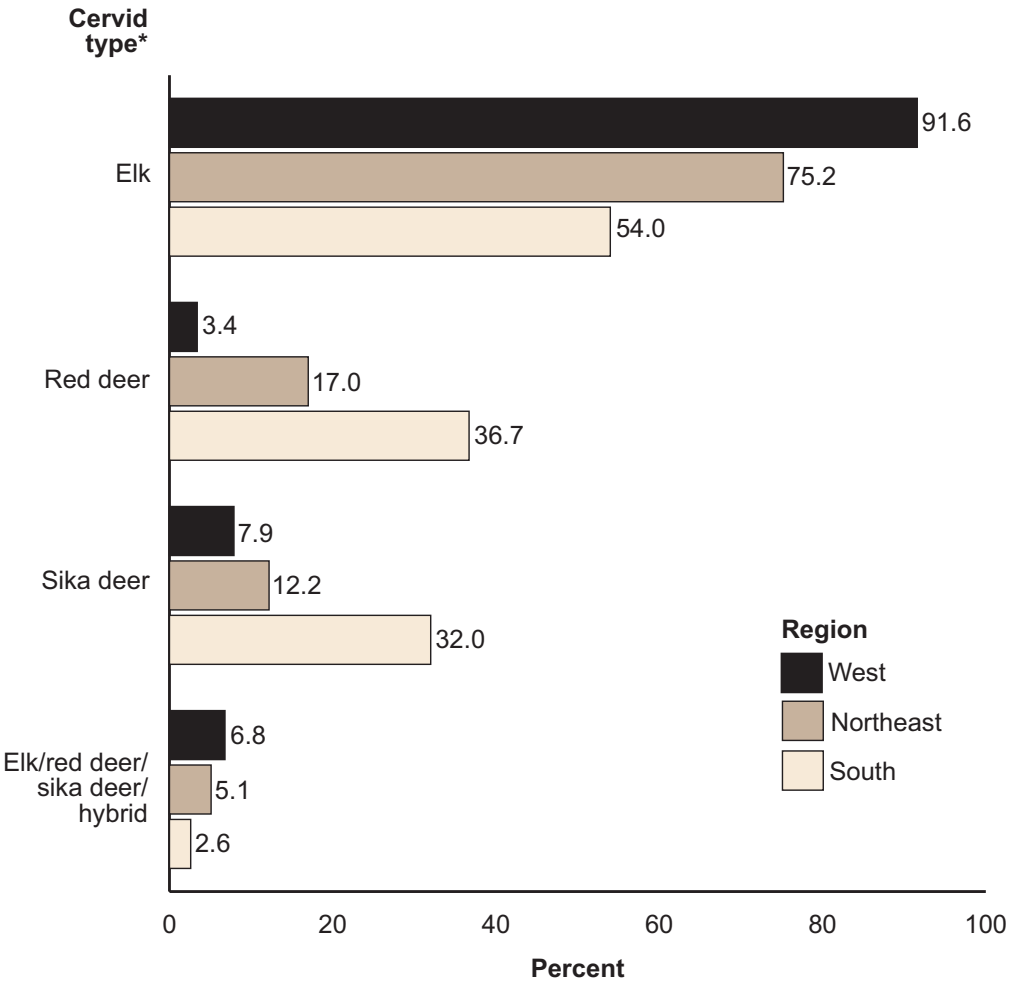
Of operations that had any elk, red deer, sika deer, or hybrids, the highest percentage across regions raised elk. In the South region, about one-third of operations raised elk, red deer, sika deer, or hybrids.

A.1.j. For the 34.4 percent of operations with any elk, red deer, sika deer, or hybrids (table A.1.a), percentage of operations by type of cervid and by region:

	Percent Operations					
	Region					
	West		Northeast		South	
Cervid type*	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Elk	91.6	(1.9)	75.2	(3.1)	54.0	(3.7)
Red deer	3.4	(1.1)	17.0	(2.7)	36.7	(3.8)
Sika deer	7.9	(1.7)	12.2	(2.4)	32.0	(3.7)
Elk/red deer/ sika deer hybrid	6.8	(2.1)	5.1	(1.7)	2.6	(1.0)

*Some operations had more than one cervid type.

For the 34.4 percent of operations with any elk, red deer, sika deer, or hybrids, percentage of operations by type of cervid and by region



*Some operations had more than one cervid type.

The percentages of males and females within the different species were similar.

A.1.k. For the 34.4 percent of operations with any elk, red deer, sika deer, or hybrids (table A.1.a), percentage of operations that had adult animals (1 year and older), by gender and by type of cervid:

	Percent Operations			
	Gender			
	Male		Female	
Cervid type*	**Percent**	**Std. error**	**Percent**	**Std. error**
Elk	66.2	(2.1)	66.1	(2.1)
Red deer	19.4	(1.8)	18.8	(1.8)
Sika deer	15.4	(1.6)	15.9	(1.7)
Elk/red deer/sika deer/hybrid	2.9	(0.8)	3.6	(0.9)
Any	92.1	(1.3)	93.2	(1.1)

*Some operations reported more than one cervid type.

Over half of all operations with any elk, red deer, sika deer, or hybrids had cervids less than 1 year of age.

A.1.l. For the 34.4 percent of operations with any elk, red deer, sika deer, or hybrids (table A.1.a), percentage of operations with young elk (less than 1 year of age), by gender and by type of cervid:

	Percent Operations			
	Gender			
	Male		Female	
Cervid type*	**Percent**	**Std. error**	**Percent**	**Std. error**
Elk	38.3	(2.0)	42.9	(2.1)
Red deer	10.5	(1.4)	11.0	(1.4)
Sika deer	6.5	(1.2)	7.6	(1.3)
Elk/red deer/sika deer/ hybrid	1.6	(0.6)	2.0	(0.7)
Any	53.7	(2.2)	58.6	(2.2)

*Some operations reported more than one cervid type.

B. Removals and Deaths

Note: Unless otherwise noted, data in all tables in this section refer to the period from July 1, 2013, through June 30, 2014.

1. Removals

Nearly two-thirds of all cervid operations permanently removed any cervids using any method. The highest percentage of operations removed animals by harvesting them for personal purposes. Almost 5 percent of operations reported animals were removed because they were lost or stolen. On about one-third of elk operations cervids were removed by on-site hunting. Nearly one-fifth of elk operations sold venison/meat privately.

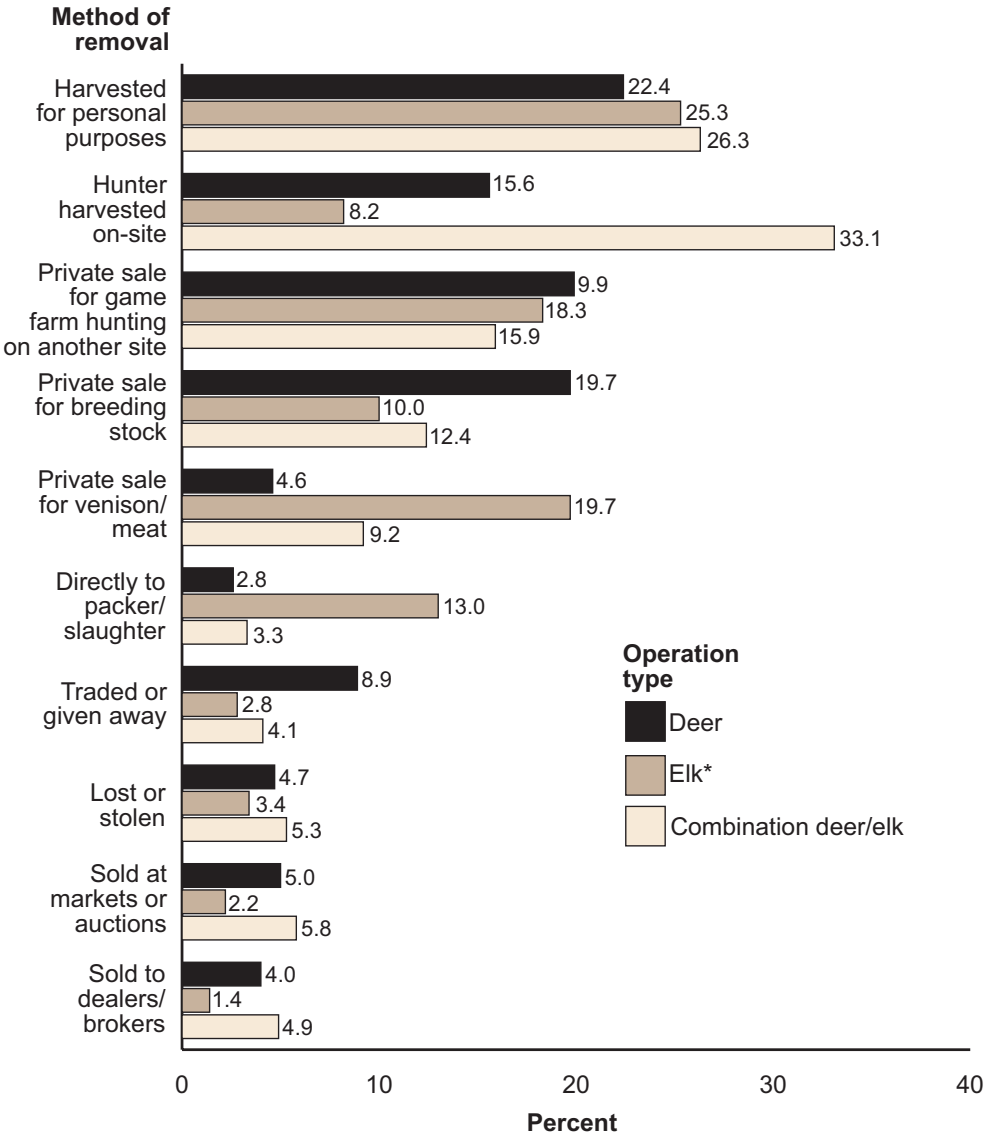
B.1.a. Percentage of operations that permanently removed any cervids (excluding those that died) from the operation, by method of removal and by operation type:

Percent Operations

	Operation Type							
	Deer		Elk*		Combination deer/elk		All operations	
Method of removal	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Harvested for personal purposes	22.4	(1.5)	25.3	(2.5)	26.3	(2.7)	23.6	(1.2)
Hunter-harvested on-site	15.6	(1.1)	8.2	(1.3)	33.1	(2.9)	16.4	(0.9)
Private sale for game/ranch hunting on another site	19.9	(1.3)	18.3	(2.0)	15.9	(2.1)	19.0	(1.0)
Private sale for breeding stock	19.7	(1.2)	10.0	(1.7)	12.4	(1.8)	16.7	(0.9)
Private sale for venison/meat	4.6	(0.7)	19.7	(2.1)	9.2	(1.6)	8.4	(0.7)
Directly to packer/ slaughter	2.6	(0.5)	13.0	(1.6)	3.3	(0.9)	4.9	(0.5)
Traded or given away	8.9	(1.0)	2.8	(1.0)	4.1	(1.0)	7.0	(0.7)
Lost or stolen	4.7	(0.8)	3.4	(1.0)	5.3	(1.5)	4.5	(0.6)
Sold at markets or auctions	5.0	(0.7)	2.2	(0.9)	5.8	(1.7)	4.5	(0.6)
Sold to dealers/ brokers	4.0	(0.7)	1.4	(0.5)	4.9	(1.4)	3.6	(0.5)
Other	2.6	(0.6)	3.3	(0.9)	2.1	(0.8)	2.7	(0.4)
Any	61.2	(1.8)	59.9	(2.9)	66.4	(3.3)	61.6	(1.4)

*Includes elk, red deer, sika deer, and hybrids.

Percentage of operations that permanently removed any cervids (excluding those that died) from the operation, by method of removal and by operation type



Includes red deer, sika deer, and hybrids.

About one-fifth of all cervids were permanently removed via any method. The highest percentages of cervids were removed by on-site hunter-harvest, private sales for game-farm hunting, and private sales for breeding stock. About 3 percent of elk on elk operations were removed via private sale for venison/meat.

B.1.b. Percentage of cervids permanently removed (excluding those that died) from the operation, by method of removal and by operation type:

	Percent Cervids[1]							
	Operation Type							
	Deer		Elk[2]		Combination deer/elk		All operations	
Method of removal	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Harvested for personal purposes	2.4	(0.2)	1.8	(0.3)	1.6	(0.3)	2.1	(0.2)
Hunter harvested on-site	5.2	(0.4)	3.7	(0.8)	7.2	(1.1)	5.5	(0.4)
Private sale for game/ranch hunting on another site	4.7	(0.4)	4.3	(0.7)	3.6	(0.8)	4.4	(0.3)
Private sale for breeding stock	6.2	(0.8)	2.4	(0.6)	1.5	(0.3)	4.5	(0.5)
Private sale for venison/meat	0.8	(0.2)	3.1	(0.6)	0.4	(0.1)	1.0	(0.1)
Directly to packer/slaughter	0.6	(0.2)	2.3	(0.4)	1.3	(0.4)	1.0	(0.2)
Traded or given away	0.9	(0.2)	0.2	(0.1)	0.1	(0.0)	0.6	(0.1)
Lost or stolen	0.2	(0.0)	0.7	(0.4)	0.3	(0.1)	0.3	(0.1)
Sold at markets or auctions	0.4	(0.1)	0.2	(0.1)	2.4	(1.3)	0.9	(0.3)
Sold to dealers/ brokers	0.7	(0.1)	0.7	(0.5)	0.5	(0.2)	0.7	(0.1)
Other	0.3	(0.1)	0.7	(0.3)	0.4	(0.3)	0.4	(0.1)
Any method	22.3	(1.1)	20.3	(1.4)	19.3	(1.7)	21.3	(0.8)

[1]As a percentage of July 1, 2014, inventory.
[2]Includes elk, red deer, sika deer, and hybrids.

Of the 61.6 percent of operations that permanently removed any cervids from the operation, 21.8 percent were deer operations and 27.5 percent were elk operations. Just over one-fourth of deer and elk operations moved cervids to another State.

B.1.c. For the 61.6 percent of operations that permanently removed any cervids from the operation (table B.1.a), percentage of operations that moved cervids out of State, by operation type and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more		All operations	
Operation type	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Deer	15.7	(3.7)	24.8	(3.7)	22.9	(3.2)	23.4	(3.1)	22.9	(3.1)	21.8	(1.6)
Elk*	13.8	(4.5)	29.8	(5.0)	26.7	(4.6)	45.1	(6.8)	38.2	(5.5)	27.5	(2.4)

*Includes elk, red deer, sika deer, and hybrids.

Of the 61.6 percent of operations that removed any cervids from the operation (table B.1.a), a higher percentage in the Northeast region than in the other two regions moved animals out of State. In the West region, a higher percentage of elk operations than deer operations moved animals out of State.

B.1.d. For the 61.6 percent of operations that permanently removed any cervids from the operation, percentage of operations that moved cervids out of State, by operation type and by region:

Percent Operations

Region

	West		Northeast		South	
Operation type	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Deer	15.5	(4.2)	33.3	(2.6)	6.9	(1.4)
Elk*	35.3	(4.9)	31.2	(3.7)	13.5	(3.8)

*Includes elk, red deer, sika deer, and hybrids.

2. Deaths

Just over half of all operations had at least one cervid death. Nearly one of five operations had trauma- or fight-related deaths. Over 20 percent of deer operations had cervid deaths related to respiratory problems compared with about 4 percent of elk operations. Epizootic hemorrhagic disease, handling, and predation deaths were each noted on at least 10 percent of deer operations.

B.2.a. Percentage of operations that had any cervid deaths, by cause of death and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Cause of death	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
EHD (epizootic hemorrhagic disease)	11.1	(1.1)	1.3	(0.5)	11.5	(2.0)	9.1	(0.8)
Respiratory illness/pneumonia	20.6	(1.3)	3.6	(1.0)	10.1	(1.7)	15.6	(0.9)
Digestive illness	7.7	(0.9)	3.0	(0.9)	6.2	(1.4)	6.5	(0.6)
Neurologic disorder	0.6	(0.2)	0.0	(—)	2.6	(1.2)	0.7	(0.2)
Handling related	10.0	(1.0)	3.8	(0.8)	10.9	(1.6)	8.8	(0.7)
Predation	10.3	(1.0)	3.9	(1.0)	17.7	(2.3)	9.9	(0.7)
Trauma or fighting (not related to handling or predation)	18.2	(1.3)	17.0	(2.0)	24.8	(2.8)	18.9	(1.0)
Lightning/ weather related	2.1	(0.4)	4.5	(1.1)	6.4	(1.6)	3.2	(0.4)
Other	16.0	(1.3)	12.7	(1.7)	11.1	(2.1)	14.7	(1.0)
Any deaths	56.6	(1.7)	39.6	(2.7)	57.6	(3.3)	53.2	(1.3)

*Includes elk, red deer, sika deer, and hybrids.

More than 5 percent of cervids died during the study period. A higher percentage of cervids on deer operations than on elk or combination operations died from any cause.

B.2.b. Percentage of cervids that died, by cause of death and by operation type:

Percent Cervids[1]

Operation Type

	Deer		Elk[2]		Combination deer/elk		All operations	
Cause of death	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
EHD (epizootic hemorrhagic disease)	1.7	(0.2)	0.2	(0.1)	0.6	(0.1)	1.2	(0.1)
Respiratory illness/pneumonia	1.6	(0.1)	0.1	(0.0)	0.4	(0.1)	1.1	(0.1)
Digestive illness	0.3	(0.1)	0.1	(0.0)	0.2	(0.1)	0.3	(0.0)
Neurologic disorder	<0.1	(0.0)	0.0	(—)	<0.1	(0.0)	<0.1	(0.0)
Handling related	0.4	(0.0)	0.2	(0.0)	0.3	(0.1)	0.3	(0.0)
Predation	0.9	(0.1)	0.4	(0.1)	1.7	(0.3)	1.0	(0.1)
Trauma or fighting (not related to handling or predation)	0.8	(0.1)	0.8	(0.1)	0.6	(0.1)	0.7	(0.1)
Lightning/ weather related	0.1	(0.0)	0.2	(0.1)	0.2	(0.1)	0.2	(0.0)
Other	1.0	(0.2)	1.2	(0.3)	0.3	(0.1)	0.8	(0.1)
Any cause	6.8	(0.4)	3.2	(0.4)	4.3	(0.5)	5.7	(0.3)

[1]As a percentage of July 1, 2014, inventory.

[2]Includes elk, red deer, sika deer, and hybrids.

C. Operation Management

Note: Unless otherwise noted, data in all tables in this section refer to the period from July 1, 2013, through June 30, 2014.

1. Reasons for keeping cervids

Over half of all operations indicated that breeding was one reason they kept cervids. Meat production/slaughter was a reason for keeping cervids on over half of elk operations but less than 20 percent of deer operations.

C.1.a. Percentage of operations by reason for keeping cervids, and by operation type:

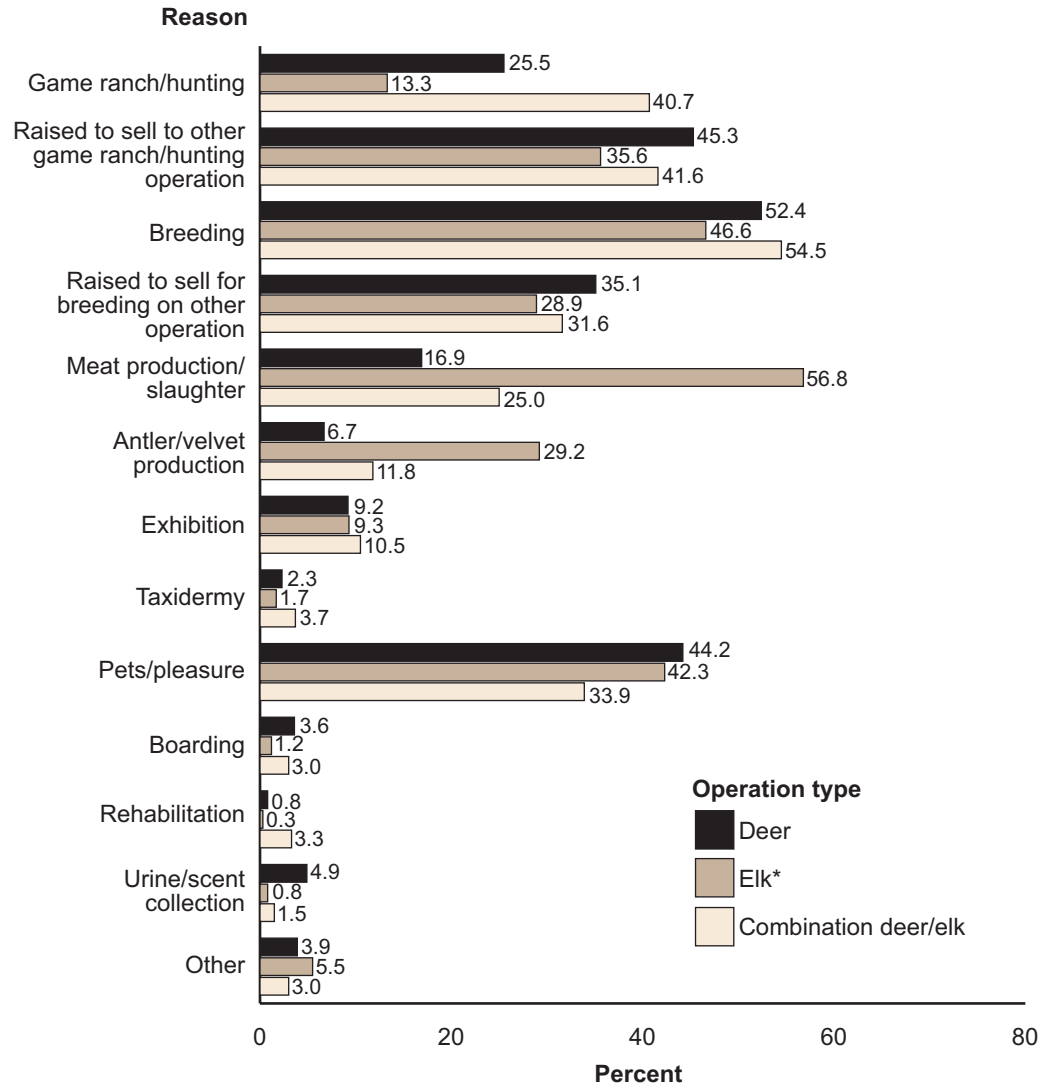
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Game ranch/ hunting	25.5	(1.4)	13.3	(1.6)	40.7	(3.2)	24.9	(1.1)
Raised to sell to other game ranch/ hunting operation	45.3	(1.8)	35.6	(2.7)	41.6	(3.2)	42.7	(1.4)
Breeding	52.4	(1.8)	46.6	(2.9)	54.5	(3.3)	51.4	(1.4)
Raised to sell for breeding on other operation	35.1	(1.6)	28.9	(2.6)	31.6	(3.0)	33.3	(1.3)
Meat production/ slaughter	16.9	(1.3)	56.8	(2.9)	25.0	(2.8)	26.4	(1.2)
Antler/velvet production	6.7	(0.9)	29.2	(2.4)	11.8	(2.1)	12.1	(0.8)
Exhibition	9.2	(1.2)	9.3	(1.7)	10.5	(2.1)	9.4	(0.9)
Taxidermy	2.3	(0.5)	1.7	(0.6)	3.7	(0.9)	2.3	(0.4)
Pets/pleasure	44.2	(1.8)	42.3	(2.9)	33.9	(3.3)	42.4	(1.4)
Boarding	3.6	(0.6)	1.2	(0.5)	3.0	(0.9)	3.0	(0.4)
Rehabilitation	0.8	(0.3)	0.3	(0.2)	3.3	(1.2)	1.1	(0.3)
Urine/scent collection	4.9	(0.8)	0.8	(0.5)	1.5	(0.6)	3.6	(0.5)
Other	3.9	(0.7)	5.5	(1.4)	3.0	(0.9)	4.1	(0.6)

*Includes elk, red deer, sika deer, and hybrids.

Percentage of operations by reason for keeping cervids, and by operation type



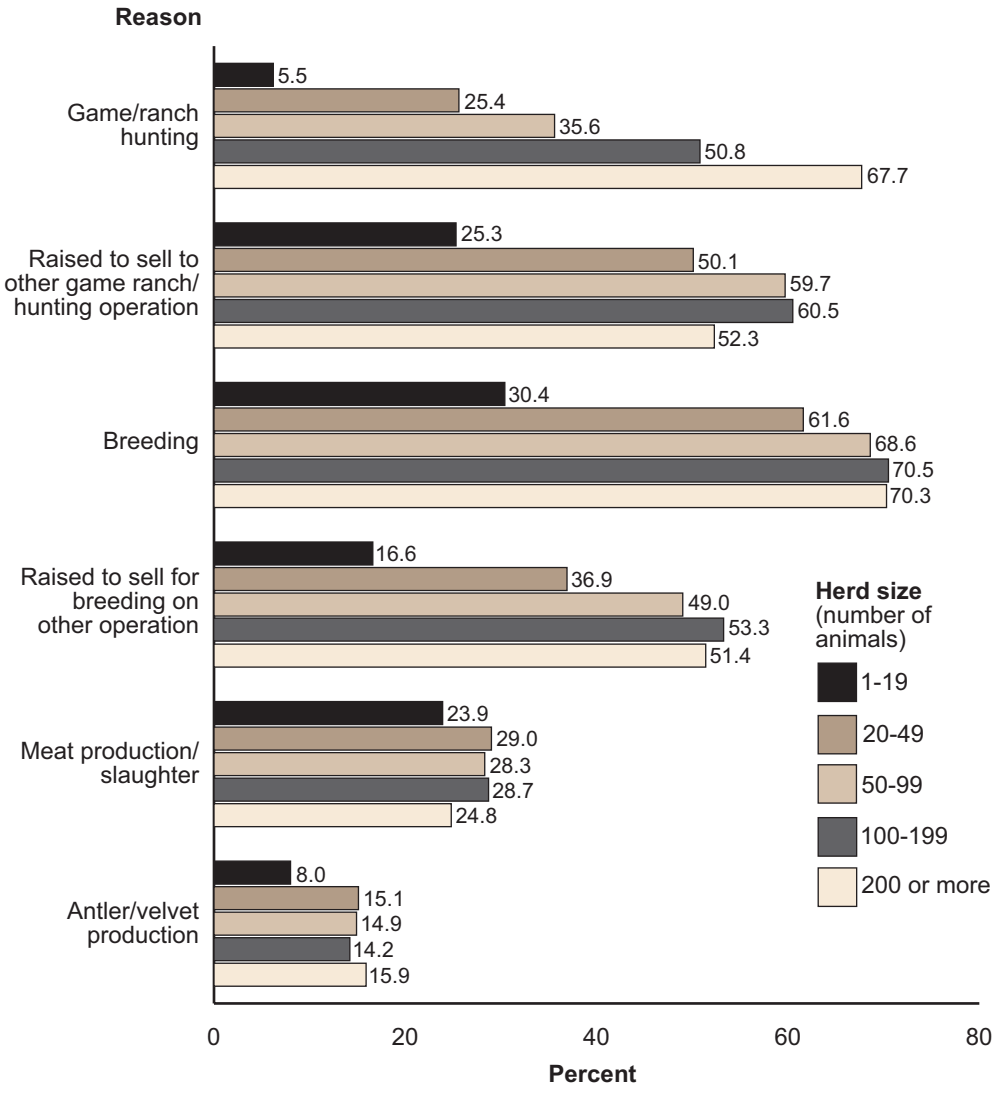
*Includes elk, red deer, sika deer, and hybrids.

Reasons for keeping cervids varied based on operation size. As expected, as herd size increased the percentages of operations that indicated pets/pleasure and exhibition were reasons for keeping cervids decreased. Conversely, as herd size increased the percentage of operations that kept cervids for game ranch/hunting increased.

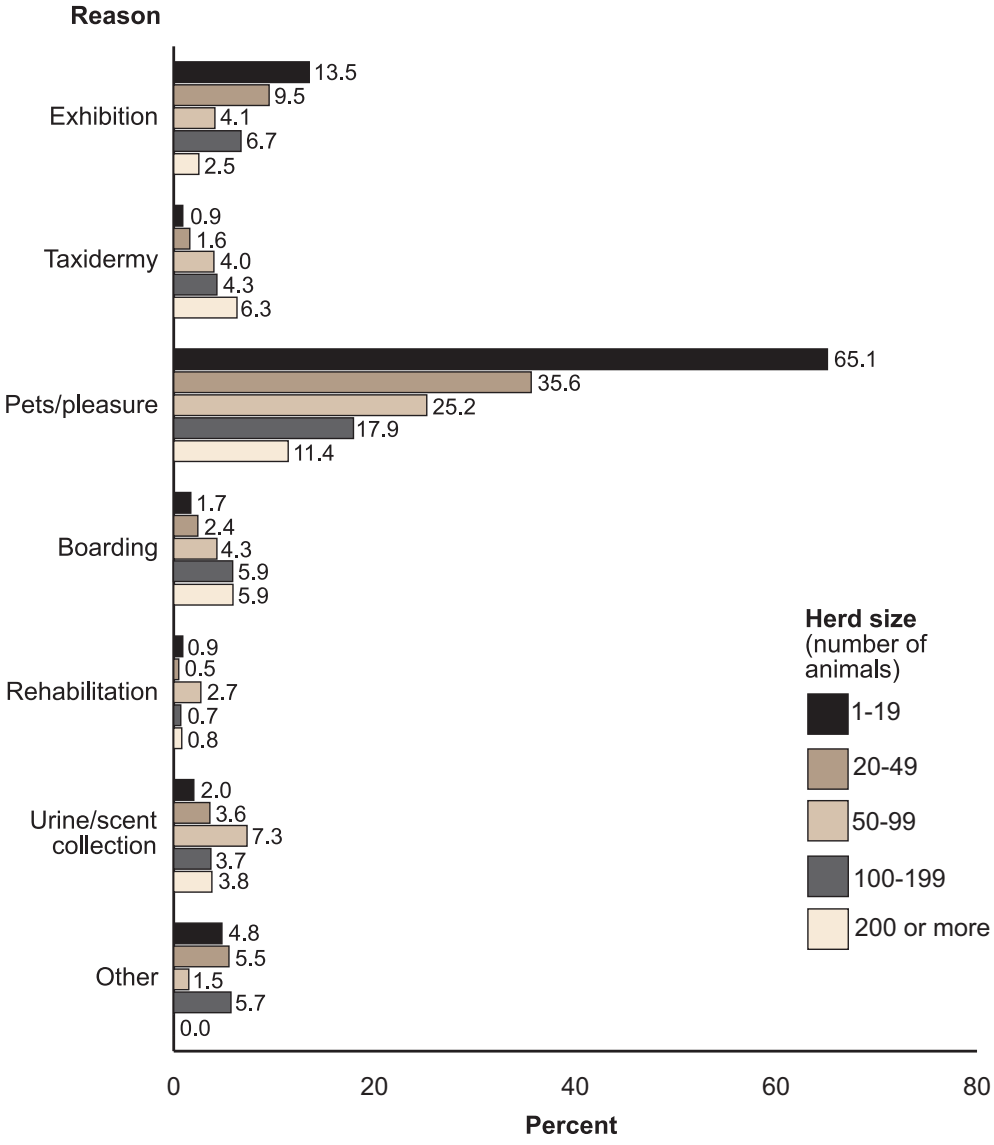
C.1.b. Percentage of operations by reason for keeping cervids, and by herd size:

	Percent Operations									
	Herd Size (number of cervids)									
	1–19		**20–49**		**50–99**		**100–199**		**200 or more**	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Game ranch/ hunting	5.5	(1.0)	25.4	(2.5)	35.6	(2.9)	50.8	(3.2)	67.7	(3.1)
Raised to sell to other game ranch/hunting operation	25.3	(2.2)	50.1	(2.8)	59.7	(2.9)	60.5	(3.1)	52.3	(3.4)
Breeding	30.4	(2.3)	61.6	(2.8)	68.6	(2.8)	70.5	(2.9)	70.3	(3.1)
Raised to sell for breeding on other operation	16.6	(1.9)	36.9	(2.8)	49.0	(3.0)	53.3	(3.2)	51.4	(3.4)
Meat production/ slaughter	23.9	(2.0)	29.0	(2.5)	28.3	(2.5)	28.7	(2.8)	24.8	(2.9)
Antler/velvet production	8.0	(1.3)	15.1	(1.9)	14.9	(2.0)	14.2	(2.4)	15.9	(2.5)
Exhibition	13.5	(1.7)	9.5	(1.8)	4.1	(1.1)	6.7	(1.9)	2.5	(1.0)
Taxidermy	0.9	(0.4)	1.6	(0.6)	4.0	(1.3)	4.3	(1.2)	6.3	(1.7)
Pets/pleasure	65.1	(2.4)	35.6	(2.9)	25.2	(2.7)	17.9	(2.6)	11.4	(2.3)
Boarding	1.7	(0.7)	2.4	(0.8)	4.3	(1.3)	5.9	(1.4)	5.9	(1.6)
Rehabilitation	0.9	(0.4)	0.5	(0.4)	2.7	(1.0)	0.7	(0.5)	0.8	(0.6)
Urine/scent collection	2.0	(0.7)	3.6	(1.1)	7.3	(1.7)	3.7	(1.1)	3.8	(1.1)
Other	4.8	(1.0)	5.5	(1.3)	1.5	(0.8)	5.7	(1.7)	0.0	(—)

Percentage of operations by reason for keeping cervids, and by herd size



Percentage of operations by reason for keeping cervids, and by herd size (cont'd)



Game ranch/hunting was a reason for keeping cervids on a higher percentage of operations in the South and West regions than in the Northeast region. Over half of operations in the West region listed meat production/slaughter as a reason for keeping cervids, which is likely higher than the Northeast and South regions due to the number of elk in the West region.

C.1.c. Percentage of operations by reason for keeping cervids, and by region:

	Percent Operations					
	Region					
	West		Northeast		South	
Reason	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Game ranch/hunting	28.4	(3.1)	15.7	(1.2)	37.4	(2.0)
Raised to sell to other game ranch/hunting operation	32.2	(3.3)	46.1	(1.9)	39.9	(2.2)
Breeding	48.9	(3.6)	49.4	(1.9)	55.3	(2.2)
Raised to sell for breeding on other operation	26.7	(3.2)	32.7	(1.8)	35.8	(2.1)
Meat production/ slaughter	51.7	(3.5)	30.3	(1.7)	14.3	(1.6)
Antler/velvet production	25.2	(3.2)	15.2	(1.3)	4.2	(0.9)
Exhibition	10.5	(2.2)	11.5	(1.4)	5.9	(1.2)
Taxidermy	4.3	(1.2)	2.0	(0.5)	2.5	(0.6)
Pets/pleasure	36.1	(3.4)	46.0	(1.9)	38.2	(2.2)
Boarding	3.8	(1.2)	3.2	(0.7)	2.7	(0.7)
Rehabilitation	0.0	(—)	0.3	(0.2)	2.4	(0.6)
Urine/scent collection	1.9	(0.7)	5.5	(0.9)	1.0	(0.4)
Other	3.4	(1.1)	3.9	(0.8)	4.7	(1.0)

About one-fifth of all operations listed the primary reason for keeping cervids as game ranch/hunting (18.9 percent) or pets/pleasure (20.7 percent). Nearly one-third of elk operations listed meat production/slaughter as the primary reason for keeping cervids.

C.1.d. Percentage of operations by **primary** reason for keeping cervids, and by operation type:

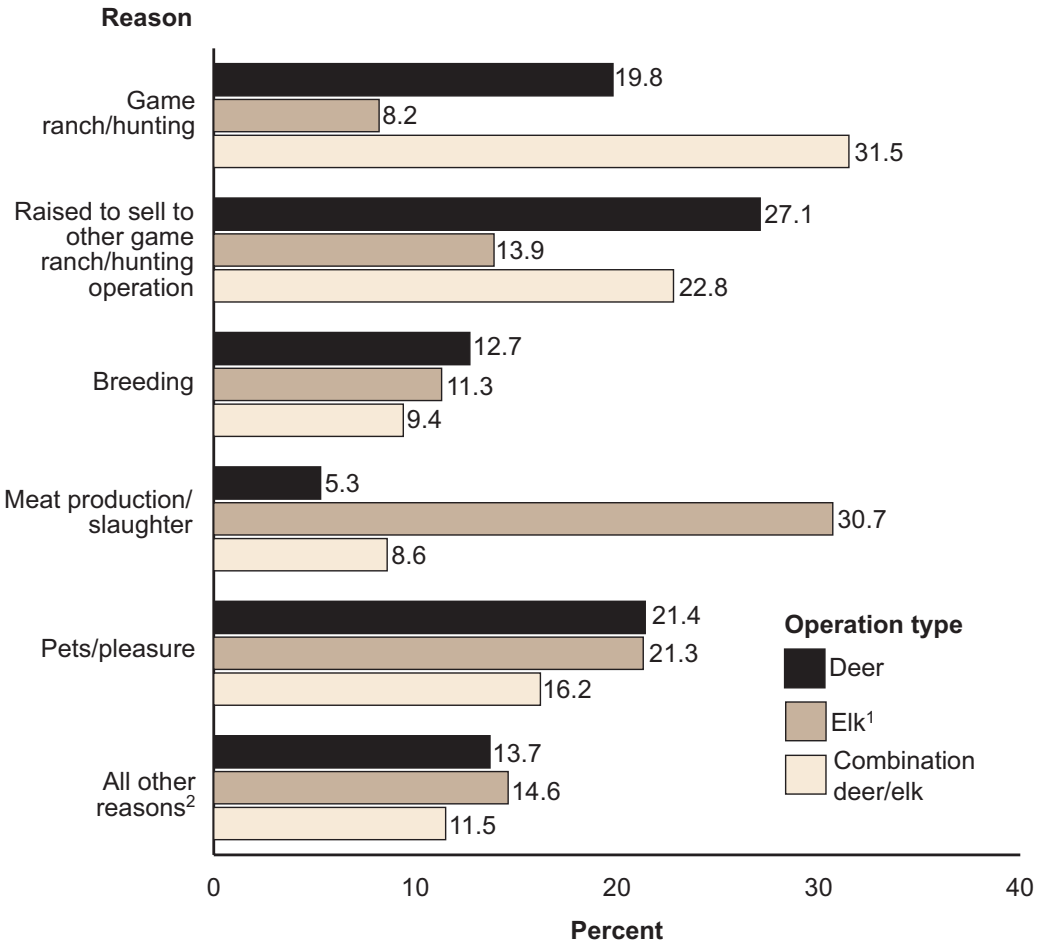
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Game ranch/ hunting	19.8	(1.3)	8.2	(1.3)	31.5	(3.0)	18.9	(1.0)
Raised to sell to other game ranch/ hunting operation	27.1	(1.6)	13.9	(1.9)	22.8	(2.7)	23.8	(1.2)
Breeding	12.7	(1.2)	11.3	(1.8)	9.4	(2.2)	12.0	(0.9)
Raised to sell for breeding on other operation	4.8	(0.8)	4.5	(1.3)	4.3	(1.3)	4.7	(0.6)
Meat production/ slaughter	5.3	(0.8)	30.7	(2.8)	8.6	(2.0)	11.1	(0.9)
Antler/velvet production	0.2	(0.2)	4.9	(1.3)	0.0	(—)	1.2	(0.3)
Exhibition	5.2	(1.0)	1.9	(0.7)	4.8	(1.4)	4.5	(0.7)
Taxidermy	0.3	(0.2)	0.0	(—)	0.0	(—)	0.2	(0.2)
Pets/pleasure	21.4	(1.6)	21.3	(2.7)	16.2	(2.9)	20.7	(1.3)
Boarding	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)
Rehabilitation	0.1	(0.1)	0.0	(—)	0.0	(—)	0.1	(0.1)
Urine/scent collection	0.5	(0.3)	0.0	(—)	0.0	(—)	0.3	(0.2)
Other	2.6	(0.6)	3.3	(1.1)	2.5	(0.8)	2.7	(0.5)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Percentage of operations by *primary* reason for keeping cervids, and by operation type



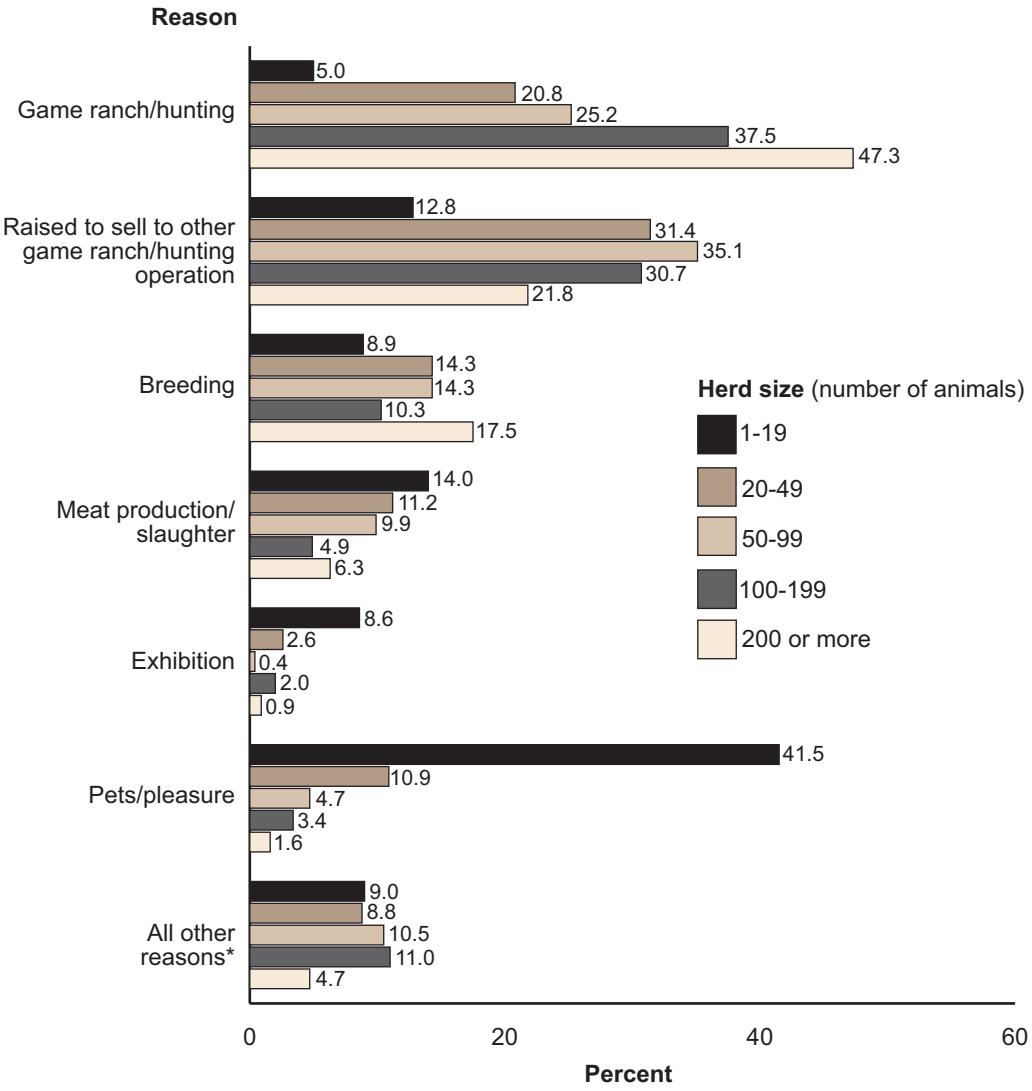
[1]Includes elk, red deer, sika deer, and hybrids.
[2]Includes: raised to sell for breeding on other operation, antler/velvet production, exhibition, taxidermy, boarding, rehabilitation, and urine/scent collection.

Slightly more than 40 percent of operations with fewer than 20 animals listed pets/pleasure as the **primary** reason for keeping cervids. Not surprisingly, operations with 100 or more animals were more likely to indicate that game ranch/hunting was their primary reason for keeping cervids than operations with fewer than 20 animals.

C.1.e. Percentage of operations by **primary** reason for keeping cervids, and by herd size:

	Percent Operations									
	Herd Size (number of animals)									
	1–19		**20–49**		**50–99**		**100–199**		**200 or more**	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Game ranch/ hunting	5.0	(1.1)	20.8	(2.3)	25.2	(2.7)	37.5	(3.1)	47.3	(3.5)
Raised to sell to other game ranch/hunting operation	12.8	(1.8)	31.4	(2.8)	35.1	(3.0)	30.7	(2.9)	21.8	(3.0)
Breeding	8.9	(1.5)	14.3	(2.1)	14.3	(2.2)	10.3	(1.9)	17.5	(2.6)
Raised to sell for breeding on other operation	3.2	(0.9)	3.8	(1.2)	7.9	(1.7)	7.6	(1.9)	3.7	(1.3)
Meat production/ slaughter	14.0	(1.8)	11.2	(1.7)	9.9	(1.5)	4.9	(1.2)	6.3	(1.7)
Antler/velvet production	1.0	(0.5)	1.4	(0.7)	1.7	(0.6)	0.7	(0.6)	1.0	(0.8)
Exhibition	8.6	(1.5)	2.6	(0.9)	0.4	(0.3)	2.0	(0.9)	0.9	(0.6)
Taxidermy	0.4	(0.4)	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)
Pets/pleasure	41.5	(2.6)	10.9	(1.9)	4.7	(1.3)	3.4	(1.5)	1.6	(0.7)
Boarding	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)
Rehabilitation	0.0	(—)	0.0	(—)	0.5	(0.4)	0.0	(—)	0.0	(—)
Urine/scent collection	0.7	(0.5)	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)
Other	3.7	(0.9)	3.6	(1.1)	0.4	(0.3)	2.7	(1.4)	0.0	(—)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of operations by *primary* reason for keeping cervids, and by herd size



*Includes: raised to sell for breeding on other operation, antler/velvet production, exhibition, taxidermy, boarding, rehabilitation, urine/scent collection.

Regionally, the percentages of operations by **primary** reasons for keeping cervids were similar. Meat production/slaughter was cited as the primary reason more frequently in the West region than in the Northeast or South regions, likely due to the higher number of elk operations in the West region. Operations in the Northeast and South regions were more likely than those in the West region to raise cervids to sell to other game ranch/hunting operations or to sell for breeding on other operations.

C.1.f. Percentage of operations by **primary** reason for keeping cervids, and by region:

	Percent Operations					
	Region					
	West		Northeast		South	
Reason	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Game ranch/hunting	21.0	(3.0)	12.9	(1.2)	27.9	(1.9)
Raised to sell to other game ranch/hunting operation	11.7	(2.5)	27.1	(1.8)	21.4	(1.9)
Breeding	11.7	(2.4)	10.3	(1.2)	14.6	(1.7)
Raised to sell for breeding on other operation	0.6	(0.4)	4.5	(0.8)	5.9	(1.1)
Meat production/slaughter	29.4	(3.4)	11.9	(1.3)	5.5	(1.1)
Antler/velvet production	4.5	(1.5)	1.2	(0.4)	0.4	(0.4)
Exhibition	2.7	(1.3)	6.2	(1.1)	2.2	(0.8)
Taxidermy	0.0	(—)	0.3	(0.3)	0.0	(—)
Pets/pleasure	15.5	(2.6)	23.2	(1.8)	17.9	(1.9)
Boarding	0.0	(—)	0.0	(—)	0.0	(—)
Rehabilitation	0.0	(—)	0.2	(0.1)	0.0	(—)
Urine/scent collection	0.0	(—)	0.5	(0.3)	0.0	(—)
Other	2.9	(1.3)	1.7	(0.5)	4.3	(1.0)
Total	100.0		100.0		100.0	

2. Record keeping and number of years with cervids

In general, as herd size increased the percentage of operations that kept herd management and business records increased, regardless of record type. Sales and purchase records were kept by over three-fourths of all operations and by over 90 percent of operations with 100 or more animals.

C.2.a. Percentage of operations by type of herd management and business records kept, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more		All operations	
Record type	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Sales/ purchases	64.0	(2.5)	83.3	(2.2)	86.3	(2.1)	91.7	(1.9)	90.9	(2.0)	77.3	(1.2)
Breeding	44.2	(2.5)	60.0	(2.8)	69.3	(2.7)	67.2	(2.9)	73.4	(3.1)	56.8	(1.4)
Health	54.1	(2.5)	64.3	(2.7)	70.0	(2.7)	70.8	(2.9)	76.1	(3.1)	62.6	(1.4)
Feed	48.7	(2.6)	70.1	(2.6)	80.7	(2.3)	78.5	(2.6)	81.5	(2.7)	64.8	(1.4)

Of all operations, the highest percentage had raised cervids for 11 to 20 years. Over 20 percent of elk operations had raised cervids for over 20 years. Only about 10 percent of all operations had raised cervids for less than 5 years.

C.2.b. Percentage of operations by number of years cervids had been raised on the operation (including previous ownership), and by operation type:

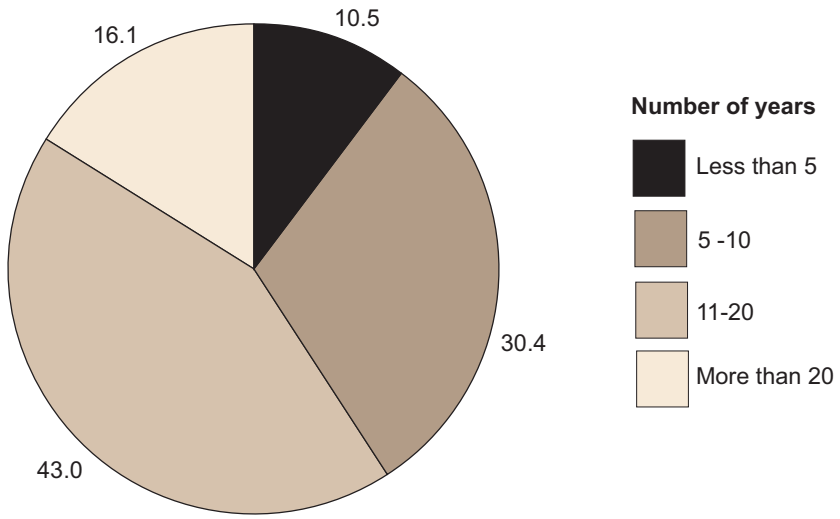
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Number of years	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Less than 5	12.9	(1.3)	4.0	(1.2)	9.1	(2.2)	10.5	(0.9)
5 to 10	34.4	(1.7)	15.6	(2.2)	34.4	(3.2)	30.4	(1.3)
11 to 20	39.8	(1.8)	58.5	(2.9)	34.1	(3.1)	43.0	(1.4)
More than 20	13.0	(1.3)	21.8	(2.4)	22.4	(2.7)	16.1	(1.0)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Percentage of all operations by number of years cervids had been raised on the operation (including previous ownership)



Eighty percent of operations in the West region and over 66 percent of operations in the Northeast region had raised cervids for 11 years or more. In the South region, 58.0 percent of operations had raised cervids for 5 to 10 years.

C.2.c. Percentage of operations by number of years cervids had been raised on the operation (including previous ownership), and by region:

	Percent Operations					
	Region					
	West		Northeast		South	
Number of years	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Less than 5	4.9	(1.5)	7.5	(1.2)	16.5	(1.8)
5 to 10	15.1	(2.5)	25.5	(1.8)	41.5	(2.3)
11 to 20	54.4	(3.5)	49.7	(2.0)	29.9	(2.0)
More than 20	25.6	(3.1)	17.2	(1.5)	12.2	(1.5)
Total	100.0		100.0		100.0	

3. Acreage used for hunting

Of operations that kept cervids for game ranching/hunting, over three-quarters placed cervids on over 100 acres for hunting purposes. Nearly 20 percent of hunt operations hunted on over 1,000 acres.

C.3.a. For the 24.9 percent of operations that kept cervids for game ranching/hunting (table C.1.a), percentage of operations by number of acres used when hunting cervids, and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Number of acres	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Less than 10	1.3	(1.2)	9.1	(5.6)	0.0	(0.0)	1.8	(1.0)
10 to 25	10.4	(2.5)	0.0	(0.0)	2.6	(1.4)	7.3	(1.6)
26 to 50	4.5	(1.5)	8.2	(4.6)	0.0	(0.0)	3.7	(1.1)
51 to 100	12.1	(2.3)	9.2	(3.7)	4.2	(2.6)	9.8	(1.7)
101 to 250	25.1	(3.2)	18.6	(5.2)	19.3	(3.9)	22.9	(2.4)
251 to 500	10.9	(1.9)	8.5	(3.4)	30.1	(4.2)	15.7	(1.7)
501 to 1,000	19.0	(2.4)	15.7	(6.1)	20.7	(3.9)	19.1	(1.9)
More than 1,000	16.5	(2.4)	30.6	(7.5)	23.1	(3.7)	19.7	(2.0)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

As expected, the number of acres used for hunting generally increased as herd size increased.

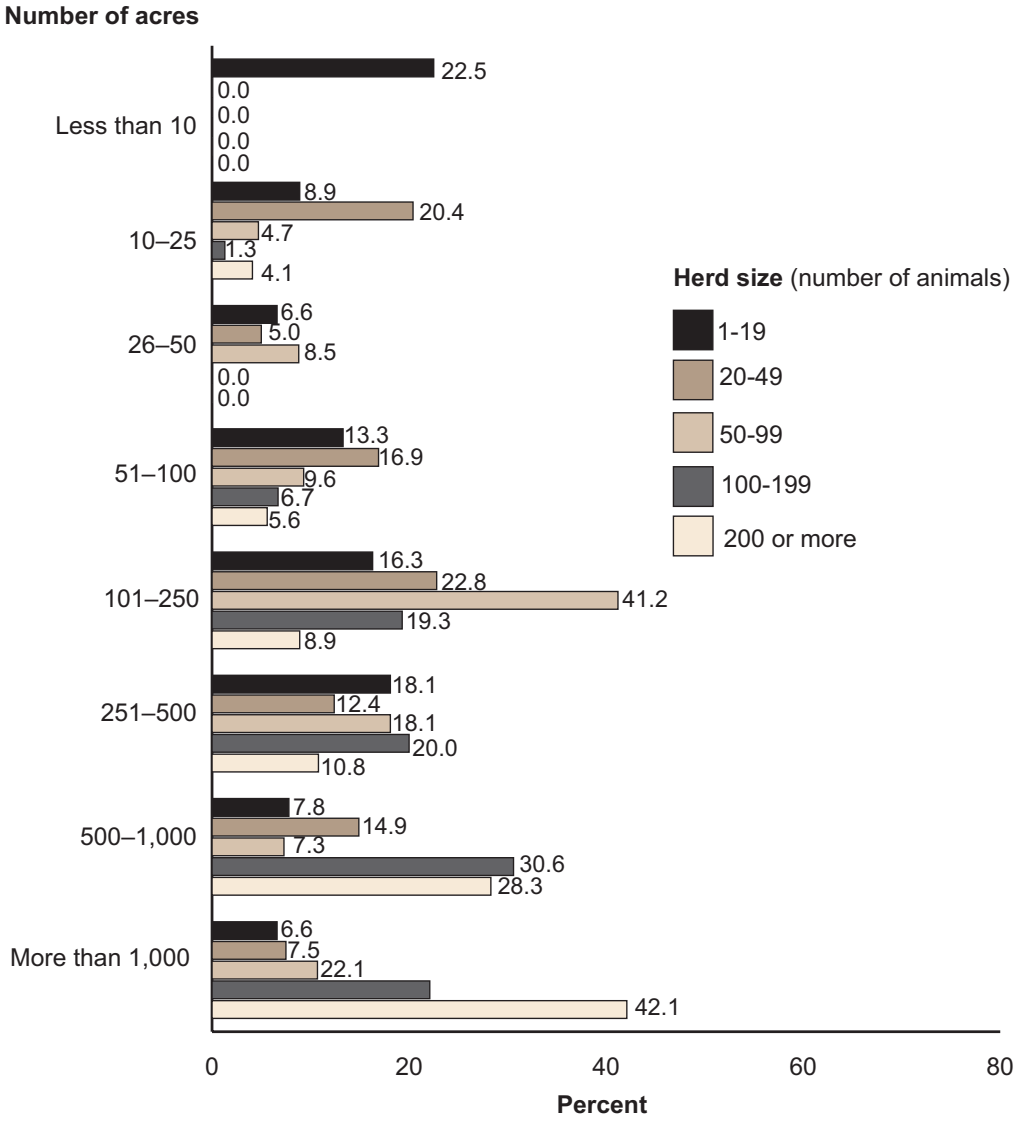
C.3.b. For the 24.9 percent of operations that kept cervids for game ranching/hunting (table C.1.a), percentage of operations by number of acres used when hunting cervids, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more		All operations	
Number of acres	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Less than 10	22.5	(10.6)	0.0	(0.0)	0.0	(0.0	0.0	(0.0)	0.0	(0.0)	1.8	(1.0)
10 to 25	8.9	(7.4)	20.4	(6.1)	4.7	(2.1)	1.3	(0.9)	4.1	(1.7)	7.3	(1.6)
26 to 50	6.6	(5.4)	5.0	(3.2)	8.5	(3.0)	0.0	(0.0)	0.0	(0.0)	3.7	(1.1)
51 to 100	13.3	(8.1)	16.9	(5.2)	9.6	(3.0)	6.7	(2.0)	5.6	(2.8)	9.8	(1.7)
101 to 250	16.3	(7.9)	22.8	(6.1)	41.2	(5.6)	19.3	(3.7)	8.9	(2.3)	22.9	(2.4)
251 to 500	18.1	(8.4)	12.4	(3.3)	18.1	(4.0)	20.0	(3.6)	10.8	(2.6)	15.7	(1.7)
501 to 1,000	7.8	(4.0)	14.9	(5.0)	7.3	(2.5)	30.6	(4.6)	28.3	(4.0)	19.1	(1.9)
More than 1,000	6.6	(5.4)	7.5	(3.7)	10.7	(3.1)	22.1	(4.3)	42.1	(4.3)	19.7	(2.0)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

For the 24.9 percent of operations that kept cervids for game ranching/hunting, percentage of operations by number of acres used when hunting cervids, and by herd size



Over one-third of operations that kept cervids for game ranching/hunting in the West region hunted on over 1,000 acres. Nearly half of game ranch/hunting operations in the South region used 500 acres or more for hunting. Hunting acreage in the Northeast region was more variable.

C.3.c. For the 24.9 percent of operations that kept farmed cervids for game ranching/hunting (table C.1.a), percentage of operations by number of acres used when hunting cervids, and by region:

	Percent Operations					
	Region					
	West		Northeast		South	
Number of acres	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Less than 10	2.7	(1.7)	2.7	(2.4)	1.2	(1.0)
10 to 25	2.8	(1.9)	18.0	(4.3)	2.4	(1.2)
26 to 50	5.3	(4.3)	5.6	(2.2)	2.4	(1.2)
51 to 100	5.9	2.9)	12.4	(3.1)	9.0	(2.3)
101 to 250	23.4	(5.3)	26.3	(4.3)	21.0	(3.2)
251 to 500	16.7	(4.4)	14.9	(3.0)	15.9	(2.4)
501 to 1,000	7.5	(3.9)	10.7	(2.9)	25.6	(2.8)
More than 1,000	35.7	(7.1)	9.4	(2.3)	22.5	(2.7)
Total	100.0		100.0		100.0	

4. Future plans

Most operations planned to maintain their current herd size in the next year. The percentage of operations that planned to increase their herd size was similar to the percentage that planned to decrease their herd size. Over 10 percent of operations planned to get out of the cervid business in the next year.

C.4.a. Percentage of operations by plan for the operation's herd over the next year, and by operation type:

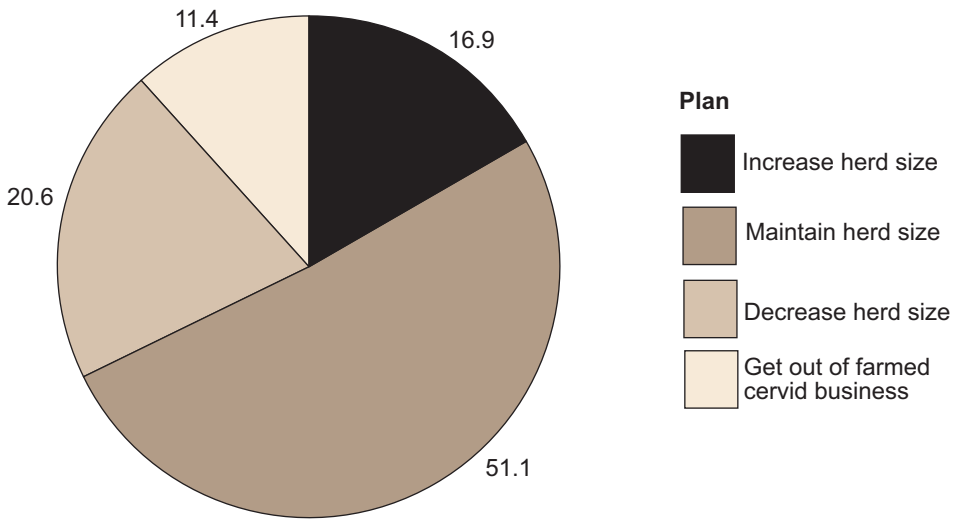
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Plan	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Increase herd size	17.1	(1.4)	16.2	(2.1)	17.0	(2.6)	16.9	(1.1)
Maintain herd size	49.3	(1.8)	51.2	(2.9)	60.0	(3.3)	51.1	(1.4)
Decrease herd size	22.0	(1.5)	18.7	(2.4)	16.5	(2.3)	20.6	(1.2)
Get out of cervid business	11.6	(1.3)	13.8	(2.3)	6.6	(1.7)	11.4	(1.0)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Percentage of operations by plan for the operation's herd over the next year



Over 20 percent of operations with fewer than 20 cervids planned to get out of the cervid business in the next year, compared with less than 2 percent of operations with 200 or more cervids.

C.4.b. Percentage of operations by plan for the operation's herd over the next year, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Plan	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Increase herd size	15.1	(1.8)	17.9	(2.3)	16.7	(2.3)	20.1	(2.5)	19.4	(2.7)
Maintain herd size	45.6	(2.6)	50.5	(2.9)	54.6	(3.0)	60.2	(3.1)	63.6	(3.3)
Decrease herd size	18.6	(2.0)	24.9	(2.5)	23.6	(2.6)	17.0	(2.3)	15.3	(2.4)
Get out of cervid business	20.7	(2.1)	6.7	(1.5)	5.1	(1.2)	2.7	(1.0)	1.7	(0.9)
Total	100.0		100.0		100.0		100.0		100.0	

A higher percentage of operations in the West and South regions than in the Northeast region planned to increase their herd size over the next year. About half the operations in each region planned to maintain their herd sizes.

C.4.c. Percentage of operations by plan for the operation's herd over the next year, and by region:

	Percent Operations					
	Region					
	West		Northeast		South	
Plan	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Increase the herd size	25.2	(3.2)	13.3	(1.4)	20.5	(1.9)
Maintain the herd size	45.9	(3.4)	49.6	(2.0)	54.7	(2.3)
Decrease the herd size	16.5	(2.6)	23.9	(1.7)	16.4	(1.7)
Get out of the cervid business	12.5	(2.5)	13.1	(1.5)	8.5	(1.4)
Total	100.0		100.0		100.0	

Less than 4 percent of all operations planned to add any new cervid species over the next year.

C.4.d. Percentage of operations that planned to add any new cervid species to the herd over the next year, by operation type:

Percent Operations							
Operation Type							
Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
3.3	(0.7)	3.6	(1.1)	6.0	(1.8)	3.7	(0.5)

*Includes elk, red deer, sika deer, and hybrids.

5. Individual-animal identification

Almost three-fourths of all operations used plastic ear tags as a form of individual-animal identification (ID). Metal ear tags were used by over half of elk operations and by over one-third of deer operations.

C.5.a. Percentage of operations by type of individual-animal ID used for cervids, and by operation type:

Percent Operations

	Operation Type							
	Deer		Elk*		Combination deer/elk		All operations	
ID type	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Plastic ear tags	71.5	(1.7)	79.1	(2.5)	65.6	(3.2)	72.3	(1.3)
Metal ear tags	35.7	(1.6)	54.6	(2.9)	35.7	(3.1)	39.7	(1.3)
Electronic ear tags	13.9	(1.2)	13.7	(1.9)	7.2	(1.4)	13.0	(0.9)
Electronic implant/ microchip	10.3	(1.1)	5.7	(1.2)	9.2	(2.2)	9.2	(0.8)
Tattoo/freeze brand	14.0	(1.1)	12.4	(1.5)	10.7	(1.8)	13.2	(0.8)
Other	2.5	(0.6)	1.1	(0.4)	2.5	(0.8)	2.2	(0.4)
Any	76.7	(1.5)	82.0	(2.4)	68.8	(3.2)	76.8	(1.2)

*Includes elk, red deer, sika deer, and hybrids.

More than 70 percent operations of any size used some form of individual-animal ID. A higher percentage of operations with 50 or more cervids than operations with 20 or more used some form of individual-animal ID for their cervids. Plastic ear tags were the most popular form of individual-animal ID across all herd sizes. The percentage of operations that used tattoos and freeze brands as individual-animal ID increased as herd size increased.

C.5.b. Percentage of operations by type of individual-animal ID used for cervids, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
ID type	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Plastic ear tags	62.1	(2.4)	75.8	(2.5)	81.1	(2.3)	82.6	(2.3)	82.9	(2.6)
Metal ear tags	36.5	(2.4)	44.9	(2.8)	41.3	(2.8)	33.5	(2.9)	44.9	(3.3)
Electronic ear tags	9.2	(1.5)	14.4	(2.0)	18.3	(2.3)	14.2	(2.1)	14.7	(2.4)
Electronic implant/ microchip	5.8	(1.2)	11.6	(1.9)	10.9	(2.0)	11.0	(1.9)	14.4	(2.3)
Tattoo/ freeze brand	6.4	(1.1)	9.2	(1.6)	19.3	(2.4)	26.2	(2.7)	32.8	(3.3)
Other	1.7	(0.6)	2.3	(0.9)	3.9	(1.2)	1.4	(0.7)	1.8	(0.9)
Any	70.2	(2.3)	77.5	(2.4)	83.0	(2.3)	83.1	(2.3)	88.3	(2.2)

Approximately two-thirds of all cervids and nearly 90 percent of cervids on elk operations had individual-animal ID.

C.5.c. Percentage of cervids that had any individual animal ID, by operation type:

Percent Cervids

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
71.3	(2.5)	87.8	(2.1)	36.9	(4.7)	65.0	(2.4)

*Includes elk, red deer, sika deer, and hybrids.

D. Handling Facilities and Methods

Note: Unless otherwise noted, data in all tables in this section refer to the period from July 1, 2013, through June 30, 2014.

As expected, there were differences in the types of handling facilities present on deer and elk operations. A higher percentage of elk operations than deer or combination operations used pens or other enclosures for sorting, handling, and other activities. Overall, about two-thirds of operations used pens or other enclosures for sorting and handling.

About half of all operations used alleys connecting multiple pens, and a higher percentage of elk operations than deer and combination operations used an alley. About one-fifth of all operations used tunnels such as enclosed passageways, and a higher percentage of deer operations than elk operations used tunnels. Overall, about two-fifths of operations used shading or subdued lighting, and there were no differences by operation type. About one-fourth of operations used a drop chute, and a higher percentage of deer operations than the other operation types used a chute.

Only about 3 percent of operations used a tilt table. About 17 percent of all operations used guillotine gates, and 56.6 percent used swing gates. A higher percentage of deer and combination operations than elk operations used guillotine gates. Almost 20 percent of all operations used a cable and pulley system to remotely operate gates, and a higher percentage of deer operations than elk operations used such a system. Only about 6 percent of all operations used feeders in handling pens that could be remotely operated, and a higher percentage of deer and combination operations than elk operations used feeders.

1. Facilities and structures

D.1.a. Percentage of operations by type of facility or structure used for handling or processing cervids, and by operation type:

Percent Operations

Operation Type

Facility or structure	Deer		Elk*		Combination deer/elk		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Pens or other enclosures for sorting, handling, etc.	66.4	(1.8)	77.1	(2.7)	62.6	(3.3)	68.2	(1.4)
Alley connecting multiple pens for sorting, handling, etc.	50.3	(1.8)	70.9	(2.8)	42.1	(3.2)	53.5	(1.4)
Tunnels such as enclosed passageways	24.7	(1.4)	15.0	(2.1)	17.4	(2.5)	21.7	(1.1)
Shading/ subdued lighting	43.4	(1.8)	39.3	(2.8)	35.8	(3.1)	41.5	(1.4)
Drop chute	28.6	(1.5)	19.2	(2.3)	18.1	(2.2)	25.2	(1.1)
Tilt table	4.1	(0.7)	1.6	(0.7)	0.5	(0.4)	3.1	(0.5)
Guillotine gates	20.9	(1.3)	6.6	(1.5)	15.4	(2.1)	17.1	(1.0)
Swing gates	53.0	(1.8)	71.8	(2.7)	50.6	(3.3)	56.6	(1.4)
Cable and pulley system to remotely operate gates	21.4	(1.4)	11.1	(1.8)	18.4	(2.5)	18.9	(1.0)
Feeders in handling pens remotely operated	7.6	(1.0)	1.6	(0.8)	10.4	(2.0)	6.7	(0.7)

*Includes elk, red deer, sika deer, and hybrids.

As expected, the percentage of operations that had any of the facilities or structures listed in the following table increased as herd size increased. Operations with 200 or more cervids accounted for the highest percentages of operations across facility or structure types, with the exceptions of tilt tables and remotely operated feeders.

D.1.b. Percentage of operations by type of facility or structure used for handling or processing cervids, and by herd size:

	Percent Operations									
	Herd Size (number of cervids)									
	1–19		**20–49**		**50–99**		**100–199**		**200 or more**	
Facility or structure	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Pens or other enclosures for sorting, handling, etc.	58.2	(2.5)	71.3	(2.7)	75.0	(2.6)	77.9	(2.6)	84.7	(2.5)
Alley connecting multiple pens for sorting, handling, etc.	37.5	(2.4)	58.4	(2.9)	66.1	(2.9)	69.2	(3.0)	76.1	(2.9)
Tunnels such as enclosed passageways	10.9	(1.6)	23.6	(2.5)	28.9	(2.8)	36.1	(3.1)	39.7	(3.4)
Shading/ subdued lighting	31.3	(2.3)	43.0	(2.9)	48.5	(3.0)	54.8	(3.2)	59.8	(3.4)
Drop chute	11.5	(1.6)	26.8	(2.6)	35.1	(2.8)	39.6	(3.1)	54.6	(3.5)
Tilt table	0.4	(0.4)	4.3	(1.3)	3.7	(1.3)	5.1	(1.3)	10.1	(2.1)
Guillotine gates	6.9	(1.2)	19.3	(2.4)	20.9	(2.4)	30.4	(2.8)	40.4	(3.4)
Swing gates	45.3	(2.5)	59.2	(2.9)	63.8	(2.9)	67.0	(3.0)	81.0	(2.7)
Cable and pulley system to operate gates remotely	8.8	(1.4)	21.2	(2.5)	23.0	(2.6)	31.0	(2.9)	41.5	(3.4)
Feeders in handling pens that can be operated remotely	4.6	(1.1)	7.0	(1.6)	8.7	(1.8)	7.2	(1.5)	12.2	(2.2)

About two-thirds of operations used facilities specifically designed for handling cervids. A higher percentage of elk operations than deer or combination operations used facilities specifically designed for cervids.

D.1.c. Percentage of operations that used facilities specifically designed for handling cervids, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
63.0	(1.8)	76.8	(2.6)	58.2	(3.3)	65.3	(1.4)

*Includes elk, red deer, sika deer, and hybrids.

In general, the percentage of operations with facilities designed specifically for handling cervids increased as herd size increased. A higher percentage of operations with 20 or more cervids than operations with fewer than 20 cervids used handling facilities designed specifically for cervids.

D.1.d. Percentage of operations that used facilities specifically designed for handling cervids, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
52.2	(2.5)	70.9	(2.6)	76.1	(2.7)	73.1	(2.9)	84.5	(2.4)

About half of operations, regardless of type, handled one or more cervids.

D.1.e. Percentage of operations that handled cervids for any reason, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
53.5	(1.8)	59.4	(2.9)	48.9	(3.3)	54.1	(1.4)

*Includes elk, red deer, sika deer, and hybrids.

A higher percentage of operations with 200 or more cervids handled cervids for any reason compared with the other sized operations. A lower percentage of operations with 1 to 19 cervids handled cervids compared with the other operations sizes.

D.1.f. Percentage of operations that handled cervids for any reason, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
43.3	(2.5)	55.7	(2.8)	64.3	(2.9)	60.1	(3.2)	76.8	(2.9)

On average, operations handled cervids as individuals nine times during the study reference period. Deer operations handled individual cervids more times than combination operations. On average, operations handled cervids as a group of two or more animals 3.5 times during the study reference period, and there were no differences by operation type.

D.1.g. Average number of times operations handled cervids for any reason, by how cervids were handled and by operation type:

Average Number of Times

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Cervids handled . . .	**Avg.**	**Std. error**	**Avg.**	**Std. error**	**Avg.**	**Std. error**	**Avg.**	**Std. error**
Individually	11.4	(2.3)	6.4	(2.6)	3.4	(0.5)	9.2	(1.6)
As a group of two or more	3.8	(0.9)	1.7	(0.2)	4.7	(1.7)	3.5	(0.6)

*Includes elk, red deer, sika deer, and hybrids.

On average, operations with 200 or more cervids handled animals as individuals or in groups more times than operations with fewer than 100 cervids. Similarly, operations with 200 or more cervids handled animals as individuals more times than operations with fewer than 100 cervids.

D.1.h. Average number of times operations handled cervids for any reason, by how cervids were handled and by herd size:

	Average Number of Times									
	Herd Size (number of cervids)									
	1–19		**20–49**		**50–99**		**100–199**		**200 or more**	
Cervids handled . . .	**Avg.**	**Std. error**	**Avg.**	**Std. error**	**Avg.**	**Std. error**	**Avg.**	**Std. error**	**Avg.**	**Std. error**
Individually	6.6	(2.3)	2.7	(0.4)	6.3	(1.5)	15.7	(5.3)	45.4	(16.0)
As a group of two or more	2.6	(1.4)	2.0	(0.3)	2.8	(0.3)	4.2	(0.5)	14.0	(3.6)

There were few differences across operation types in the number of times operations handled cervids as individuals. More than half of all operations did not handle cervids as individuals, and about 30 percent handled cervids as individuals one to five times. A higher percentage of deer operations than elk operations handled cervids as individuals more than 10 times.

D.1.i. Percentage of operations by number of times cervids were handled as **individuals** for any reason, and by operation type:

	Percent Operations							
	Operation Type							
	Deer		**Elk***		**Combination deer/elk**		**All operations**	
Times handled	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
0	55.4	(1.8)	58.3	(2.8)	58.3	(3.2)	56.4	(1.4)
1 to 5	28.9	(1.7)	33.2	(2.6)	28.6	(2.9)	29.8	(1.3)
6 to 10	6.7	(0.9)	4.0	(1.2)	6.2	(1.6)	6.1	(0.7)
More than 10	8.9	(0.9)	4.5	(1.0)	6.8	(1.4)	7.7	(0.7)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

More than half of all operations did not handle cervids as a group, and about 30 percent handled cervids as a group one to five times. A lower percentage of elk operations than deer or combination operations did not handle cervids as a group, and a higher percentage of elk operations than deer or combination operations handled cervids as a group one to five times. A higher percentage of deer operations than elk operations handled cervids as a group more than 10 times.

D.1.j. Percentage of operations by number of times cervids were handled as a **group** of two or more for any reason, by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Times handled	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
0	59.1	(1.8)	48.9	(2.9)	65.9	(3.0)	57.9	(1.4)
1 to 5	30.0	(1.7)	43.7	(2.9)	25.5	(2.7)	32.3	(1.3)
6 to 10	5.1	(0.7)	5.5	(1.3)	3.9	(1.2)	5.1	(0.6)
More than 10	5.7	(0.8)	1.9	(0.6)	4.6	(1.2)	4.8	(0.6)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

For operations that handled cervids, the reasons for handling cervids given by the highest percentages of operations were treatment/physical examination, movement of animals, and vaccination. A higher percentage of deer operations than elk or combination operations handled cervids for contraception or artificial insemination purposes, and a higher percentage of deer operations than elk operations handled cervids for euthanasia purposes. A higher percentage of combination operations than elk operations handled cervids for escape-recovery purposes.

D.1.k. For the 54.1 percent of operations that handled cervids (table D.1.e), percentage of operations by reason for handling and by operation type:

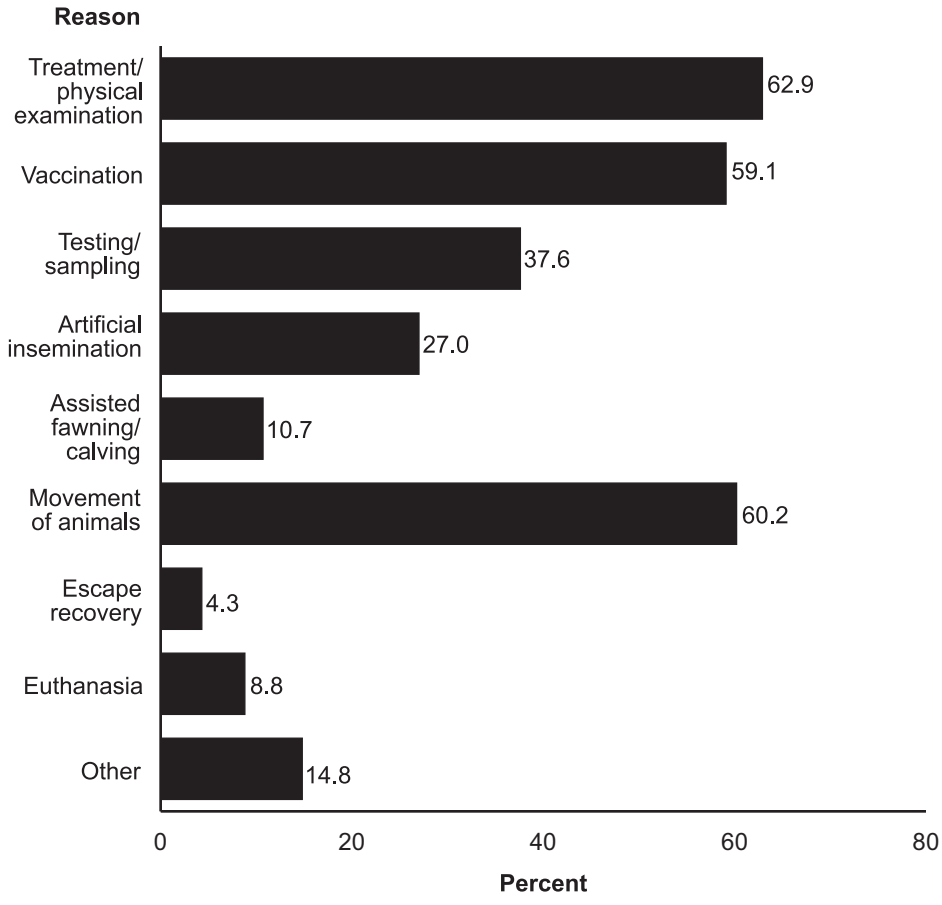
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Treatment/ physical examination	64.4	(2.3)	59.0	(3.5)	62.0	(4.2)	62.9	(1.8)
Vaccination	60.9	(2.4)	55.0	(3.6)	57.2	(4.3)	59.1	(1.8)
Testing/ sampling	37.3	(2.2)	40.5	(3.4)	33.8	(4.4)	37.6	(1.7)
Artificial insemination	34.3	(2.1)	10.3	(1.9)	19.4	(3.2)	27.0	(1.5)
Assisted fawning/ calving	10.3	(1.3)	11.6	(1.8)	11.6	(2.4)	10.7	(1.0)
Movement of animals	59.8	(2.4)	60.6	(3.4)	61.5	(4.3)	60.2	(1.8)
Escape recovery	3.8	(0.9)	2.5	(1.0)	10.9	(2.9)	4.3	(0.7)
Euthanasia	10.3	(1.3)	3.3	(1.4)	11.4	(2.9)	8.8	(1.0)
Other	14.4	(1.8)	15.9	(2.8)	15.3	(2.8)	14.8	(1.4)

*Includes elk, red deer, sika deer, and hybrids.

For the 54.1 percent of operations that handled cervids, percentage of operations by reason for handling



Operations with 1 to 19 cervids represented the lowest percentage of operations that handled cervids.

D.1.l. For the 54.1 percent of operations that handled cervids (table D.1.e), percentage of operations by reason for handling and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Treatment/ physical examination	52.7	(3.8)	65.9	(3.6)	66.5	(3.5)	66.4	(3.7)	76.7	(3.3)
Vaccination	38.9	(3.7)	64.3	(3.6)	66.1	(3.6)	76.2	(3.4)	77.3	(3.5)
Testing/ sampling	24.1	(3.3)	38.3	(3.7)	47.4	(3.7)	45.3	(3.9)	51.1	(3.9)
Artificial insemination	7.2	(2.0)	21.5	(3.0)	39.0	(3.7)	49.6	(3.9)	53.5	(3.9)
Assisted fawning/ calving	2.8	(1.0)	8.9	(2.1)	16.0	(2.9)	16.8	(2.8)	23.3	(3.3)
Movement of animals	40.6	(3.7)	59.1	(3.8)	69.6	(3.4)	83.1	(2.9)	80.2	(3.1)
Escape recovery	2.5	(1.1)	4.6	(1.8)	7.4	(1.9)	4.1	(1.5)	3.5	(1.5)
Euthanasia	4.3	(1.5)	9.5	(2.2)	10.2	(2.4)	14.4	(2.6)	12.1	(2.5)
Other	23.0	(3.2)	9.1	(2.1)	8.9	(2.2)	18.8	(3.0)	9.9	(2.3)

Almost half of all operations sometimes sorted cervids before handling them, and almost one-third never sorted animals before handling them. A higher percentage of deer operations than combination operations always sorted animals before handling them.

D.1.m. For the 54.1 percent of operations that handled cervids (table D.1.e), percentage of operations by how often cervids were sorted (e.g., by gender or age) prior to being handled, and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
How often cervids sorted	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Always	24.2	(1.9)	20.4	(2.8)	14.1	(3.0)	22.1	(1.4)
Sometimes	46.6	(2.4)	47.7	(3.6)	39.4	(4.1)	46.0	(1.8)
Never	29.2	(2.3)	31.9	(3.4)	46.5	(4.4)	31.8	(1.7)
Total	100.0		100.0		100.0		100.0	

*Includes red deer, sika deer, and hybrids.

Perhaps because it is easier to work with smaller numbers of cervids, a lower percentage of operations with 1 to 19 cervids than operations of any other size always sorted cervids before handling them. Similarly, almost half of operations with 1 to 19 cervids never sorted cervids before handling them, which is a higher percentage than for any other size category.

D.1.n. For the 54.1 percent of operations that handled cervids (table D.1.e), percentage of operations by how often cervids were sorted, (e.g., by gender or age) prior to being handled, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
How often cervids sorted	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Always	9.4	(2.2)	27.5	(3.4)	26.4	(3.2)	30.8	(3.8)	31.1	(3.6)
Sometimes	41.7	(3.8)	44.9	(3.8)	51.4	(3.7)	52.1	(3.9)	44.8	(3.9)
Never	48.9	(3.8)	27.7	(3.4)	22.2	(3.1)	17.1	(2.9)	24.1	(3.5)
Total	100.0		100.0		100.0		100.0		100.0	

More than half of all operations provided some form of training for people who handled cervids on the operation. A lower percentage of operations with 1 to 19 cervids and with 20 to 49 cervids provided handler training than operations in the three larger size categories.

D.1.o. For the 54.1 percent of operations that handled cervids (table D.1.e), percentage of operations that provided training (including on the job) to people who handled cervids, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
43.6	(3.8)	48.0	(3.8)	65.4	(3.5)	72.0	(3.5)	77.9	(3.3)	56.0	(1.8)

Almost two-thirds of operations that handled cervids used remote chemical restraint, e.g., darting, for handling cervids. More than 73 percent of deer and combination operations used at least one of the listed means of restraint for handling cervids compared with about 28 percent of elk operations. Similarly, a lower percentage of elk operations than deer and combination operations used either direct or remote chemical restraints for handling cervids.

D.1.p. For the 54.1 percent of operations that handled cervids (table D.1.e), percentage of operations by means ever used to handle cervids, by operation type:

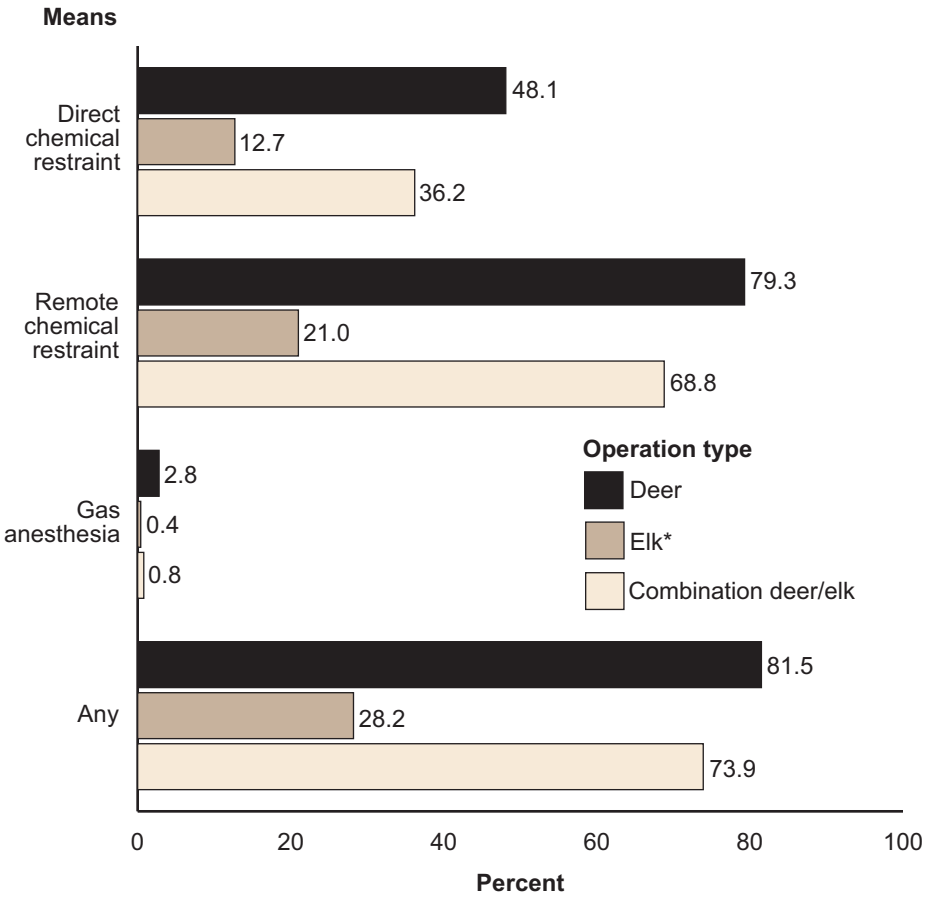
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Means	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Direct chemical restraint, e.g., injection	48.1	(2.4)	12.7	(2.1)	36.2	(4.1)	38.6	(1.7)
Remote chemical restraint, e.g., darting	79.3	(2.0)	21.0	(2.9)	68.8	(4.0)	64.6	(1.7)
Gas anesthesia, e.g., mask	2.8	(0.7)	0.4	(0.3)	0.8	(0.5)	2.0	(0.4)
Any	81.5	(2.0)	28.2	(3.1)	73.9	(3.8)	68.3	(1.6)

*Includes red deer, sika deer, and hybrids.

For the 54.1 percent of operations that handled cervids, percentage of operations by means ever used to handle cervids



*Includes elk, red deer, sika deer, and hybrids.

Operations with 1 to 19 cervids represented the lowest percentage of operations that used any of the means listed in the following table to handle cervids. Similarly, a lower percentage of operations with 1 to 19 cervids than operations in the other size categories used either direct or remote chemical restraints.

D.1.q. For the 54.1 percent of operations that handled cervids (table D.1.e), percentage of operations by means ever used to handle cervids, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Means	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Direct chemical restraint, e.g., injection	20.6	(3.0)	40.3	(3.7)	49.4	(3.7)	57.3	(3.9)	49.0	(3.9)
Remote chemical restraint e.g., darting	50.9	(3.7)	68.7	(3.2)	69.7	(3.1)	74.7	(3.4)	77.0	(3.3)
Gas anesthesia, e.g., mask	0.6	(0.5)	2.1	(1.2)	0.0	(—)	4.2	(1.6)	7.5	(2.0)
Any	54.4	(3.7)	73.6	(3.0)	71.8	(3.0)	79.5	(3.3)	80.4	(3.1)

E. Biosecurity

Note: Unless otherwise noted, data in all tables in this section refer to the period from July 1, 2013, through June 30, 2014**.**

1. Movement

Approximately 5 percent of all operations had any cervids leave the operation and return.

E.1.a. Percentage of operations that had any cervids leave the operation and return, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
6.1	(0.8)	2.3	(0.9)	4.7	(1.4)	5.1	(0.6)

*Includes red deer, sika deer, and hybrids.

Of the 5.1 percent of operations in which any cervids left the operation and returned, about half sent breeding females to another operation for breeding and then returned them. Just over one-fourth of operations sent breeding males to another operation and returned them.

E.1.b. For the 5.1 percentage of operations in which any cervids left the operation and returned (table E.1.a), percentage of operations by reason for leaving the operation:

Reason for leaving operation	Percent operations	Std. error
Breeding males sent to another operation for breeding purposes and returned	28.3	(4.8)
Breeding females sent to another operation for breeding purposes and returned	51.4	(6.2)
Cervids moved off-site to pasture on another operation and returned	15.5	(4.5)
Other	29.5	(6.3)

2. Cervids moved onto operation

Nearly 20 percent of all operations added new cervids to their herd. A lower percentage of elk operations than deer and combination operations added new cervids.

E.2.a. Percentage of operations that permanently or temporarily brought any new cervids to the operation, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
23.2	(1.4)	8.8	(1.5)	20.9	(2.4)	19.8	(1.0)

*Includes elk, red deer, sika deer, and hybrids.

A lower percentage of operations with 1 to 19 cervids than operations with 20 or more added new cervids to the operation.

E.2.b. Percentage of operations that permanently or temporarily brought any new cervids onto the operation, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more	
Pct.	Std. Error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
6.9	(1.3)	25.2	(2.6)	29.0	(2.7)	34.2	(3.0)	32.7	(3.2)

For operations that added new cervids, the highest percentage sourced new cervids via private sales. Almost 20 percent of deer and combination operations sourced new additions from auctions.

E.2.c. For the 19.8 percent of operations that permanently or temporarily brought any cervids onto the operation (table E.2.a), percentage of operations by source of new cervids and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Source	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Private sale	71.4	(3.2)	70.2	(8.7)	76.8	(5.8)	72.0	(2.7)
Trade	7.1	(1.8)	8.7	(4.9)	7.4	(3.1)	7.3	(1.5)
Auction	18.9	(2.7)	8.0	(6.7)	19.3	(4.7)	17.9	(2.3)
Dealer	0.9	(0.5)	0.0	(—)	15.9	(5.4)	2.9	(0.9)
Other	14.7	(2.6)	9.7	(5.4)	4.7	(2.4)	12.9	(2.1)

*Includes elk, red deer, sika deer, and hybrids.

Over 80 percent of added cervids were sourced via private sales.

E.2.d. For the 19.8 percent of operations that permanently or temporarily brought any cervids onto the operation (table E.2.a), percentage of cervids brought onto the operation, by source of cervids and by operation type:

Percent Cervids

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Source	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Private sale	80.9	(3.0)	84.7	(8.5)	88.2	(2.9)	82.7	(2.3)
Trade	2.9	(0.9)	0.9	(0.6)	1.3	(0.6)	2.4	(0.7)
Auction	5.6	(1.1)	2.4	(2.2)	4.9	(1.6)	5.2	(0.9)
Dealer	0.2	(0.1)	0.0	(—)	4.3	(1.7)	1.0	(0.3)
Other	10.4	(2.8)	12.1	(8.1)	1.3	(0.7)	8.8	(2.1)
Total	100.0		100.0		100.0		100.0	

*Includes red deer, sika deer, and hybrids.

Of operations that added cervids, approximately 25 percent sourced new cervids from out of State.

E.2.e. For the 19.8 percent of operations that permanently or temporarily brought any cervids onto the operation (table E.2.a), percentage of operations that obtained new cervids from an out-of-State source, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
24.9	(3.0)	26.6	(8.3)	20.3	(5.2)	24.4	(2.6)

*Includes red deer, sika deer, and hybrids.

Of operations that added cervids, a higher percentage in the West and Northeast regions obtained new cervids from another State than operations in the South region.

E.2.f. For the 19.8 percent of operations that permanently or temporarily brought any cervids onto the operation (table E.2.a), percentage of operations that obtained cervids from an out-of-State source, by region:

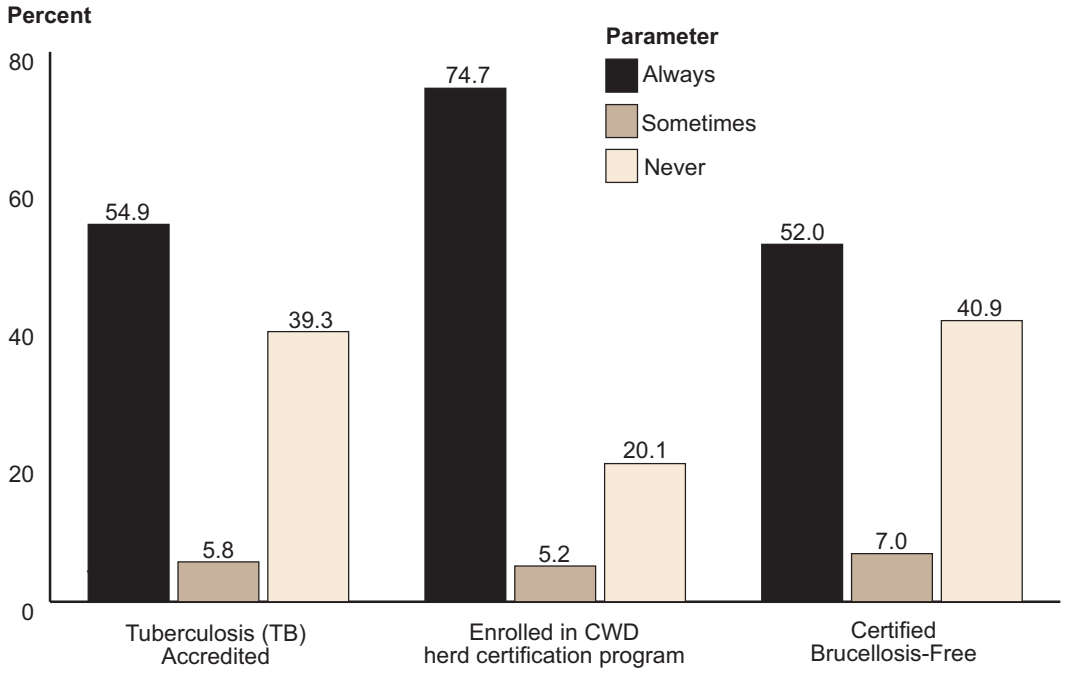
Percent Operations					
Region					
West		Northeast		South	
Percent	Std. error	Percent	Std. error	Percent	Std. error
38.4	(8.7)	31.7	(3.9)	10.7	(3.0)

Of operations that added any cervids, just over half always required that the herd of origin be TB Accredited. Approximately three-fourths of operations always required that the source herd be enrolled in a chronic wasting disease (CWD) herd certification program, and about half always required that the herd of origin be Certified Brucellosis Free.

E.2.g. For the 19.8 percent of operations that permanently or temporarily brought any cervids onto the operation (table E.2.a), percentage of operations by how often the operation required that the herd of origin for new cervids be TB Accredited, enrolled in a CWD herd certification program, or Certified Brucellosis Free.

	Percent Operations Required						
	Always		Sometimes		Never		
Parameter	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Total
Tuberculosis (TB) Accredited	54.9	(2.9)	5.8	(1.3)	39.3	(2.8)	100.0
Enrolled in a chronic wasting disease (CWD) herd certification program	74.7	(2.4)	5.2	(1.2)	20.1	(2.2)	100.0
Certified Brucellosis Free	52.0	(2.9)	7.0	(1.4)	40.9	(2.8)	100.0

For the 19.8 percent of operations that permanently or temporarily brought any cervids onto the operation, percentage of operations by how often the operation required that the herd of origin for new cervids be TB Accredited, enrolled in a CWD herd certification program, or Certified Brucellosis Free



3. Isolation

Nearly 30 percent of operations that added cervids always isolated them before introducing them to the herd. Over two-thirds of operations with 200 or more cervids always or sometimes isolated new additions.

E.3.a. For the 19.8 percent of operations that brought any cervids onto the operation (table E.2.a), percentage of operations by how often new additions were isolated before being introduced to the herd, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more		All operations	
Parameter	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Always	36.6	(9.0)	26.7	(5.4)	28.4	(5.1)	24.3	(4.8)	38.1	(5.8)	29.4	(2.7)
Sometimes	9.1	(5.4)	12.1	(3.5)	13.2	(4.0)	19.2	(3.9)	30.8	(5.3)	15.4	(1.9)
Never	54.3	(9.5)	61.2	(5.9)	58.5	(5.6)	56.5	(5.3)	31.1	(5.7)	55.1	(2.9)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

For operations that isolated new additions, there was wide variation in the number of days that the new additions were isolated.

E.3.b. For the 29.4 percent of operations that always isolated new additions (table E.3.a), percentage of operations by number of days new additions were typically isolated on the operation:

Number of days	Percent operations	Std. error
0	12.8	(3.2)
1 to 7	20.0	(3.6)
8 to 14	19.8	(3.5)
15 to 30	32.1	(4.0)
More than 30	15.4	(2.7)

4. Contact with wild animals

Over half of all operations had observed wild white-tailed deer near their perimeter fence line. White-tailed deer were the wild animals seen inside or near perimeter fence lines by the highest percentages of operations. In the South region, feral swine were seen near the perimeter fence line on nearly one-fourth of operations and inside the perimeter fence on 9.0 percent. In the West region, mule deer and elk were seen near the perimeter fence line on about one-fourth of operations.

E.4.a. Percentage of operations by type of wild animal seen inside the operation's perimeter fence or near the perimeter fence line, and by region:

Percent Operations

Region

	West		Northeast		South		All operations	
Wild animal	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Inside perimeter fence								
White-tailed deer	4.7	(1.4)	4.9	(0.8)	22.1	(1.9)	11.0	(0.8)
Mule deer	6.0	(1.7)	0.5	(0.3)	0.5	(0.2)	1.0	(0.2)
Elk	3.3	(1.3)	0.7	(0.2)	2.2	(0.5)	1.5	(0.2)
Other wild cervids	2.1	(1.2)	0.5	(0.2)	3.2	(0.7)	1.6	(0.3)
Bighorn sheep	0.0	(—)	0.2	(0.1)	0.4	(0.2)	0.3	(0.1)
Other wild sheep	0.7	(0.4)	0.0	(—)	1.1	(0.4)	0.5	(0.2)
Wild goats	0.0	(—)	0.0	(—)	0.6	(0.3)	0.2	(0.1)
Feral swine	0.6	(0.4)	0.4	(0.3)	9.2	(1.3)	3.6	(0.5)
Near perimeter fence line								
White-tailed deer	33.6	(3.4)	52.2	(2.0)	57.8	(2.3)	52.6	(1.4)
Mule deer	24.6	(3.1)	0.7	(0.4)	1.2	(0.4)	2.9	(0.4)
Elk	27.8	(3.2)	0.6	(0.2)	1.2	(0.3)	3.1	(0.3)
Other wild cervids	6.9	(1.7)	0.8	(0.3)	5.0	(1.0)	2.8	(0.4)
Bighorn sheep	1.7	(0.9)	0.4	(0.3)	0.5	(0.2)	0.6	(0.2)
Other wild sheep	1.2	(1.0)	0.1	(0.1)	1.7	(0.6)	0.8	(0.2)
Wild goats	0.0	(—)	0.0	(—)	0.6	(0.4)	0.2	(0.1)
Feral swine	2.1	(0.8)	0.9	(0.3)	23.5	(1.9)	9.0	(0.7)

The highest percentages of all operations used woven wire for perimeter fencing, followed by high-tensile wire. Nearly 20 percent of deer operations used chain link for perimeter fencing. Some operations used more than one perimeter fence type.

E.4.b. Percentage of operations by type of perimeter fencing used to confine farmed cervids and exclude wild cervids and other wildlife, and by operation type:

Percent Operations

	Operation Type							
	Deer		Elk[1]		Combination deer/elk		All operations	
Fence type[2]	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Woven wire	61.3	(1.8)	63.6	(2.9)	63.5	(3.3)	62.1	(1.4)
Wood	4.8	(0.8)	11.8	(2.0)	4.9	(1.8)	6.2	(0.7)
Chain link	19.4	(1.5)	6.2	(1.5)	14.3	(2.6)	15.9	(1.1)
High-tensile wire	45.9	(1.8)	51.9	(3.0)	51.7	(3.3)	47.9	(1.4)
Electric	7.2	(0.9)	1.1	(0.4)	4.8	(1.1)	5.6	(0.6)
Barbed wire	7.1	(0.9)	6.4	(1.4)	13.6	(2.3)	7.8	(0.7)
Other	4.9	(0.8)	4.3	(1.1)	9.1	(1.8)	5.3	(0.6)

[1]Includes elk, red deer, sika deer, and hybrids.
[2]Multiple types of fencing may be included in the reported results.

Over 90 percent of operations that used woven wire or high-tensile wire for **perimeter** fencing had fence heights of 8 feet or higher. Electric fencing was less than 8 feet high on about two-thirds of operations.

E.4.c. For operations with the specified perimeter fence type (table B.4.b), percentage of operations by fence height:

	Percent Operations						
	Fence Height (ft)						
	Less than 8		8–10		More than 10		
Fence type*	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Total
Woven wire	7.8	(1.0)	90.7	(1.1)	1.5	(0.5)	100.0
Wood	7.6	(3.2)	85.2	(4.4)	7.2	(3.2)	100.0
Chain link	19.7	(3.4)	78.5	(3.4)	1.8	(1.1)	100.0
High-tensile wire	6.1	(1.1)	92.9	(1.1)	1.0	(0.4)	100.0
Electric	62.1	(5.6)	35.5	(5.5)	2.4	(1.2)	100.0
Barbed wire	30.9	(5.0)	63.5	(5.2)	5.6	(2.4)	100.0
Other	23.0	(5.1)	77.0	(5.1)	0.0	(—)	100.0

*Multiple types of fencing may be included for a single operation.

Many operations used multiple types of perimeter fencing. For example, of operations that used some woven-wire fencing, 51.2 percent also used fencing other than woven wire.

E.4.d. For operations with the specified perimeter fence type (table B.4.b), percentage of operations that used more than one type of fencing:

Fence type	Percent operations	Std. error
Woven wire	51.2	(1.8)
Wood	93.3	(3.3)
Chain link	66.8	(3.8)
High-tensile wire	55.0	(2.0)
Electric	95.5	(2.2)
Barbed wire	96.3	(1.8)
Other	53.1	(6.1)

Almost one of six operations used double fencing around their perimeter.

E.4.e. Percentage of operations that used double fencing around their perimeter, by operation type:

Percent Operations							
Operation Type							
Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
16.9	(1.3)	12.2	(1.9)	16.8	(2.6)	15.9	(1.0)

[1]Includes red deer, sika deer, and their hybrids.

About one-fourth of operations with 200 or more cervids used double fencing around their perimeter. A higher percentage of operations with 200 or more cervids than operations with fewer than 50 cervids used double fencing.

E.4.f. Percentage of operations that used double fencing around their perimeter, by herd size:

Percent Operations									
Herd Size (number of cervids)									
1–19		20–49		50–99		100–199		200 or more	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
13.2	(1.6)	14.3	(2.1)	19.4	(2.5)	18.0	(2.3)	25.1	(3.0)

There were no regional differences in the percentage of operations that used double fencing for their perimeter.

E.4.g. Percentage of operations that used double fencing around their perimeter, by region:

Percent Operations					
Region					
West		Northeast		South	
Percent	Std. error	Percent	Std. error	Percent	Std. error
16.2	(2.6)	15.0	(1.4)	17.1	(1.7)

Only 6.4 percent of all operations had any cervids escape. The percentage of operations that had cervids escape was similar across herd sizes.

E.4.h. Percentage of operations that had any cervids escape, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
6.2	(1.2)	6.2	(1.5)	7.1	(1.6)	7.2	(1.8)	5.5	(1.6)	6.4	(0.7)

A higher percentage of operations in the South region than in the Northeast or West regions had any cervids escape.

E.4.i. Percentage of operations that had any cervids escape, by region:

Percent Operations

Region

West		Northeast		South	
Percent	Std. error	Percent	Std. error	Percent	Std. error
2.7	(1.3)	4.7	(0.8)	10.1	(1.5)

Only 1 percent of operations that used electric fencing as a component of their perimeter fencing had one or more escapes.

E.4.j. For operations with the specified perimeter fence type (table B.4.b), percentage of operations that had one or more cervids escape:

Fence type	Percent operations	Std. error
Woven wire	5.7	(0.8)
Wood	7.5	(2.9)
Chain link	7.0	(2.0)
High-tensile wire	4.8	(0.8)
Electric	1.0	(0.7)
Barbed wire	9.5	(3.1)
Other	6.9	(3.0)
All fence types	6.4	(0.7)

Less than 8 percent of all operations reported that another operation with farmed cervids was within 1 mile of their operation.

E.4.k. Percentage of operations in which farmed cervids from a different operation were within 1 mile of their operation, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
4.0	(1.0)	11.3	(1.9)	8.6	(1.7)	7.8	(1.7)	8.9	(2.1)	7.3	(0.7)

A higher percentage of operations in the South region than in the other two regions reported that farmed cervids from another operation were within 1 mile of their operation.

E.4.l. Percentage of operations in which farmed cervids from a different operation were within 1 mile of their operation, by region:

Percent Operations

Region

West		Northeast		South	
Percent	**Std. error**	**Percent**	**Std. error**	**Percent**	**Std. error**
4.2	(1.7)	5.3	(0.9)	11.2	(1.4)

Of the 7.3 percent of operations that reported farmed cervids from a different operation within 1 mile of their operation (table E.4.k), about one-third reported that their cervids had fence-line contact with cervids from another operation.

E.4.m. For the 7.3 percent of operations in which farmed cervids from a different operation were within 1 mile of their operation, percentage of operations in which their cervids had fence-line contact with cervids from a different operation, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more		All operations	
Pct.	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
31.6	(12.0)	33.5	(8.2)	32.0	(10.0)	18.8	(9.1)	73.6	(12.0)	34.3	(4.9)

Of the 7.3 percent of operations that had farmed cervids form a different operation within 1 mile (table E.4.k), over half in the South region reported that their cervids had fence-line contact with cervids from a different operation.

E.4.n. For the 7.3 percent of operations that had farmed cervids from a different operation within 1 mile of their operation (table E.4.k), percentage of operations in which their cervids had fence-line contact with cervids from a different operation, by region:

Percent Operations					
Region					
West*		Northeast		South	
Percent	Std. error	Percent	Std. error	Percent	Std. error
		11.5	(5.8)	52.7	(7.0)

*Too few to report.

F. Reproduction

Note: Unless otherwise noted, data in all tables in this section refer to the period from July 1, 2013, through June 30, 2014.

1. Breeding

About two-thirds of all operations bred cervids.

F.1.a. Percentage of operations that bred any cervids, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Both deer and elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
68.0	(1.7)	67.7	(2.8)	71.7	(3.0)	68.4	(1.3)

*Includes elk, red deer, sika deer, and hybrids.

At least 79 percent of operations with 20 or more cervids bred cervids. Less than half of operations with fewer than 20 head bred cervids.

F.1.b. Percentage of operations that bred any cervids, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
48.9	(2.5)	79.5	(2.3)	82.5	(2.3)	83.9	(2.4)	86.9	(2.3)

About three-fourths of all operations that bred cervids placed a single male with multiple females as a breeding practice. Artificial insemination was used on over one-fourth of deer operations. Embryo transfer was used on less than 1 percent of all operations.

F.1.c. For the 68.4 percent of operations that bred any cervids (table F.1.a), percentage of operations by breeding practice and by operation type:

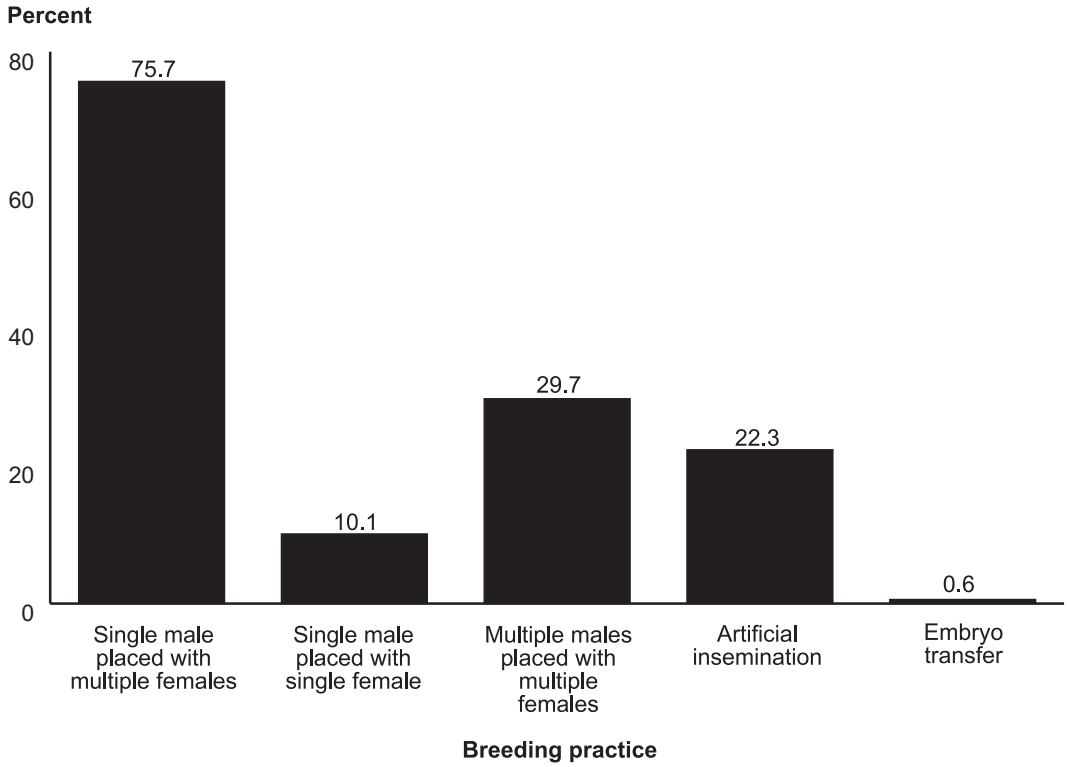
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Breeding practice	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Single male placed with multiple females	77.7	(1.8)	78.0	(3.0)	62.9	(3.8)	75.7	(1.4)
Single male placed with single female	11.8	(1.5)	7.1	(2.1)	6.4	(2.2)	10.1	(1.1)
Multiple males placed with multiple females	23.7	(1.7)	26.7	(3.1)	63.0	(3.8)	29.7	(1.4)
Artificial insemination	28.0	(1.7)	11.4	(2.0)	11.7	(2.0)	22.3	(1.2)
Embryo transfer	0.7	(0.3)	0.0	(—)	1.1	(0.5)	0.6	(0.2)

*Includes elk, red deer, sika deer, and hybrids.

For the 68.4 percent of operations that bred any cervids, percentage of operations by breeding practice



Over half of operations with 200 or more cervids used artificial insemination as a breeding practice. Almost 20 percent of operations with fewer than 1 to 19 cervids placed a single male with a single female for breeding.

F.1.d. For the 68.4 percent of operations that bred any cervids (table F.1.a), percentage of operations by breeding practice and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Breeding practice	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Single male placed with multiple females	68.4	(3.4)	78.5	(2.6)	79.4	(2.6)	75.0	(3.0)	82.7	(2.8)
Single male placed with single female	18.4	(2.9)	9.3	(2.1)	4.9	(1.6)	5.4	(1.5)	4.7	(1.4)
Multiple males placed with multiple females	21.9	(2.9)	32.2	(3.0)	32.8	(3.0)	34.9	(3.3)	32.3	(3.4)
Artificial insemination	5.8	(1.7)	15.5	(2.2)	31.1	(3.1)	39.9	(3.4)	51.2	(3.7)
Embryo transfer	0.0	(—)	0.0	(—)	0.8	(0.7)	1.5	(0.8)	2.6	(1.0)

2. Males and females brought onto operation for breeding

Less than 5 percent of all breeding operations brought another cervid onto the operation for breeding purposes.

F.2. For the 68.4 percentage of operations that bred any cervids (table F.1.a), percentage of operations that temporarily brought males and/or females from another operation onto the operation for breeding purposes, by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Both deer and elk		All operations	
Temporarily brought	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Males	4.0	(0.8)	1.2	(0.6)	3.5	(1.1)	3.3	(0.5)
Females	6.0	(0.9)	0.0	(—)	2.9	(1.1)	4.3	(0.6)

*Includes elk, red deer, sika deer, and hybrids.

3. Fawns and calves

On average, over 80 percent of all bred females on deer operations gave birth to a live fawn. An average of three-fourths of females on elk operations and on combination operations gave birth to a live fawn or calf.

F.3.a. Operation average percentage of bred female cervids that gave birth to a live fawn or calf during the last breeding season, by operation type:

Operation Average Percent

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error
82.6	(1.3)	74.3	(2.1)	74.6	(2.5)	79.7	(1.0)

*Includes elk, red deer, sika deer, and hybrids.

On average, a lower percentage of female cervids on operations with 1 to 19 cervids gave birth to a live fawn or calf compared with operations with 20 or more cervids.

F.3.b. Operation average percentage of bred female cervids that gave birth to a live fawn or calf during the last breeding season, by herd size:

Operation Average Percent

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more	
Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error
71.1	(2.6)	81.6	(1.8)	84.4	(1.3)	83.7	(1.6)	85.8	(1.3)

On average, about 80 percent of fawns on deer operations survived and were successfully weaned, while about 90 percent of offspring on elk operations survived and were successfully weaned.

F.3.c. Operation average percentage of fawns and calves born after the last breeding season that survived and were successfully weaned, by operation type:

Operation Average Percent

Operation Type

Deer		Elk*		Combination deer/elk	
Avg.	Std. error	Avg.	Std. error	Avg.	Std. error
80.2	(1.3)	92.2	(1.3)	77.9	(2.3)

*Includes elk, red deer, sika deer, and hybrids.

Across herd sizes, a similar average percentage of fawns and calves survived and were successfully weaned.

F.3.d. Operation average percentage of fawns and calves born after the last breeding season that survived and were successfully weaned, by herd size:

Operation Average Percent Fawns and Calves Successfully Weaned

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more	
Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error
81.8	(2.4)	84.1	(1.7)	81.2	(1.5)	82.3	(2.0)	82.5	(1.3)

Over half of all operations that bred any cervids had any fawns and/or calves die before weaning. One-fourth of deer operations had fawn or calf deaths due to respiratory disease. About two-thirds of deer and combination operations and one-third of elk operations had any fawn or calf deaths.

F.3.e. For the 68.4 percentage of operations that bred any cervids (table F.1.a), percentage of operations that had any fawns and/or calves die before weaning, by reason and by operation type:

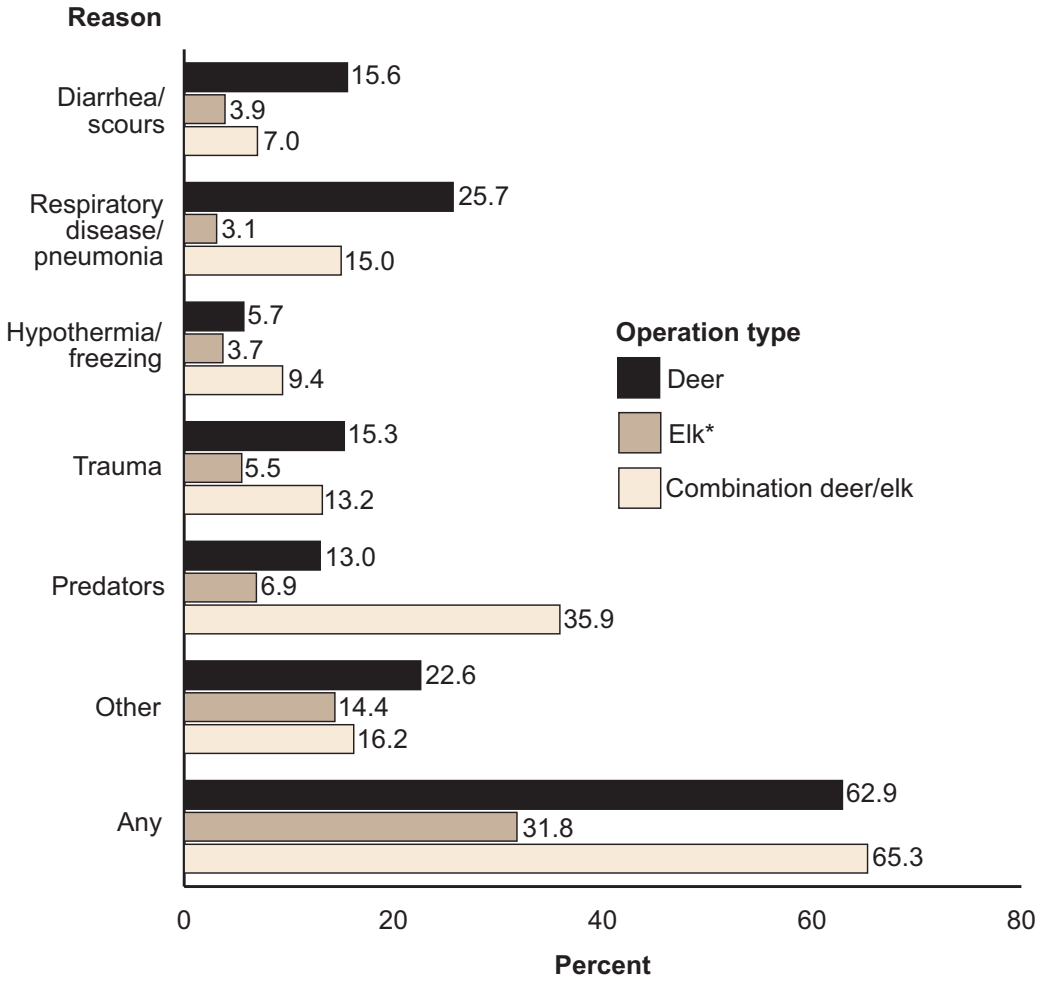
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Diarrhea/scours	15.6	(1.3)	3.9	(1.1)	7.0	(1.6)	11.9	(0.9)
Respiratory disease/pneumonia	25.7	(1.7)	3.1	(1.0)	15.0	(2.6)	19.4	(1.2)
Hypothermia/ freezing	5.7	(0.9)	3.7	(1.0)	9.4	(2.1)	5.8	(0.7)
Trauma	15.3	(1.4)	5.5	(1.2)	13.2	(2.4)	13.0	(1.0)
Predators	13.0	(1.3)	6.9	(1.6)	35.9	(3.7)	14.8	(1.0)
Other	22.6	(1.8)	14.4	(2.3)	16.2	(2.6)	20.0	(1.3)
Any	62.9	(2.1)	31.8	(3.0)	65.3	(3.9)	56.6	(1.6)

*Includes elk, red deer, sika deer, and hybrids.

For the 68.4 percent of operations that bred any cervids, percentage of operations that had any fawns and/or calves die before weaning, by reason and by operation type



*Includes elk, red deer, sika deer, and hybrids.

Reasons for fawn and calf deaths varied across regions. A higher percentage of operations in the South region than in the West and Northeast regions had any fawn and/or calf deaths. Respiratory disease/pneumonia was a cause of death for offspring on a much higher percentage of operations in the Northeast and South regions than in the West region.

F.3.f. For the 68.4 percent of operations that bred any cervids (table F.1.a), percentage of operations that had any fawns and/or calves die before weaning, by reason and by region:

	Percent Operations					
	Region					
	West		Northeast		South	
Reason	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Diarrhea/scours	6.0	(1.7)	13.6	(1.3)	10.8	(1.5)
Respiratory disease/pneumonia	6.1	(1.8)	21.6	(1.7)	19.3	(1.9)
Hypothermia/freezing	6.2	(1.8)	6.1	(0.9)	5.2	(1.1)
Trauma	9.8	(2.1)	11.0	(1.3)	16.6	(1.9)
Predators	14.8	(2.6)	9.0	(1.1)	23.7	(2.2)
Other	14.2	(3.0)	17.9	(1.8)	24.5	(2.3)
Any reason	43.7	(4.0)	51.8	(2.3)	67.1	(2.6)

Fawns and calves remained with their mothers and the herd before weaning on nearly three-fourths of operations that bred cervids.

F.3.g. For the 68.4 percentage of operations that bred any cervids (table F.1.a), percentage of operations by preweaning management practices for fawns and calves born after the last breeding season, and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Preweaning Management	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Fawns and calves remained with mothers and remained with the herd	68.8	(1.9)	75.0	(2.8)	82.7	(2.8)	72.0	(1.4)
Fawns and calves remained with mothers, but were separated from the rest of the herd	16.7	(1.5)	18.3	(2.4)	6.9	(1.9)	15.7	(1.1)
Fawns and calves were separated from their mothers and bottle fed	7.5	(1.1)	1.5	(1.0)	6.1	(1.7)	6.0	(0.8)
Other	7.0	(1.1)	5.2	(1.3)	4.3	(1.3)	6.2	(0.8)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

4. Colostrum feeding

Over 90 percent of operations gave most newborns colostrum from their mother. Just over 5 percent of operations gave most fawns and calves colostrum from deer/elk on the operation other than the mother.

F.4.a. Percentage of operations by number of fawns and calves that received colostrum, and by source:

	Percent Operations						
	Number Fawns and Calves						
	Most		Some		None		
Source	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Total
Colostrum from mother (either nursing or by hand)	92.0	(1.0)	1.0	(0.4)	7.0	(0.9)	100.0
Colostrum from other deer/elk on operation	5.5	(0.8)	3.7	(0.6)	90.8	(0.9)	100.0
Colostrum from a goat or a sheep	1.0	(0.4)	1.3	(0.3)	97.7	(0.5)	100.0
Colostrum from a cow	0.7	(0.2)	0.8	(0.2)	98.5	(0.3)	100.0
Commercial colostrum product	3.5	(0.7)	5.8	(0.6)	90.7	(0.9)	100.0

Across operations types, over 90 percent of operations sourced colostrum fed to most or some fawns/calves from the mother. A higher percentage of deer operations than elk operations fed colostrum from a goat or sheep and fed commercial colostrum products.

F.4.b. Percentage of operations on which most or some fawns/calves received colostrum, by source of colostrum and by operation type:

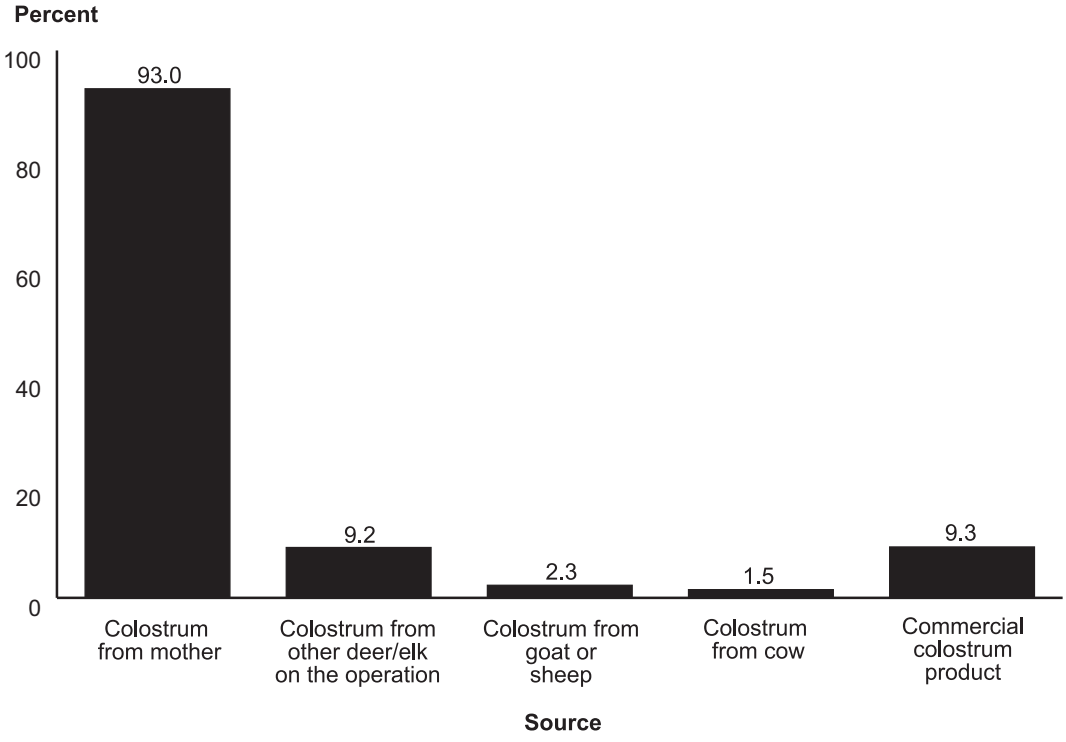
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Source	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Colostrum from the mother (either nursing or by hand)	93.0	(1.2)	91.2	(2.0)	95.7	(1.6)	93.0	(0.9)
Colostrum from other deer/elk on the operation	8.6	(1.2)	9.8	(2.2)	10.8	(2.2)	9.2	(0.9)
Colostrum from a goat or a sheep	3.1	(0.8)	0.4	(0.3)	1.9	(0.8)	2.3	(0.5)
Colostrum from a cow	1.9	(0.5)	0.5	(0.3)	1.4	(0.7)	1.5	(0.3)
Commercial colostrum product	11.6	(1.3)	3.1	(1.2)	7.9	(2.0)	9.3	(0.9)

*Includes elk, red deer, sika deer, and hybrids.

Percentage of operations on which most or some fawns/calves received colostrum, by source of colostrum



Three-fourths of all operations typically fed colostrum to newborns within 1 hour of birth; over 90 percent fed newborns colostrum within 6 hours of birth. Only 5 percent of all operations waited 13 hours or more before feeding newborns colostrum.

F.4.c. Percentage of operations by number of hours following birth that newborn fawns/calves typically received their **first** colostrum (from any source), and by operation type:

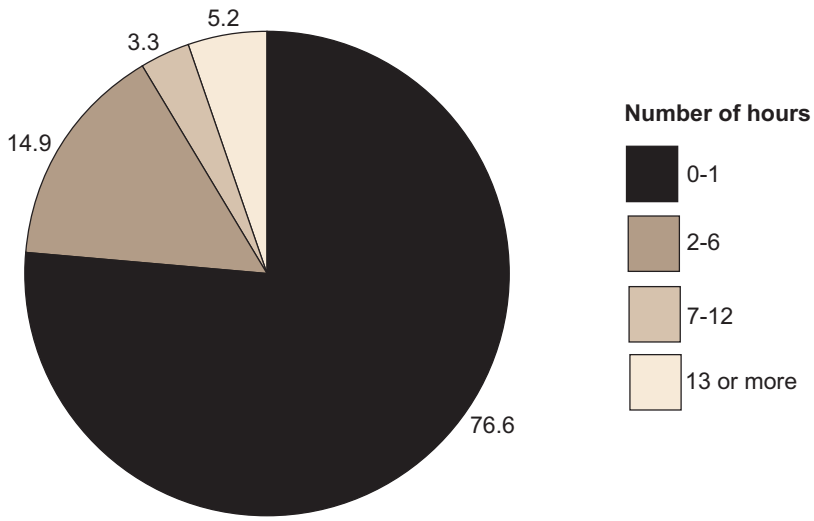
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Number of hours	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
0 to 1	74.6	(2.0)	78.9	(3.0)	82.7	(2.9)	76.6	(1.5)
2 to 6	15.4	(1.7)	16.8	(2.7)	9.5	(2.1)	14.9	(1.3)
7 to 12	4.1	(0.9)	0.7	(0.5)	3.5	(1.3)	3.3	(0.6)
13 or more	5.9	(1.1)	3.7	(1.4)	4.3	(1.8)	5.2	(0.8)
Total	100.0		100.0		100.0		100.0	

*Includes red deer, sika deer, and their hybrids.

Percentage of operations by number of hours following birth that newborn fawns/calves typically received their *first* colostrum (from any source)



G. Health Management

Note: Unless otherwise noted, data in all tables in this section refer to the period from July 1, 2013, through June 30, 2014.

1. Disease and vaccination

Producers on over three-fourths of all operations were very or moderately familiar with chronic wasting disease (CWD). Producers on over half of operations were very or moderately familiar with tuberculosis (TB), brucellosis, and epizootic hemorrhagic disease (EHD). Two-thirds of respondents had no familiarity with malignant catarrhal fever (MCF), and over half had no familiarity with clostridial diseases.

G.1.a. Percentage of operations by level of familiarity with the following diseases:

	Percent Operations								
	Level of Familiarity								
	Very		Moderate		Slight		None		
Disease	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Total
Tuberculosis (TB)	37.9	(1.4)	25.9	(1.3)	19.7	(1.2)	16.5	(1.1)	100.0
Chronic wasting disease (CWD)	52.7	(1.4)	24.9	(1.3)	12.8	(1.0)	9.6	(0.9)	100.0
Epizootic hemorrhagic disease (EHD)	36.2	(1.4)	20.7	(1.2)	14.3	(1.0)	28.8	(1.3)	100.0
Malignant catarrhal fever (MCF)	8.3	(0.7)	7.6	(0.7)	15.7	(1.1)	68.4	(1.3)	100.0
Clostridial diseases	15.1	(1.0)	14.4	(1.0)	18.7	(1.2)	51.7	(1.4)	100.0
Brucellosis	26.7	(1.2)	24.1	(1.3)	24.4	(1.3)	24.8	(1.3)	100.0

About one-third of all operations vaccinated any cervids. Nearly twice the percentage of deer operations than elk or combined operations vaccinated any cervids.

G.1.b. Percentage of operations that vaccinated any cervids, by disease and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Disease	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Clostridium perfringens Type A (diarrhea)	25.1	(1.5)	13.3	(1.8)	15.9	(2.4)	21.3	(1.1)
Clostridium perfringens Type C and D (overeating, enterotoxemia)	22.6	(1.5)	11.7	(1.7)	13.6	(2.0)	19.1	(1.1)
Tetanus	19.6	(1.4)	9.8	(1.7)	11.7	(1.9)	16.4	(1.0)
Epizootic hemorrhagic disease (EHD)	13.7	(1.2)	2.6	(0.9)	8.9	(1.6)	10.7	(0.9)
Bluetongue	12.2	(1.1)	4.6	(1.3)	6.4	(1.2)	9.8	(0.8)
Fusobacterium necrophorum (lumpy jaw)	17.8	(1.3)	2.6	(0.9)	8.9	(1.5)	13.4	(0.9)
Pasteurella multocida	23.8	(1.5)	6.7	(1.4)	10.7	(2.0)	18.4	(1.1)
Trueperella pyogenes (actinomyces, *Corynebacterium*, *Arcanobacterium*)	7.3	(0.9)	3.7	(1.0)	6.1	(1.5)	6.4	(0.6)
Other	2.9	(0.6)	6.0	(1.2)	2.6	(0.9)	3.5	(0.5)
Any	40.1	(1.8)	23.1	(2.3)	23.7	(2.7)	34.3	(1.3)

*Includes elk, red deer, sika deer, and hybrids.

2. Veterinarian visits

About half of all operations had a veterinarian visit during the study reference period. A higher percentage of elk operations than deer and combination operations had a veterinarian visit for TB and brucellosis testing.

G.2.a. Percentage of operations that had a veterinarian visit, by reason for visit and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Medical treatment, for illness or injury	21.3	(1.4)	15.2	(2.0)	14.2	(2.1)	19.0	(1.1)
Consultation, such as nutrition or reproduction advice	14.0	(1.2)	7.0	(1.4)	11.7	(1.9)	12.2	(0.9)
Vaccinations	11.2	(1.1)	11.9	(1.8)	9.1	(1.8)	11.1	(0.9)
Health certificate issuance	21.5	(1.5)	27.5	(2.5)	18.2	(2.4)	22.4	(1.1)
Artificial insemination	11.4	(0.9)	5.2	(1.2)	8.4	(1.6)	9.7	(0.7)
CWD sampling	12.5	(1.2)	13.2	(1.9)	11.4	(1.8)	12.5	(0.9)
TB testing	14.4	(1.2)	22.3	(2.3)	8.9	(1.8)	15.3	(0.9)
Brucellosis testing	10.9	(1.0)	18.0	(2.1)	7.5	(1.4)	12.0	(0.8)
Tranquilization/ handling	8.3	(0.9)	6.9	(1.7)	4.5	(1.1)	7.5	(0.7)
Euthanasia	2.4	(0.4)	1.3	(0.7)	1.0	(0.5)	2.0	(0.3)
Other	8.5	(1.1)	6.2	(1.5)	8.0	(1.7)	8.0	(0.8)
Any reason	49.8	(1.8)	48.6	(2.9)	40.3	(3.2)	48.3	(1.4)

*Includes elk, red deer, sika deer, and hybrids.

A higher percentage of operations with 200 or more cervids than operations with fewer than 50 cervids had a veterinarian visit for any reason.

G.2.b. Percentage of operations that had a veterinarian visit, by reason for visit and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Medical treatment, for illness or injury	11.1	(1.6)	18.3	(2.2)	21.1	(2.5)	35.9	(3.0)	38.1	(3.4)
Consultation, such as nutrition or reproduction advice	7.5	(1.4)	12.6	(1.9)	11.5	(1.9)	21.0	(2.6)	28.0	(3.1)
Vaccinations	6.2	(1.2)	15.9	(2.2)	10.6	(1.8)	13.6	(2.1)	20.4	(2.8)
Health certificate issuance	17.2	(1.9)	23.3	(2.5)	25.1	(2.6)	25.2	(2.7)	38.3	(3.4)
Artificial insemination	1.3	(0.6)	7.0	(1.4)	15.7	(2.3)	27.6	(2.9)	27.7	(3.1)
CWD sampling	8.7	(1.4)	13.9	(2.0)	9.7	(1.8)	19.2	(2.6)	27.5	(3.1)
TB testing	8.6	(1.4)	20.2	(2.2)	19.3	(2.3)	16.9	(2.4)	25.8	(3.0)
Brucellosis testing	4.5	(1.0)	17.1	(2.2)	14.8	(2.0)	16.9	(2.4)	23.4	(2.9)
Tranquilization/ handling	5.3	(1.1)	7.7	(1.5)	7.8	(1.8)	11.9	(2.0)	12.6	(2.3)
Euthanasia	0.7	(0.4)	1.8	(0.7)	3.2	(0.9)	3.6	(1.2)	4.6	(1.5)
Other	9.2	(1.5)	5.6	(1.4)	9.9	(2.0)	6.2	(1.6)	7.1	(1.7)
Any reason	39.7	(2.5)	49.3	(2.8)	54.6	(3.0)	58.6	(3.1)	64.6	(3.4)

Operations in the South region accounted for the lowest percentage of operations that had a veterinary visit for any reason. Almost 60 percent of operations in the Northeast region and almost 50 percent in the West region had a veterinarian visit for any reason. A higher percentage of operations in the West and Northeast regions than operations in the South region had a veterinarian visit for health certificate issuance, TB testing, and brucellosis testing.

G.2.c. Percentage of operations that had a veterinarian visit, by reason for visit and by region:

	Percent Operations					
	Region					
	West		Northeast		South	
Reason	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Medical treatment, for illness or injury	16.9	(2.6)	21.3	(1.6)	15.9	(1.5)
Consultation, such as nutrition or reproduction advice	8.3	(1.9)	12.2	(1.3)	13.1	(1.4)
Vaccinations	14.6	(2.3)	13.7	(1.3)	6.2	(1.1)
Health certificate issuance	23.7	(3.0)	29.9	(1.8)	10.2	(1.3)
Artificial insemination	8.0	(1.8)	10.6	(1.0)	8.6	(1.0)
CWD sampling	10.7	(2.2)	16.4	(1.4)	6.9	(1.0)
TB testing	21.5	(2.9)	22.1	(1.6)	3.4	(0.7)
Brucellosis testing	16.7	(2.5)	16.6	(1.3)	3.6	(0.8)
Tranquilization/handling	3.9	(1.3)	8.8	(1.1)	6.2	(1.1)
Euthanasia	1.4	(0.7)	2.4	(0.5)	1.4	(0.5)
Other	5.4	(1.5)	9.8	(1.3)	5.7	(1.0)
Any	45.7	(3.6)	59.1	(2.0)	31.9	(2.0)

3. Diseases and conditions

A higher percentage of deer operations than elk and combination operations had any cervids with pneumonia or diarrhea. Internal parasites were reported on over 15 percent of all operations.

G.3.a. Percentage of operations by diseases/conditions present in the herd, and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Diseases/ conditions	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Pneumonia	25.0	(1.4)	3.5	(0.9)	9.7	(1.6)	18.4	(1.0)
Diarrhea	23.9	(1.5)	5.9	(1.2)	11.1	(1.8)	18.3	(1.0)
Necrobacillosis (lumpy jaw)	11.0	(1.0)	0.0	(—)	5.9	(1.2)	8.0	(0.7)
Clostridial diseases (blackleg, malignant edema, tetanus, enterotoxemia)	2.6	(0.5)	0.6	(0.3)	3.0	(0.9)	2.2	(0.4)
Abscesses	11.0	(1.1)	3.5	(0.8)	6.2	(1.2)	8.7	(0.8)
Internal parasites (e.g., worms)	13.7	(1.2)	17.0	(2.0)	19.5	(2.4)	15.2	(1.0)
External parasites	6.5	(0.9)	7.0	(1.3)	10.6	(2.1)	7.2	(0.7)
Lameness/foot problems	12.4	(1.1)	5.4	(1.3)	7.9	(1.6)	10.3	(0.8)
Infected pedicles/ antlers	8.9	(0.9)	3.0	(0.8)	3.2	(1.0)	6.9	(0.6)
Warts	9.2	(0.9)	0.6	(0.3)	6.8	(1.5)	7.1	(0.6)

*Includes elk, red deer, sika deer, and hybrids.

Even though about one-fourth of all deer operations reported the presence of pneumonia or diarrhea in the herd (table G.3.a), only about 4 percent of cervids on those operations had these condition(s). In contrast, on the 7.2 percent of operations that had cervids with external parasites (table G.3.a), nearly 50 percent of cervids were affected with external parasites. Nearly 60 percent of elk operations had internal parasites in the herd.

G.3.b. For operations with the following diseases/conditions in the herd, percentage of cervids affected by these disease/conditions, and by operation type:

	Percent Cervids[1]							
	Operation Type							
	Deer		Elk[2]		Combination deer/elk		All operations	
Diseases/ conditions	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Pneumonia	4.1	(0.4)	1.8	(0.5)	2.8	(0.3)	3.8	(0.3)
Diarrhea	4.2	(0.5)	2.4	(0.8)	2.7	(0.5)	3.9	(0.4)
Necrobacillosis (lumpy jaw)	2.9	(0.3)	0.0	(0.0)	2.8	(0.7)	2.9	(0.3)
Clostridial diseases (blackleg, malignant edema, tetanus, enterotoxemia)	2.1	(0.6)	1.9	(0.5)	3.8	(1.8)	2.3	(0.6)
Abscesses	1.4	(0.2)	1.2	(0.3)	0.9	(0.2)	1.3	(0.1)
Internal parasites (e.g., worms)	18.3	(2.7)	59.3	(10.6)	16.2	(5.2)	26.0	(4.6)
External parasites	55.0	(11.0)	74.1	(12.3)	30.5	(12.7)	48.5	(10.3)
Lameness/foot problems	2.2	(0.6)	2.5	(0.7)	1.0	(0.1)	2.1	(0.5)
Infected pedicles/ antlers	1.5	(0.2)	1.8	(0.7)	1.7	(0.3)	1.5	(0.2)
Warts	1.3	(0.2)	1.6	(0.5)	1.3	(0.3)	1.3	(0.2)

[1]As a percentage of July 1, 2014, inventory.
[2]Includes elk, red deer, sika deer, and hybrids.

4. Epizootic hemorrhagic disease

About one of six respondents said that during the last 5 years epizootic hemorrhagic disease (EHD) was present in wildlife within 10 miles of the operation.

G.4.a. Percentage of operations in which during the last five years EHD was present in wildlife within 10 miles of the operation, by operation type:

	Percent Operations							
	Operation Type							
	Deer		Elk*		Combination deer/elk		All operations	
EHD present	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Yes	18.7	(1.4)	7.0	(1.2)	16.2	(2.4)	15.8	(1.0)
No	51.1	(1.9)	55.3	(3.0)	49.1	(3.4)	51.8	(1.4)
Don’t know	30.2	(1.7)	37.7	(2.9)	34.7	(3.1)	32.4	(1.4)

*Includes elk, red deer, sika deer, and hybrids.

About half of respondents had no concern about the potential transmission of EHD to their herd. Respondents on about one-fourth of deer and combination operations were very concerned about EHD transmission.

G.4.b. Percentage of operations by level of concern about the potential transmission of EHD to the operation, and by operation type:

	Percent Operations							
	Operation Type							
	Deer		Elk*		Combination deer/elk		All operations	
Level of concern	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
None	44.7	(1.8)	60.9	(2.8)	43.9	(3.4)	48.1	(1.4)
Slight	15.2	(1.3)	19.0	(2.3)	20.5	(2.6)	16.7	(1.1)
Moderate	15.2	(1.3)	11.6	(1.7)	10.1	(2.0)	13.8	(1.0)
Very	24.8	(1.5)	8.4	(1.4)	25.6	(2.9)	21.4	(1.1)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Respondents on about one-third of operations with 50 or more cervids were very concerned about the potential transmission of EHD to their herd. Nearly two-thirds of operations with fewer than 20 cervids had no concern about the transmission of EHD.

G.4.c. Percentage of operations by level of concern about the potential transmission of EHD to the operation, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Level of concern	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
None	65.7	(2.4)	40.8	(2.9)	33.4	(2.9)	33.5	(3.0)	27.1	(3.2)
Slight	15.6	(1.9)	20.9	(2.3)	14.6	(2.1)	15.6	(2.2)	16.5	(2.5)
Moderate	11.5	(1.6)	13.3	(2.1)	15.2	(2.2)	17.8	(2.3)	19.4	(2.7)
Very	7.2	(1.3)	25.0	(2.6)	36.9	(3.0)	33.2	(3.1)	36.9	(3.3)
Total	100.0		100.0		100.0		100.0		100.0	

One-third of all operations used some form of control measure to specifically prevent EHD transmission. Applying insecticides in confinement areas and controlling sites where midges breed were the control measures used by the highest percentages of operations.

G.4.d. Percentage of operations by control measure used **specifically** to prevent EHD transmission, and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Control measure	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Apply insecticide to cervid confinement areas	26.1	(1.5)	6.3	(1.4)	15.6	(2.3)	20.5	(1.1)
Apply insecticide directly on cervids	15.0	(1.3)	11.9	(1.8)	10.4	(1.9)	13.7	(1.0)
Control midge breeding sites, such as eliminating wet soil around water sources	29.4	(1.6)	9.0	(1.7)	19.5	(2.7)	23.7	(1.2)
Use other midge-control methods	4.4	(0.8)	0.7	(0.4)	1.7	(0.7)	3.3	(0.5)
Any of the above	39.6	(1.8)	18.6	(2.2)	27.6	(3.0)	33.5	(1.3)

*Includes elk, red deer, sika deer, and hybrids.

The use of EHD control measures by herd size was consistent with the level of concern about EHD transmission reported in table G.4.c. On operations with 1 to 19 cervids, only 7.2 percent of respondents were very concerned about EHD transmission, and 22.3 percent of those operations used any control measure. Respondents on 36.9 percent of operations with 200 or more cervids were very concerned about EHD transmission, and nearly half of these operations used some form of control measure to prevent EHD transmission.

G.4.e. Percentage of operations by control measure used **specifically** to prevent EHD transmission, and by herd size:

	Percent Operations									
	Herd Size (number of cervids)									
	1–19		**20–49**		**50–99**		**100–199**		**200 or more**	
Control measure	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Apply insecticide to cervid confinement areas	10.0	(1.6)	22.4	(2.5)	32.9	(2.9)	29.4	(3.0)	32.6	(3.3)
Apply insecticide directly on cervids	11.4	(1.6)	12.6	(1.9)	17.9	(2.4)	19.8	(2.6)	12.3	(2.5)
Control midge breeding sites, such as eliminating wet soil around water sources	14.2	(1.9)	27.2	(2.6)	31.7	(2.9)	29.9	(2.9)	39.1	(3.4)
Use other midge-control methods	2.3	(0.7)	3.9	(1.3)	4.6	(1.3)	4.3	(1.3)	2.5	(1.0)
Any of the above	22.3	(2.2)	34.4	(2.8)	45.3	(3.1)	46.0	(3.2)	49.8	(3.5)

During the last 3 years, about one of seven operations had farmed cervids with suspected or confirmed EHD. As expected, only 1.6 percent of elk operations had cervids with confirmed or suspected EHD.

G.4.g. Percentage of operations that had cervids with suspected or confirmed EHD in the last 3 years, by operation type:

Percent Operations[1]							
Operation Type							
Deer		Elk[2]		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
18.7	(1.4)	1.6	(0.5)	14.6	(2.3)	14.5	(0.9)

[1]5.3 percent of operations did not know, but were included in the denominator.
[2]Includes elk, red deer, sika deer, and hybrids.

A higher percentage of operations in the Northeast and South regions than operations in the West region had cases of suspected or confirmed EHD in the last 3 years.

G.4.h. Percentage of operations that had cervids with suspected or confirmed EHD in the last 3 years, by region:

Percent Operations*					
Region					
West		Northeast		South	
Percent	Std. error	Percent	Std. error	Percent	Std. error
7.1	(1.5)	13.6	(1.3)	17.6	(1.6)

*5.3 percent of operations did not know, but were included in the denominator.

Of operations that had suspected or confirmed cases of EHD during the last 3 years, nearly half had EHD cases confirmed by a trained professional or a veterinary laboratory.

G.4.i. For operations that had cervids with suspected or confirmed EHD in the last 3 years, percentage of operations that had EHD cases confirmed by a trained professional or a veterinary laboratory during the most recent occurrence of EHD, by operation type:

Percent Operations

Operation Type

Deer		Elk[1 2]		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
44.7	(4.0)			59.5	(8.0)	46.3	(3.6)

[1]Too few to report.
[2]Includes elk, red deer, sika deer, and hybrids.

Sudden, unexplained death loss is one indication that EHD might be in the herd. Only about 3 percent of all operations had an incident of sudden, unexplained death loss during the study timeframe.

G.4.j. Percentage of operations that had any sudden, unexplained increases in death loss, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
3.9	(0.6)	1.6	(0.7)	3.0	(0.9)	3.3	(0.5)

*Includes elk, red deer, sika deer, and hybrids.

Dead cervids with sloughing hooves, oral ulcers/sores, or scars on the rumen are hallmark signs of EHD infection. Of all operations that had any cervid deaths, less than 6 percent had seen any of these conditions.

G.4.k. For the 53.2 percent of operations with any cervid deaths (table B.2.a), percentage of operations that had dead cervids with sloughing hooves, oral ulcers/sores, or scars on the rumen, by operation type:

Percent Operations							
Operation Type							
Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
6.1	(0.9)	2.2	(1.0)	8.4	(2.1)	5.6	(0.7)

*Includes elk, red deer, sika deer, and hybrids.

Of operations that had any cervid deaths, a higher percentage in the South region than in the West or Northeast regions had dead cervids with sloughing hooves, oral ulcers/sores, or scars on the rumen.

G.4.l. For the 53.2 percent of operations with any cervid deaths (table B.2.a), percentage of operations that had dead cervids with sloughing hooves, oral ulcers/sores, or scars on the rumen, by region:

Percent Operations					
Region					
West		Northeast		South	
Percent	Std. error	Percent	Std. error	Percent	Std. error
3.0	(1.2)	2.8	(0.7)	10.4	(1.5)

H. Disease Testing Practices

Note: Unless otherwise noted, data in all tables in this section refer to the period from July 1, 2013, through June 30, 2014.

1. Chronic wasting disease

About half of all operations participated in a chronic wasting disease (CWD) herd certification program. A lower percentage of combination operations than deer or elk operations participated in a CWD herd certification program.

H.1.a. Percentage of operations that participated in a CWD herd certification program, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
54.8	(1.8)	58.1	(2.9)	31.0	(3.1)	52.4	(1.4)

*Includes elk, red deer, sika deer, and hybrids.

Over 40 percent of operations that participated in a CWD herd certification program began participating from 2001 to 2005, and about 40 percent began participating from 2006 to 2013. A higher percentage of elk operations than deer or combination operations began participating in a CWD program from 1996 to 2000.

H.1.b. For the 52.4 percent of operations that participated in a CWD herd certification program (table H.1.a), percentage of operations by time period operation began participating, and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Time period	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Before 1990	0.2	(0.2)	0.6	(0.4)	0.0	(—)	0.3	(0.2)
1990 to 1995	0.0	(—)	2.4	(0.9)	5.0	(2.1)	1.0	(0.3)
1996 to 2000	6.1	(1.3)	34.0	(3.7)	12.7	(4.8)	13.0	(1.3)
2001 to 2005	43.3	(2.5)	43.7	(3.9)	44.3	(5.8)	43.5	(2.0)
2006 to 2013	50.4	(2.6)	19.3	(3.1)	38.0	(6.0)	42.2	(2.0)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Respondents on over half of all operations had no concern about CWD being introduced to their operation. Just over one-fourth of respondents were moderately or very concerned about CWD transmission.

H.1.c. Percentage of operations by level of concern about the potential transmission of CWD to the operation, and by operation type:

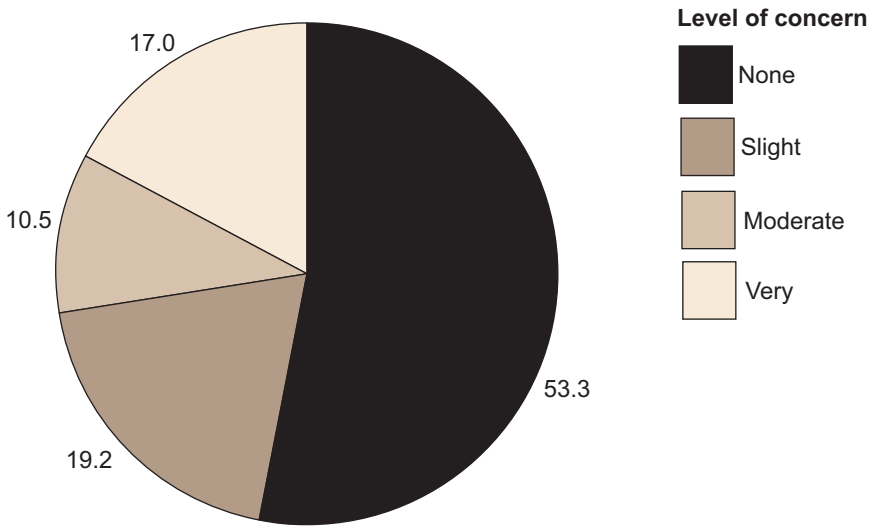
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Level of concern	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
None	52.8	(1.8)	54.4	(2.9)	54.4	(3.4)	53.3	(1.4)
Slight	19.8	(1.5)	16.3	(2.2)	20.6	(2.8)	19.2	(1.1)
Moderate	10.5	(1.1)	12.4	(1.8)	7.5	(1.6)	10.5	(0.8)
Very	17.0	(1.3)	17.0	(2.0)	17.5	(2.4)	17.0	(1.0)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Percentage of all operations by level of concern about the potential transmission of CWD to the operation



Over half of operations with 50 or more cervids tested any cervids for CWD. About one-fourth of operations with fewer than 20 cervids tested any cervids for CWD.

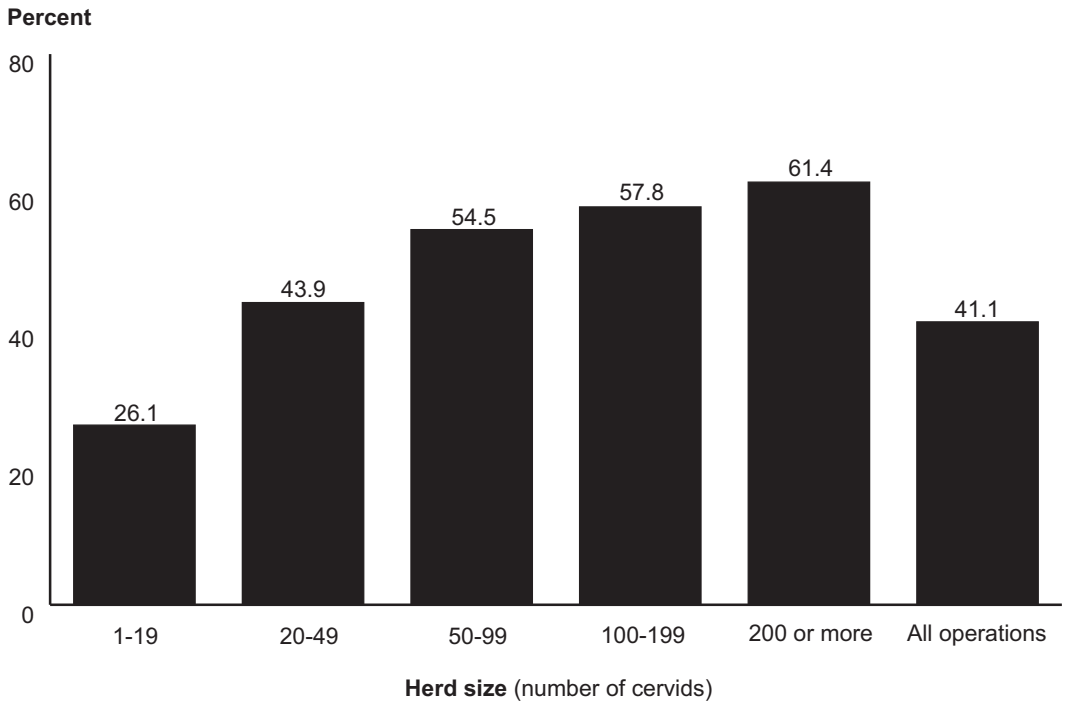
H.1.d. Percentage of operations that tested any cervids for CWD, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
26.1	(2.2)	43.9	(2.8)	54.5	(3.0)	57.8	(3.2)	61.4	(3.4)	41.1	(1.3)

Percentage of operations that tested any cervids for CWD, by herd size



H.1.e. Percentage of operations that tested any cervids for CWD, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk	
Percent	**Std. error**	**Percent**	**Std. error**	**Percent**	**Std. error**
41.5	(1.7)	45.8	(2.8)	31.4	(2.9)

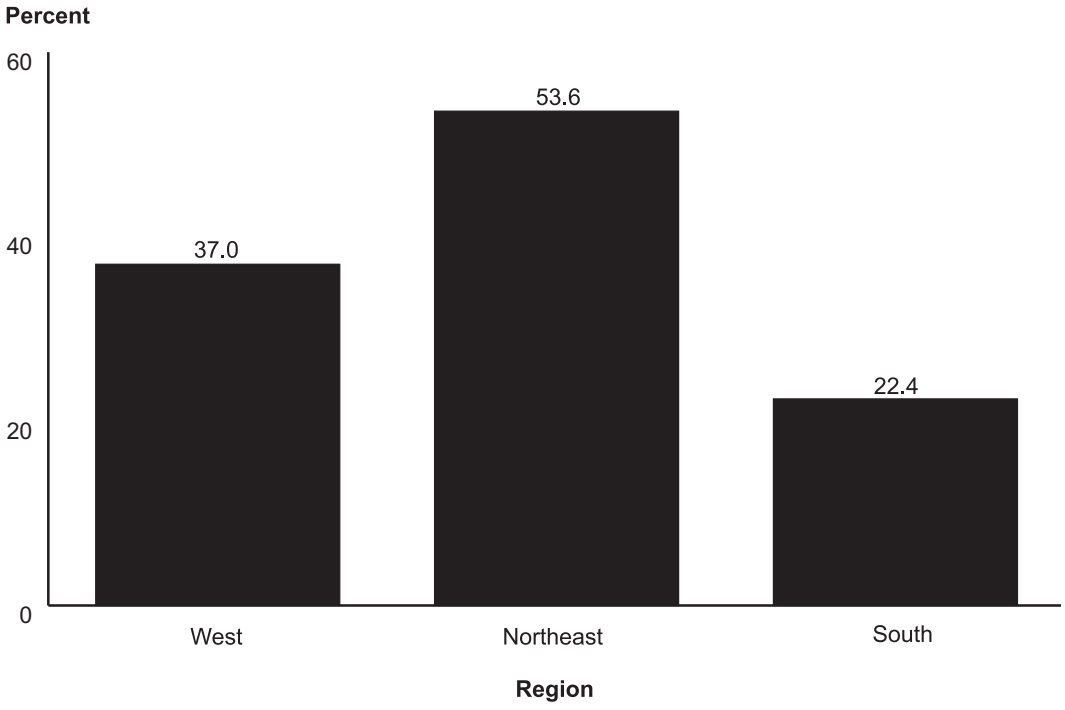
*Includes elk, red deer, sika deer, and hybrids.

A higher percentage of operations in the Northeast region than in the West or South regions tested any cervids for CWD. Less than one-fourth of operations in the South region tested any cervids for CWD.

H.1.f. Percentage of operations that tested any cervids for CWD, by region:

Percent Operations					
Region					
West		Northeast		South	
Percent	Std. error	Percent	Std. error	Percent	Std. error
37.0	(3.2)	53.6	(2.0)	22.4	(1.7)

Percentage of operations that tested any cervids for CWD, by region



Of operations that tested for CWD, over 75 percent had been testing for 6 to 15 years. Over half of elk operations had been testing for CWD for 11 to 15 years. Less than 20 percent of all operations that tested for CWD had been testing for 0 to 5 years.

H.1.g. For the 41.1 percent of operations that tested for CWD (table H.1.d), percentage of operations by number of years operation had tested its cervids for CWD, and by operation type:

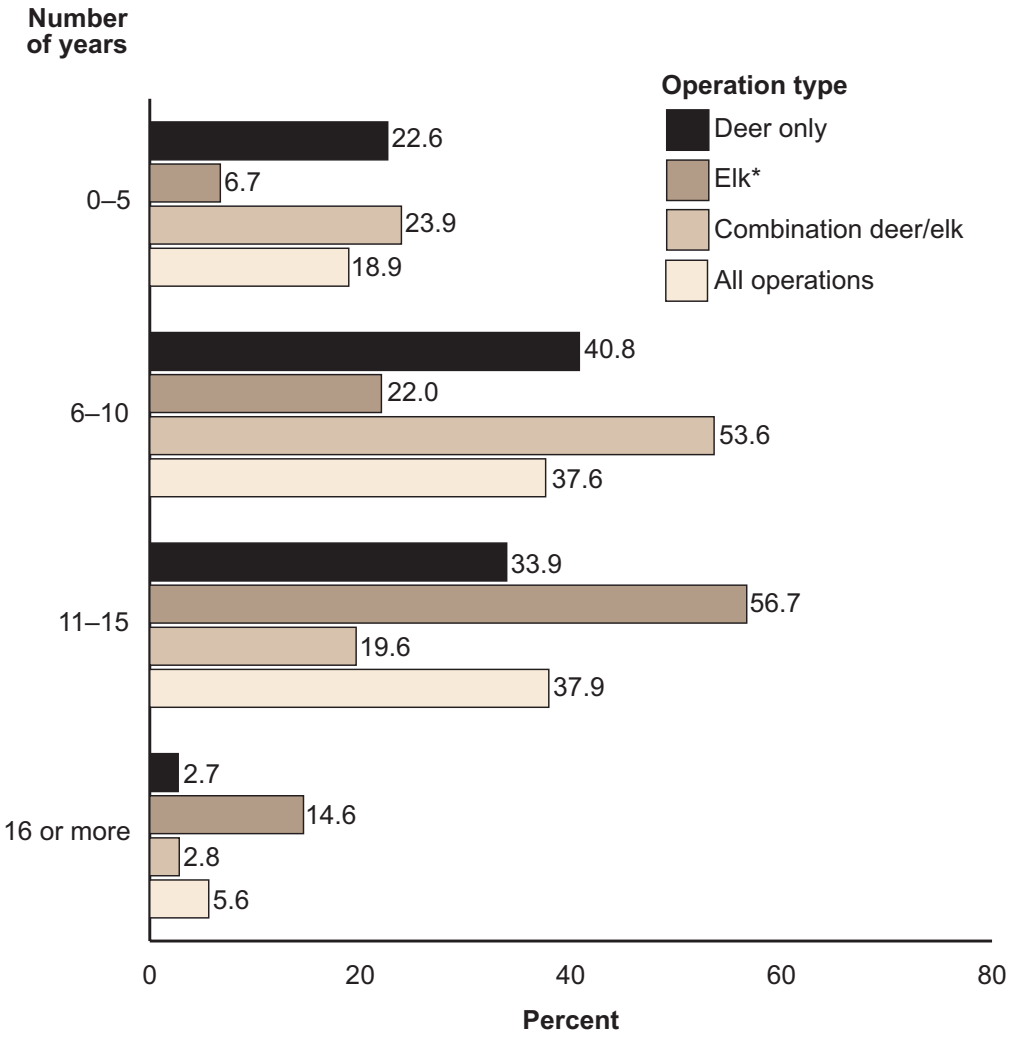
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Number of years	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
0 to 5	22.6	(2.4)	6.7	(2.0)	23.9	(5.0)	18.9	(1.7)
6 to 10	40.8	(2.7)	22.0	(3.4)	53.6	(5.6)	37.6	(2.1)
11 to 15	33.9	(2.5)	56.7	(4.2)	19.6	(4.4)	37.9	(2.1)
16 or more	2.7	(0.8)	14.6	(3.0)	2.8	(1.4)	5.6	(0.9)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

For the 41.1 percent of operations that tested for CWD, percentage of operations by number of years operation had tested its cervids for CWD, and by operation type



*Includes elk, red deer, sika deer, and hybrids.

Of operations that tested for CWD, a higher percentage in the West and Northeast regions than in the South region had been testing for 11 to 15 years. Over one-third of operations in the South region had been testing for CWD for 5 years or less.

H.1.h. For the 41.1 percent of operations that tested for CWD (table H.1.d), percentage of operations by number of years operation had tested its cervids for CWD, and by region:

Percent Operations

Region

	West		Northeast		South	
Number of years	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
0 to 5	2.5	(1.9)	15.5	(2.0)	37.7	(4.4)
6 to 10	17.8	(4.4)	37.7	(2.6)	44.8	(4.3)
11 to 15	54.6	(5.7)	42.4	(2.6)	14.8	(3.1)
16 or more	25.1	(4.7)	4.4	(1.1)	2.7	(1.7)
Total	100.0		100.0		100.0	

Less than half of operations that tested cervids for CWD slaughtered any cervids. A higher percentage of elk operations than deer or combination operations slaughtered cervids.

H.1.i. For the 41.1 percent of operations that tested any cervids for CWD (table H.1.d), percentage of operations that slaughtered cervids, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
26.8	(2.5)	73.8	(3.7)	41.5	(5.4)	39.6	(2.0)

*Includes elk, red deer, sika deer, and hybrids.

Of operations that tested for CWD and slaughtered cervids, over three-fourths tested 100 percent of their slaughtered cervids for CWD; less than 10 percent did not test any slaughtered cervids.

H.1.j. For operations that tested for CWD and slaughtered cervids, percentage of operations by percentage of slaughtered cervids tested for CWD, and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Percent slaughtered cervids tested	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
0	14.2	(3.7)	5.1	(1.6)	0.0	(—)	8.6	(1.8)
1 to 49	7.0	(2.8)	7.9	(2.6)	17.9	(8.4)	8.6	(2.0)
50 to 99	7.7	(3.0)	0.8	(0.6)	12.1	(5.0)	5.1	(1.5)
100	71.1	(5.0)	86.1	(3.0)	70.0	(8.7)	77.8	(2.8)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Of operations that tested for CWD, only 17.4 percent had any hunter-killed cervids. A higher percentage of combination operations than deer or elk operations had hunter-killed cervids.

H.1.i. For the 41.1 percent of operations that tested for CWD (table H.1.d), percentage of operations that had any hunter-killed cervids, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
16.5	(1.7)	8.2	(2.0)	45.8	(5.4)	17.4	(1.4)

*Includes elk, red deer, sika deer, and hybrids.

On operations that tested for CWD, the percentage of operations that had any hunter-killed cervids increased as herd size increased.

H.1.j. For the 41.1 percent of operations that tested for CWD (table H.1.d), percentage of operations that had any hunter-killed cervids, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
5.1	(2.3)	6.5	(2.0)	20.1	(3.4)	31.5	(3.7)	49.0	(4.3)

On operations that tested for CWD and had any hunter-killed cervids, just over 40 percent tested 100 percent of all hunter-killed cervids for CWD; 35.8 percent tested none of the hunter-killed cervids.

H.1.k. For operations that tested for CWD and had any hunter-killed cervids, percentage of operations by percentage of hunter-killed cervids tested for CWD, and by operation type:

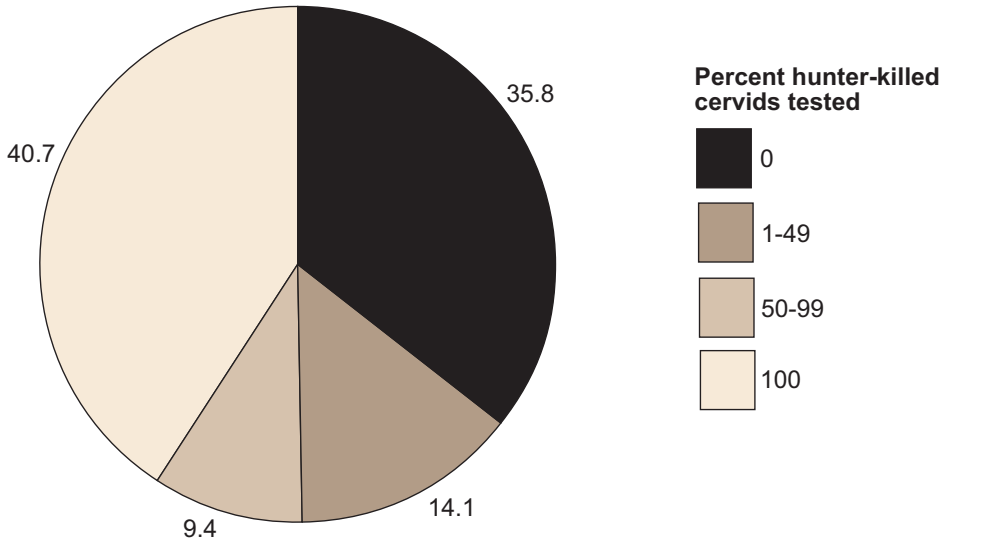
Percent Operations

Operation Type

	Deer		Elk[1 2]		Combination deer/elk		All operations	
Percent hunter-killed cervids tested	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
0	39.9	(5.4)			38.9	(7.3)	35.8	(4.0)
1 to 49	12.5	(3.2)			17.5	(8.1)	14.1	(3.1)
50 to 99	2.7	(1.3)			30.0	(6.8)	9.4	(2.1)
100	45.0	(5.7)			13.6	(4.7)	40.7	(4.3)
Total	100.0				100.0		100.0	

[1]Too few to estimate.
[2]Includes elk, red deer, sika deer, and hybrids.

For operations that teted for CWD and had any hunter-killed cervids, percentage of operations by percentage of hunter-killed cervids tested for CWD



Of operations that tested for CWD and had any hunter-killed cervids, a higher percentage in the South region than in the Northeast region tested none of their hunter-killed cervids. Over half of operations in the Northeast region tested 100 percent of their hunter-killed cervids.

H.1.l. For operations that tested for CWD and had any hunter-killed cervids, percentage of hunter-killed cervids tested for CWD, by region:

Percent Hunter-Killed Cervids

Region

	West*		Northeast		South	
Percent hunter-killed cervids tested	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
0			13.2	(3.9)	77.8	(5.3)
1 to 49			17.6	(4.7)	6.3	(3.3)
50 to 99			14.6	(3.4)	2.6	(1.8)
100			54.5	(6.0)	13.3	(4.1)
Total			100.0		100.0	

*Too few to estimate.

2. Tuberculosis

In July 2014, the dual path platform (DPP) blood test became available as the primary tool for testing cervids for bovine tuberculosis (TB). Overall, more than half of operations had no familiarity with the DPP test for cervids. Respondents on two-thirds of combination operations were not familiar with the test compared with over half of deer operations and about half of elk operations. Roughly one-fourth of all operations were moderately or very familiar with the DPP test.

H.2.a. Percentage of operations by level of familiarity with the DPP blood test for testing cervids for TB, and by operation type:

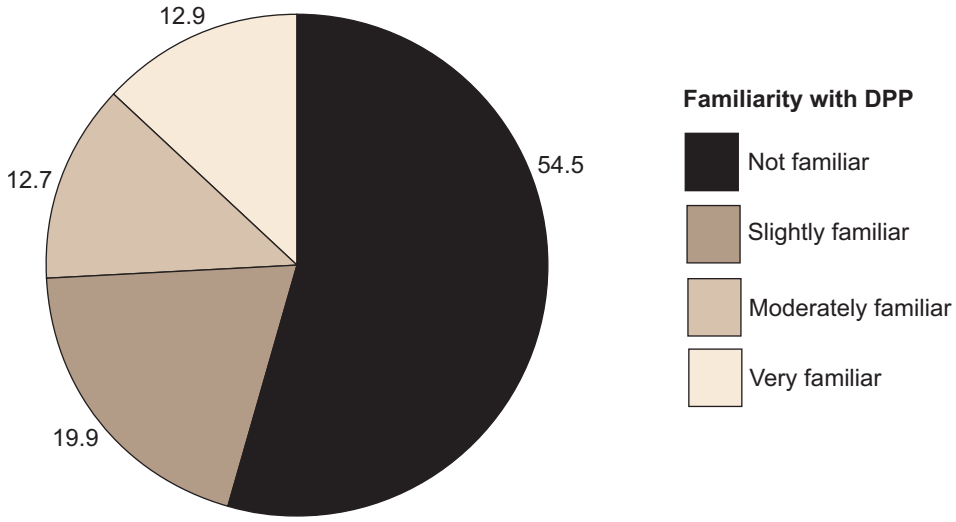
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Familiarity with DPP	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Not familiar	55.1	(1.8)	45.3	(3.0)	66.6	(3.2)	54.5	(1.4)
Slightly familiar	18.7	(1.4)	25.0	(2.7)	17.3	(2.6)	19.9	(1.1)
Moderately familiar	12.9	(1.3)	15.1	(2.1)	7.7	(1.8)	12.7	(1.0)
Very familiar	13.3	(1.2)	14.6	(1.9)	8.3	(1.7)	12.9	(0.9)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Percentage of all operations by level of familiarity with the DPP blood test for testing cervids for TB



A higher percentage of operations with 200 or more cervids than operations with 1 to 19 cervids were very familiar with the DPP test. Although some operations in different size categories differed in the slight and moderate levels of familiarity, there were no clear patterns.

H.2.b. Percentage of operations by level of familiarity with the DPP blood test for testing cervids for TB, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Familiarity with DPP	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Not familiar	61.0	(2.5)	50.6	(2.9)	47.2	(3.1)	51.5	(3.2)	52.0	(3.4)
Slightly familiar	19.7	(2.1)	20.9	(2.3)	24.2	(2.7)	16.4	(2.2)	12.1	(2.2)
Moderately familiar	10.0	(1.6)	14.1	(2.1)	13.2	(2.1)	19.3	(2.7)	12.7	(2.3)
Very familiar	9.3	(1.4)	14.3	(2.2)	15.4	(2.2)	12.7	(2.2)	23.2	(2.8)
Total	100.0		100.0		100.0		100.0		100.0	

Slightly more than one-third of all operations were not familiar with the TB Accreditation Program for farmed cervids, and just under one-third were very familiar with the program. A higher percentage of elk operations than deer or combination operations were very familiar with the program and, similarly, a lower percentage of elk operations than deer or combination operations had no familiarity with the program.

H.2.c. Percentage of operations by level of familiarity with the TB Accreditation Program for cervids, and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Familiarity with TB program	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Not familiar	41.1	(1.8)	22.9	(2.5)	46.6	(3.4)	37.9	(1.3)
Slightly familiar	17.4	(1.5)	15.1	(2.4)	26.1	(3.2)	18.0	(1.2)
Moderately familiar	14.3	(1.3)	15.7	(2.0)	9.5	(1.9)	13.9	(1.0)
Very familiar	27.3	(1.6)	46.3	(2.9)	17.7	(2.4)	30.1	(1.2)
Total	100.0		100.0		100.0		100.0	

*Includes elk, red deer, sika deer, and hybrids.

Across herd sizes, the percentages of operations by level of familiarity with the TB Accreditation Program were similar.

H.2.d. Percentage of operations by level of familiarity with the TB Accreditation Program for cervids, and by herd size:

	Percent Operations									
	Herd Size (number of cervids)									
	1–19		**20–49**		**50–99**		**100–199**		**200 or more**	
Level of familiarity	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
None	41.7	(2.5)	34.9	(2.8)	32.0	(2.8)	39.3	(3.1)	38.0	(3.4)
Slight	18.9	(2.1)	20.4	(2.5)	14.7	(2.3)	17.9	(2.7)	13.6	(2.4)
Moderate	13.6	(1.7)	12.8	(2.0)	17.0	(2.4)	14.2	(2.1)	12.2	(2.2)
Very	25.8	(2.2)	31.9	(2.7)	36.2	(2.8)	28.5	(2.8)	36.3	(3.2)
Total	100.0		100.0		100.0		100.0		100.0	

Herds on one-third of all operations were TB Accredited or were in the process of becoming TB Accredited. Herds on a lower percentage of combination operations than deer or elk operations were TB Accredited or becoming TB Accredited.

H.2.e. Percentage of operations in which the cervid herd was TB Accredited or in the process of becoming TB accredited as of July 1, 2014, and by operation type:

	Percent Operations							
	Operation Type							
Deer		**Elk***		**Combination deer/elk**		**All operations**	
Pct.	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
33.9	(1.7)	40.9	(2.9)	18.3	(2.7)	33.3	(1.3)

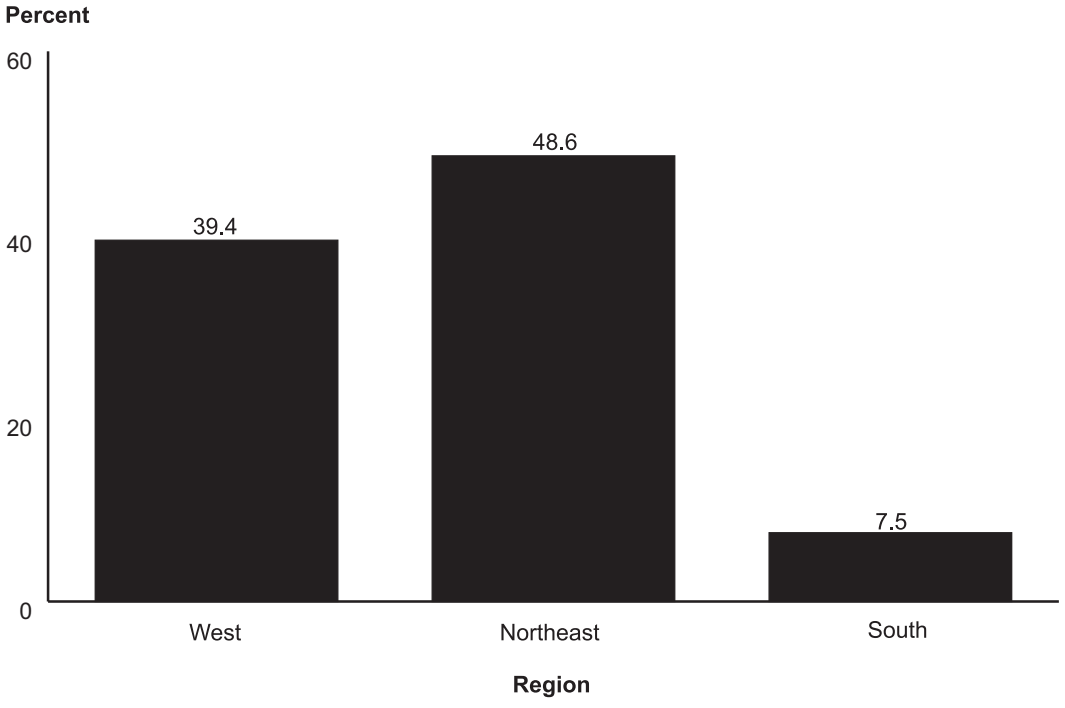
*Includes elk, red deer, sika deer, and hybrids.

Herds on almost half of operations in the Northeast region were TB Accredited or were obtaining TB Accreditation. Herds on a lower percentage of operations in the South region than in the West and Northeast regions were TB Accredited or were in the process of obtaining TB Accreditation.

H.2.f. Percentage of operations in which the cervid herd was TB Accredited or in the process of becoming TB Accredited as of July 1, 2014, and by region:

Percent Operations					
Region					
West		Northeast		South	
Percent	Std. error	Percent	Std. error	Percent	Std. error
39.4	(3.5)	48.6	(2.0)	7.5	(1.2)

Percentage of operations in which the cervid herd was TB Accredited or in the process of becoming TB Accredited as of July 1, 2014, by region



Herds on about one-third of operations with 50 or more cervids were TB Accredited or were in the process of becoming TB Accredited. Herds on about one-fourth of operations with 1 to 19 cervids were TB Accredited or in the process of becoming TB Accredited.

H.2.g. Percentage of operations in which the cervid herd was TB Accredited or in the process of becoming TB Accredited as of July 1, 2014, and by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
25.3	(2.3)	43.4	(2.9)	38.0	(2.9)	34.8	(3.0)	31.4	(3.1)

Across herd sizes, the percentages of operations by reasons for not obtaining TB Accreditation were similar, with the exception of the “too expensive to test” category. In this category, a higher percentage of operations 50 to 99 cervids than operations with 200 or more cervids indicated that tests were too expensive. About half of operations with herds that were not TB Accredited were not concerned about TB on the operation.

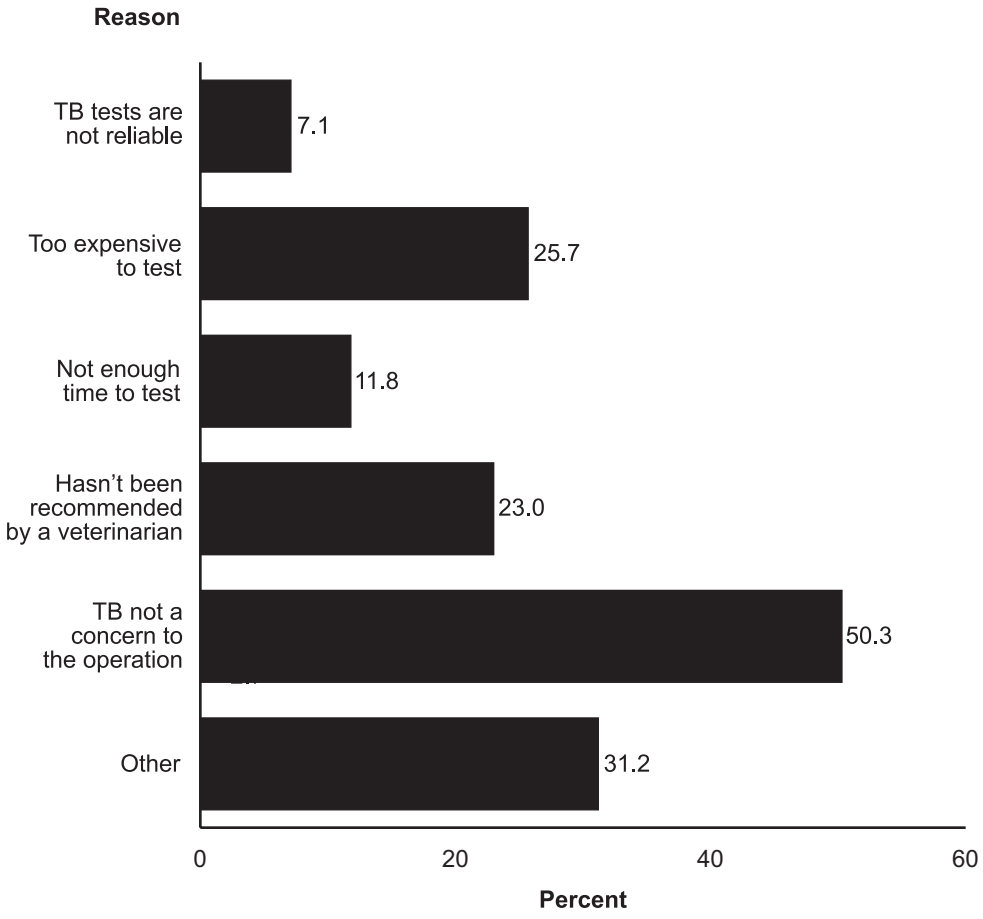
H.2.h. For the 66.7 percent of operations without TB Accreditation (table H.2.e), percentage of operations by reason for not being accredited and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more		All operations	
Reason	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
TB tests are not reliable	5.6	(1.4)	9.3	(2.3)	8.0	(2.0)	7.2	(2.0)	8.1	(2.3)	7.1	(0.9)
Too expensive to test	23.4	(2.6)	24.8	(3.4)	34.7	(3.8)	28.9	(3.5)	17.7	(3.3)	25.7	(1.6)
Not enough time to test	9.1	(1.8)	12.5	(2.6)	15.0	(2.7)	17.9	(3.0)	11.4	(2.8)	11.8	(1.1)
Hasn’t been recommended by a veterinarian	23.2	(2.6)	22.8	(3.4)	23.3	(3.4)	21.1	(3.2)	23.9	(4.0)	23.0	(1.5)
TB not a concern to the operation	47.0	(3.0)	50.9	(4.1)	51.3	(4.0)	57.7	(3.8)	55.8	(4.4)	50.3	(1.8)
Other	33.0	(2.9)	28.9	(3.7)	28.9	(3.7)	27.8	(3.5)	36.3	(4.2)	31.2	(1.7)

For the 66.7 percent of operations without TB Accreditation, percentage of operations by reason for not being accredited



Consistent with previous tables concerning TB testing (H.2.a, H.2.c, and H.2.e), the percentages of operations that had tested cervids for TB in the last 5 years differed by operation type. For example, a higher percentage of elk operations than deer or combination operations had tested any cervids for TB within the last 5 years.

H.2.i. Percentage of operations that had tested any cervids for TB in the last 5 years, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
32.8	(1.6)	49.4	(3.0)	19.8	(2.4)	34.6	(1.3)

*Includes elk, red deer, sika deer, and hybrids.

A lower percentage of operations with 1 to 19 cervids than operations with 20 or more cervids had tested cervids for TB in the last 5 years. About 25 percent of operations with 1 to 19 cervids had tested for TB, while about 38 percent of operations with 20 or more cervids had tested for TB.

H.2.j. Percentage of operations that had tested any cervids for TB in the last 5 years, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
26.7	(2.3)	39.9	(2.8)	39.1	(2.9)	38.5	(3.0)	45.1	(3.4)

Of operations that had tested for TB in the last 5 years, more than 80 percent used the tuberculin skin test, and slightly less than half used a blood test (TB Stat Pack or DPP). There were no differences across operation types in the percentages of operations by type of TB test used.

H.2.k. For the 34.6 percent of operations that had tested for TB in the last 5 years (table H.2.i), percentage of operations by type of TB test used for any cervids, and by operation type:

Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Test type	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Tuberculin skin test	83.7	(2.4)	83.0	(3.2)	78.4	(5.2)	83.0	(1.8)
Blood test (TB Stat Pack or DPP)	52.0	(3.2)	41.9	(4.1)	33.7	(6.2)	47.6	(2.4)

*Includes elk, red deer, sika deer, and hybrids.

On operations that had tested for TB in the last 5 years, there were no differences across herd sizes in the percentages of operations by type of TB tests used.

H.2.l. For the 34.6 percent of operations that had tested for TB in the last 5 years (table H.2.i), percentage of operations by type of TB test used for any cervids, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Test	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Tuberculin skin test	84.0	(3.8)	86.2	(3.3)	76.8	(4.3)	86.6	(3.2)	80.1	(4.4)
Blood test (TB Stat Pack or DPP)	42.2	(5.1)	54.5	(4.7)	51.6	(4.8)	41.5	(5.3)	42.8	(5.3)

Of operations that had tested for TB in the last 5 years, 62.1 percent had tested in the last 2 years. About one-fourth of operations had tested 2 to 3 years ago, whereas about 14 percent had tested 3 to 5 years ago. A higher percentage of operations with 200 or more cervids than operations with 1 to 19 cervids had tested less than 1 year ago. A higher percentage of operations with 1 to 19 cervids than operations with 20 to 49 cervids had last tested 3 to 5 years ago.

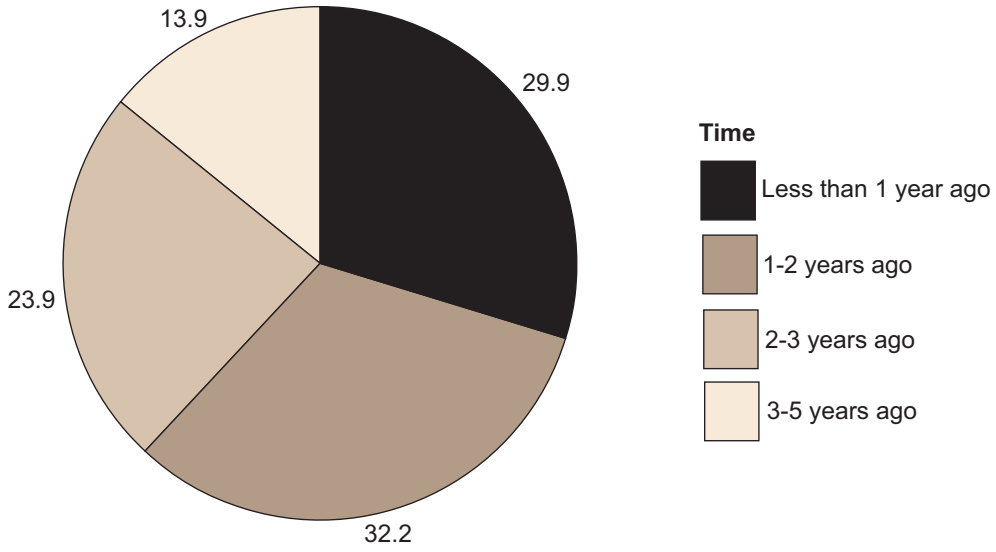
H.2.m. For the 34.6 percent of operations that had tested for TB in the last 5 years (table H.2.i), percentage of operations by time of the most recent TB testing on the operation, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more		All operations	
Time	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Less than 1 year ago	21.2	(4.1)	35.3	(4.5)	33.3	(4.5)	25.9	(4.4)	40.5	(5.1)	29.9	(2.1)
1 to 2 years ago	30.0	(4.6)	36.2	(4.5)	32.2	(4.5)	31.4	(4.9)	28.6	(4.7)	32.2	(2.2)
2 to 3 years ago	25.6	(4.5)	22.6	(3.8)	20.9	(4.3)	32.5	(4.9)	18.5	(4.1)	23.9	(2.1)
3 to 5 years ago	23.2	(4.2)	5.8	(2.1)	13.6	(3.0)	10.2	(2.9)	12.3	(3.4)	13.9	(1.7)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

For the 34.6 percent of operations that had tested for TB in the last 5 years, percentage of operations by time of the most recent TB test on the operation



Four-fifths of operations that had tested any cervids for TB in the last 5 years tested the entire herd. A higher percentage of operations with fewer than 100 cervids tested the entire herd than did operations with 200 or more cervids.

H.2.n. For the 34.6 percent of operations that had tested for TB in the last 5 years (table H.2.i), percentage of operations by portion of cervids tested during the most recent TB test, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more		All operations	
Portion	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Entire herd	81.7	(3.9)	92.9	(2.0)	79.9	(3.6)	66.4	(4.6)	59.3	(5.2)	80.6	(1.7)
Specific cervids only	18.3	(3.9)	7.1	(2.0)	20.1	(3.6)	33.6	(4.6)	40.7	(5.2)	19.4	(1.7)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

Of operations that had tested for TB in the last 5 years, four-fifths tested to obtain TB Accreditation, and three-fifths tested because of a State requirement. A slightly higher percentage of deer than combination operations tested to obtain TB Accreditation. A higher percentage of deer operations than elk operations tested because of show or exhibition requirements.

H.2.o. For the 34.6 percent of operations that had tested for TB in the last 5 years (table H.2.i), percentage of operations by reason for last TB test, and by operation type:

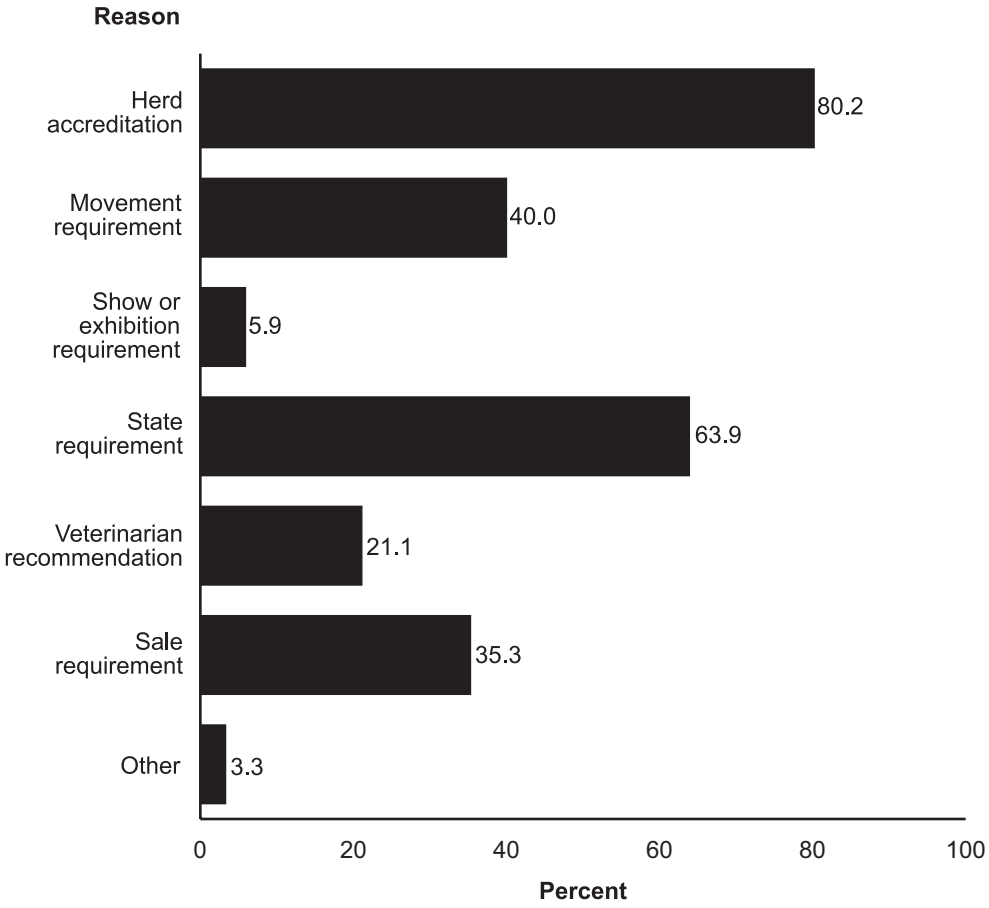
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Herd accreditation	81.2	(2.4)	82.4	(3.2)	63.4	(6.4)	80.2	(1.8)
Movement requirement	38.9	(3.1)	41.5	(4.0)	42.9	(6.6)	40.0	(2.3)
Show or exhibition requirement	7.8	(1.8)	1.2	(0.6)	9.5	(5.9)	5.9	(1.3)
State requirement	65.8	(2.9)	57.8	(4.1)	72.9	(5.7)	63.9	(2.3)
Veterinarian (nonregulatory, private practitioner) recommendation	22.4	(2.6)	19.9	(2.7)	14.9	(5.0)	21.1	(1.8)
Sale requirement	33.5	(3.0)	37.9	(3.9)	39.5	(6.6)	35.3	(2.2)
Other	4.0	(1.1)	1.4	(0.7)	5.5	(2.8)	3.3	(0.7)

*Includes elk, red deer, sika deer, and hybrids.

For the 34.6 percent of operations that had tested for TB in the last 5 years, percentage of operations by reason for last TB test



On operations that had tested for TB in the last 5 years, there were few differences across herd sizes in the percentages of operations by reason for testing, although a lower percentage of operations with 200 or more cervids than operations with 20 to 49 cervids tested to obtain TB Accreditation.

H.2.p. For the 34.6 percent of operations that tested for TB in the last 5 years (table H.2.i), percentage of operations by reason for last TB test, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Herd accreditation	76.5	(4.2)	90.0	(2.7)	79.9	(3.7)	79.3	(4.0)	66.0	(5.0)
Movement requirement	37.7	(4.8)	40.7	(4.5)	37.7	(4.6)	40.5	(5.1)	49.7	(5.2)
Show or exhibition requirement	12.4	(3.4)	3.8	(1.8)	1.0	(0.8)	4.4	(2.4)	2.1	(1.5)
State requirement	68.1	(4.6)	64.3	(4.5)	66.8	(4.6)	53.4	(5.1)	55.4	(5.2)
Veterinarian (nonregulatory, private practitioner) recommendation	14.4	(3.1)	23.4	(3.9)	25.8	(4.2)	22.2	(4.7)	25.1	(4.6)
Sale requirement	29.9	(4.5)	36.0	(4.5)	35.3	(4.4)	39.6	(5.1)	46.0	(5.2)
Other	3.3	(1.4)	1.3	(1.1)	4.0	(1.9)	1.8	(1.3)	10.0	(3.0)

3. Brucellosis

About one-fourth of all operations had tested cervids for brucellosis in the last 5 years. A lower percentage of combination operations than deer or elk operations had tested cervids for brucellosis in the last 5 years.

H.3.a. Percentage of operations that had tested any cervids for brucellosis in the last 5 years, by operation type:

Percent Operations

Operation Type

Deer		Elk*		Combination deer/elk		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
26.7	(1.6)	29.7	(2.6)	15.4	(2.0)	25.8	(1.2)

*Includes elk, red deer, sika deer, and hybrids.

A lower percentage of operations with 1 to 19 cervids than operations with 20 or more had tested any cervids for brucellosis in the last 5 years.

H.3.b. Percentage of operations that had tested any cervids for brucellosis in the last 5 years, by herd size:

Percent Operations

Herd Size (number of cervids)

1–19		20–49		50–99		100–199		200 or more	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
16.4	(1.9)	32.0	(2.7)	32.3	(2.8)	29.3	(2.9)	37.1	(3.4)

The highest percentages of operations tested for brucellosis to obtain Brucellosis-Free status or because testing was required before selling cervids. A higher percentage of elk operations than deer operations tested because of sale requirements. A higher percentage of deer operations than elk or combination operations tested cervids to obtain Brucellosis-Free status. It is interesting to note that no combination operations tested because of a show or exhibition requirement.

H.3.c. For the 25.8 percent of operations that had tested any cervids for brucellosis in the last 5 years (table H.3.c), percentage of operations by reason for last brucellosis test, and by operation type:

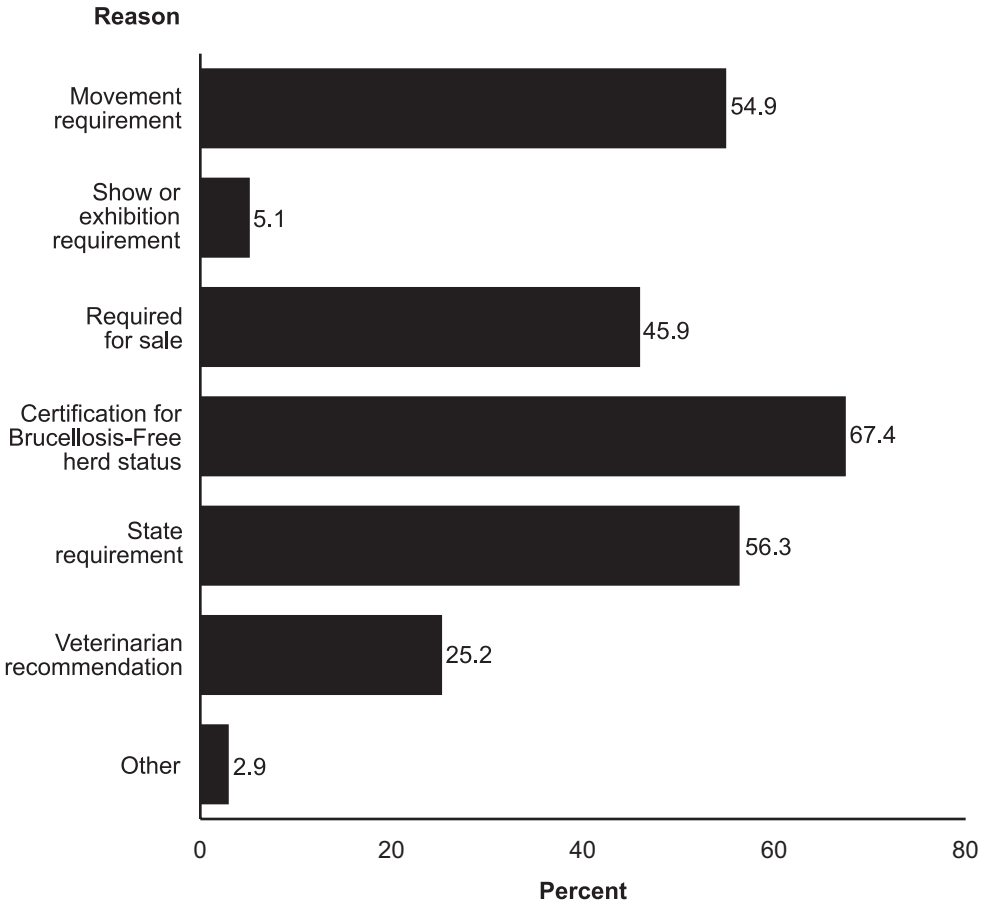
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Movement requirement	50.3	(3.5)	66.0	(4.8)	62.5	(7.0)	54.9	(2.8)
Show or exhibition requirement	6.6	(2.0)	2.3	(1.2)	0.0	(0.0)	5.1	(1.4)
Required for sale	38.7	(3.4)	62.2	(4.8)	59.5	(7.1)	45.9	(2.7)
Certification for Brucellosis-Free herd status	78.1	(2.8)	43.2	(5.0)	46.1	(7.2)	67.4	(2.5)
State requirement	58.7	(3.5)	51.9	(5.0)	48.7	(7.2)	56.3	(2.7)
Veterinarian (nonregulatory, private practitioner) recommendation	26.3	(3.1)	25.0	(4.2)	15.8	(5.5)	25.2	(2.4)
Other	2.8	(1.3)	0.8	(0.5)	10.0	(4.0)	2.9	(0.9)

*Includes elk, red deer, sika deer, and hybrids.

For the 25.8 percent of operations that had tested any cervids for brucellosis in the last 5 years, percentage of operations by reason for last brucellosis test



For operations that had tested any cervids for brucellosis in the last 5 years, a higher percentage of operations with 200 or more cervids than operations with 100 to 199 cervids tested because of movement or sale requirements. A lower percentage of operations with 200 or more cervids than operations with 20 to 49 or 50 to 99 cervids tested to acquire Brucellosis-Free status. Higher percentages of operations with 20 to 49 or 50 to 99 cervids than operations with 1 to 19 cervids tested because of a veterinarian recommendation, which might reflect a lower number of visits by veterinarians to operations with 1 to 19 cervids (table G.2.b).

H.3.f. For the 25.8 percent of operations that had tested any cervids for brucellosis in the last 5 years (table H.3.c), percentage of operations by reason for last brucellosis test, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Reason	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Movement requirement	52.5	(6.4)	56.5	(5.3)	51.7	(5.4)	47.8	(5.9)	71.9	(5.4)
Show or exhibition requirement	11.1	(4.1)	2.3	(2.1)	5.3	(2.6)	3.0	(2.3)	0.0	(—)
Required for sale	46.6	(6.4)	42.9	(5.2)	43.7	(5.3)	39.9	(5.9)	64.3	(5.8)
Certification for Brucellosis Free herd status	65.1	(6.0)	78.9	(4.0)	67.2	(4.9)	64.2	(5.4)	42.9	(6.0)
State requirement	56.7	(6.4)	55.6	(5.3)	60.1	(5.2)	50.5	(5.9)	56.2	(6.2)
Veterinarian (nonregulatory, private practitioner) recommendation	12.9	(3.8)	30.6	(5.0)	34.0	(5.3)	24.4	(5.6)	22.1	(5.1)
Other	3.7	(2.5)	1.6	(1.3)	3.1	(1.9)	1.7	(1.0)	5.3	(2.6)

In general, the highest percentages of operations had no concerns about the issues and challenges related to testing for diseases such as TB and brucellosis. About one-third of operations were very concerned about cervid injuries or deaths due to handling, and more than one-fourth were very concerned about the expense of testing.

H.3.g. Percentage of operations by level of concern with the following issues and challenges related to testing for diseases such as TB and brucellosis:

	Percent Operations								
	Level of Concern								
	None		Slight		Moderate		Very		
Issues and challenges	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Total
Expense of test	42.0	(1.5)	11.5	(0.9)	19.4	(1.2)	27.1	(1.3)	100.0
Farmed cervid injuries or deaths from handling	45.0	(1.5)	11.4	(0.9)	13.1	(1.0)	30.5	(1.3)	100.0
Reliability of test, such as false-positive test results	48.9	(1.5)	13.4	(1.0)	17.5	(1.1)	20.2	(1.1)	100.0
Amount of time to test	50.6	(1.5)	11.8	(0.9)	17.7	(1.1)	19.9	(1.1)	100.0
Lack of facilities to restrain farmed cervids for testing	63.2	(1.4)	8.6	(0.8)	9.5	(0.9)	18.6	(1.2)	100.0

A higher percentage of deer operations than elk operations had any farmed cervids die in the last 5 years because of handling during TB or brucellosis testing. There were no differences by operation type in the percentages of operations in which any cervids were injured during testing.

H.3.h. For operations that had tested any cervids for either TB or brucellosis in the last 5 years, percentage of operations that had any cervids die or become injured while being handled during testing, by operation type:

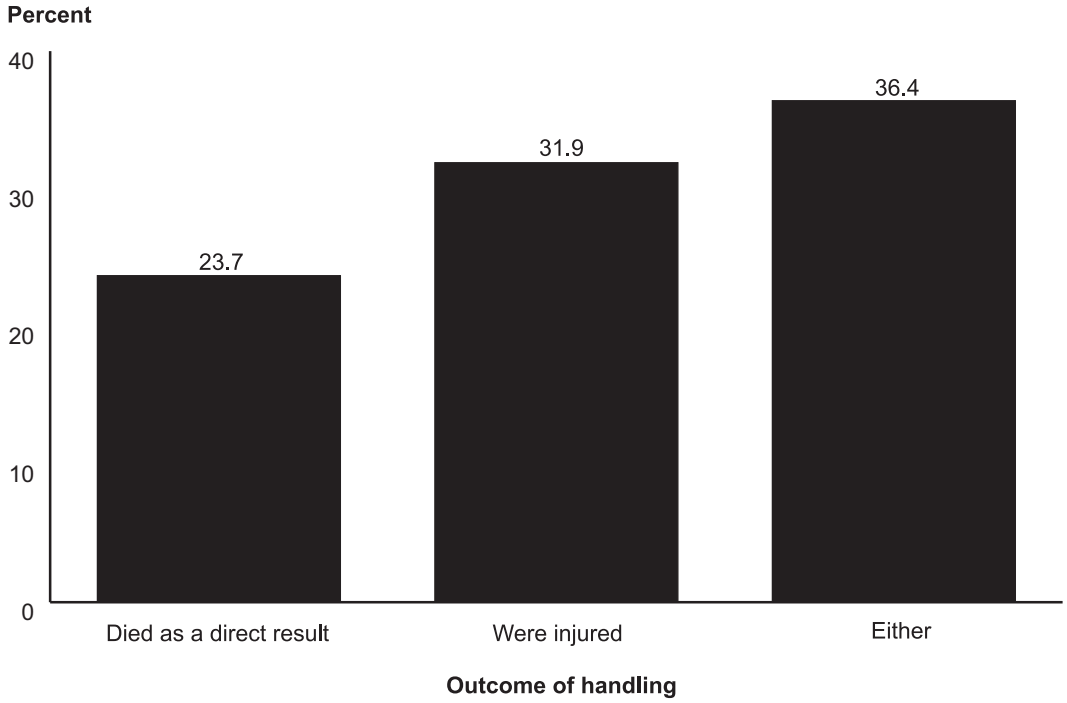
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Outcome of handling	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Died as a direct result	27.3	(2.6)	15.0	(2.8)	26.0	(5.1)	23.7	(1.9)
Were injured	33.5	(2.8)	29.5	(3.6)	28.2	(5.2)	31.9	(2.1)
Either	38.8	(2.9)	33.7	(3.8)	28.2	(5.2)	36.4	(2.1)

*Includes elk, red deer, sika deer, and hybrids.

For operations that had tested any farmed cervids for either TB or brucellosis in the last 5 years, percentage of operations that had any cervids die or become injured while being handled during testing



A higher percentage of operations with 100 to 199 cervids than operations with 1 to 19 or 20 to 49 cervids had cervids die in the last 5 years as a direct result of testing for TB or brucellosis. A higher percentage of operations with 200 or more cervids than operations with 1 to 19 cervids had cervids die in the last 5 years as a direct result of testing for TB or brucellosis. A higher percentage of operations with 100 to 199 cervids than operations with 1 to 19 cervids had cervids injured in the last 5 years during testing. Either death or injury as an outcome occurred on a lower percentage of operations with 1 to 19 cervids than operations with 50 to 99 or 100 to 199 cervids.

H.3.i. For operations that had tested any cervids for either TB or brucellosis in the last 5 years, percentage of operations that had any cervids die or become injured while being handled during testing, by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Outcome of handling	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
Died as a direct result	16.1	(3.5)	19.5	(3.5)	29.7	(4.3)	36.4	(4.7)	32.4	(4.6)
Were injured	21.6	(3.9)	33.1	(4.2)	36.6	(4.4)	45.5	(5.0)	36.0	(4.7)
Either	25.6	(4.2)	36.3	(4.3)	45.1	(4.5)	50.1	(5.0)	37.7	(4.8)

I. Outreach

1. Membership in cervid organizations/associations

Over half of all operations were members in a farmed cervid or wildlife organization.

I.1.a. Percentage of operations by membership in farmed cervid or wildlife organizations, and by operation type:

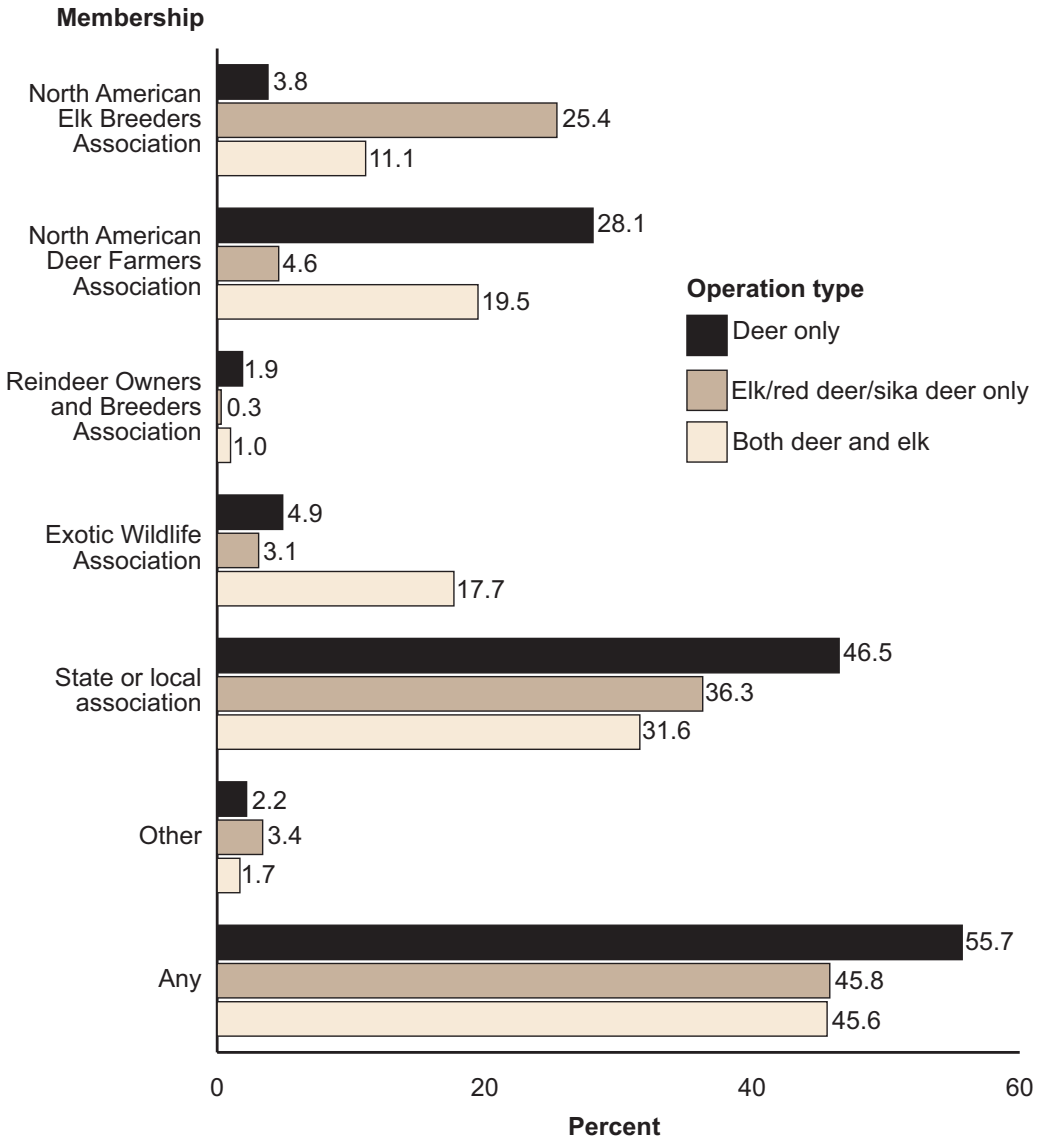
Percent Operations

Operation Type

	Deer		Elk*		Combination deer/elk		All operations	
Membership	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
North American Elk Breeders Association	3.8	(0.7)	25.4	(2.3)	11.1	(1.9)	9.3	(0.7)
North American Deer Farmers Association	28.1	(1.6)	4.6	(0.9)	19.5	(2.4)	22.0	(1.1)
Reindeer Owners and Breeders Association	1.9	(0.5)	0.3	(0.2)	1.0	(0.5)	1.4	(0.4)
Exotic Wildlife Association	4.9	(0.7)	3.1	(0.8)	17.7	(2.5)	6.3	(0.6)
State or local association	46.5	(1.8)	36.3	(2.7)	31.6	(3.0)	42.4	(1.4)
Other	2.2	(0.5)	3.4	(1.2)	1.7	(0.8)	2.4	(0.4)
Any	55.7	(1.8)	45.8	(2.9)	45.6	(3.3)	52.3	(1.4)

*Includes elk, red deer, sika deer, and hybrids.

Percentage of operations by membership in farmed cervid or wildlife organizations, and by operation type



*Includes elk, red deer, sika deer, and hybrids.

Operations with 50 or more cervids accounted for the highest percentages of operations with membership in any farmed cervid or wildlife organization.

I.1.b. Percentage of operations by membership in farmed cervid or wildlife organizations, and by herd size:

Percent Operations

Herd Size (number of cervids)

	1–19		20–49		50–99		100–199		200 or more	
Membership	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**	**Pct.**	**Std. error**
North American Elk Breeders Association	3.5	(0.8)	10.9	(1.6)	15.4	(2.1)	12.7	(2.3)	18.3	(2.7)
North American Deer Farmers Association	10.0	(1.6)	24.3	(2.6)	29.1	(2.9)	38.4	(3.1)	43.8	(3.4)
Reindeer Owners and Breeders Association	1.7	(0.7)	0.7	(0.4)	1.5	(0.9)	1.4	(0.8)	1.8	(0.9)
Exotic Wildlife Association	1.5	(0.6)	7.0	(1.4)	8.9	(1.8)	14.9	(2.3)	12.6	(2.3)
State or local association	18.9	(2.1)	45.9	(3.0)	67.7	(2.9)	69.1	(3.0)	68.2	(3.3)
Other	1.9	(0.7)	2.9	(0.8)	1.7	(0.8)	3.4	(1.1)	3.2	(1.4)
Any	28.2	(2.3)	56.9	(3.0)	76.8	(2.6)	80.2	(2.6)	77.2	(2.9)

2. Information sources

Almost 70 percent of respondents said that their veterinarian was a moderately or very important source of information. Nearly one-third identified other producers as a very important information source.

I.2.a. Percentage of operations by importance of cervid information sources:

	Percent Operations								
	Level of Importance								
	None		Slight		Moderate		Very		
Source	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Total
Producer meetings	40.3	(1.4)	17.4	(1.1)	19.0	(1.1)	23.2	(1.2)	100.0
Other producers—individually	32.5	(1.4)	13.9	(1.0)	22.3	(1.2)	31.3	(1.3)	100.0
Internet	33.4	(1.4)	15.7	(1.1)	22.9	(1.2)	28.0	(1.3)	100.0
Magazines/ newsletters	29.9	(1.4)	20.1	(1.2)	25.5	(1.2)	24.4	(1.2)	100.0
University extension	40.7	(1.5)	20.3	(1.2)	20.7	(1.2)	18.3	(1.1)	100.0
Veterinarians	18.6	(1.2)	11.8	(1.0)	21.5	(1.2)	48.0	(1.4)	100.0
Feed and drug salespeople	44.6	(1.5)	22.6	(1.2)	15.4	(1.0)	17.5	(1.1)	100.0
Other	91.8	(0.9)	2.4	(0.5)	2.6	(0.5)	3.2	(0.6)	100.0

Section II: Methodology

A. Study Purpose

This report presents results from the Cervid 2014 study conducted by the National Animal Health Monitoring System (NAHMS) at the request of the administrator of the U.S. Department of Agriculture's Animal and Plant Health Inspection Service. The primary objectives of the Cervid 2014 study were to provide statistically valid, national estimates of the health management and production practices of the Nation's cervid industry and to improve understanding of cervid health-related issues faced by cervid producers.

B. Sample Selection

Potential respondents for the Cervid 2014 study were all producers with deer and/or elk who responded to the 2012 Census of Agriculture. Based on the Census, there were 4,042 operations with deer and 1,199 operations with elk in the United States. A total of 3,000 operations with deer or elk were selected from NASS' list frame from this population.

The list frame was stratified by type of operation (deer only, elk only, both deer and elk), by region (West, Northeast, South), and by size. Within each type/region/size stratum, the list frame was sorted by State (to ensure geographic representation), and a systematic random sample was chosen. Different strata had different sampling fractions, with larger operations selected with a higher probability than smaller operations. All operations with both deer and elk were selected to be in the sample.

C. Data Collection

Data for the Cervid 2014 study were collected from July 21 through August 30, 2014. Questionnaires and instructions were mailed to producers in late July 2014. Telephone followup with producers that had not returned their questionnaire took place from August 1 through 30, 2014. Up to 10 calls were made to each producer to administer the questionnaire; if no contact was made after 10 attempts, the producer was coded as inaccessible. Initial data entry and validation for the Cervid 2014 study were performed at a NASS office and data were entered into a SAS data set. NAHMS national staff performed additional data validation.

D. Estimation

The sampling design was a stratified random sample with unequal probabilities of selection between strata. Statistical estimation of percentages and averages was done with SUDAAN software, which uses a Taylor series expansion to estimate appropriate variances for the stratified, weighted data.

E. Sample Allocation

1. Operations with elk only

	Number of Responding Operations				
	Herd Size (number of cervids)				
Region	**1–19**	**20–49**	**50–99**	**100–199**	**200 or more**
Northeast	113	78	67	18	9
South	40	28	9	4	2
West	62	77	37	34	22
Total	215	183	113	56	33

2. Operations with deer only

	Number of Responding Operations				
	Herd Size (number of cervids)				
Region	**1–19**	**20–49**	**50–99**	**100–199**	**200 or more**
Northeast	356	248	150	112	59
South	227	200	200	176	135
West	46	18	13	10	1
Total	629	466	363	298	195

F. Sample Evaluation

Response category	Number of operations
Complete	1,274
Refusal	506
Inaccessible	1,196
Office hold	24
Total	3,000

Appendix I: Sample Profile

A. Responding Sites

1. Size of operation

Size of operation	Number of responding operations
1 to 19	306
20 to 49	289
50 to 99	192
100 to 199	160
200 or more	103
Total	1,050

2. Region

Region	Number of responding operations
West	127
Northeast	534
South	389
Total	1,050

Appendix II: 2012 Census of Agriculture Data

	Deer		Elk	
State*	Farms	Number	Farms	Number
Alabama	64	2,292	—	—
Alaska	1	(D)	11	452
Arizona	52	565	—	—
Arkansas	23	603	7	302
California	25	663	—	—
Colorado	12	188	49	2,314
Connecticut	14	118	—	—
Florida	113	10,163	9	93
Georgia	10	944	2	(D)
Hawaii	2	(D)	1	(D)
Idaho	10	212	31	2,270
Illinois	109	2,052	25	249
Indiana	139	3,550	35	437
Iowa	65	3,431	41	885
Kansas	28	1,398	43	1,461
Kentucky	32	753	4	60
Louisiana	63	2,964	4	(D)
Maine	42	4,219	23	145
Maryland	1	(D)	—	—
Massachusetts	5	45	1	(D)
Michigan	199	14,658	43	1,170
Minnesota	174	6,229	151	4,610
Mississippi	36	1,920	5	158
Missouri	80	3,332	38	757
Montana	1	(D)	16	686
Nebraska	10	154	16	815
Nevada	1	(D)	—	—
New Hampshire	10	190	5	126
New Jersey	15	376	3	(D)
New Mexico	10	69	18	2,465
New York	99	5,158	28	577
North Carolina	11	140	3	20
North Dakota	11	1,024	41	2,065
Ohio	234	5,911	25	401
Oklahoma	114	4,634	31	957
Oregon	10	252	7	206
Pennsylvania	415	15,731	50	1,093
South Carolina	10	378	1	(D)
South Dakota	5	89	27	1,509
Tennessee	36	3,393	18	355
Texas	1,523	122,936	233	4,474
Utah	12	86	27	930
Vermont	12	256	4	(D)
Virginia	5	(D)	1	(D)
Washington	15	451	3	134
West Virginia	22	574	1	(D)
Wisconsin	162	9,002	105	3,390
Wyoming	—	—	1	(D)
U.S.	4,042	231,431	1,199	38,061

*Cervid data for Delaware and Rhode Island not available.

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