



United States
Department of
Agriculture

Animal and
Plant Health
Inspection
Service

Veterinary
Services

National
Animal Health
Monitoring
System

September
2015

Table of
Contents

Sheep and Lamb Predator and Nonpredator Death Loss in the United States, 2015



The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD).
USDA is an equal opportunity provider and employer.

Mention of companies or commercial products does not imply recommendation or endorsement by the USDA over others not mentioned. USDA neither guarantees nor warrants the standard of any product mentioned. Product names are mentioned solely to report factually on available data and to provide specific information.

USDA-APHIS-VS-CEAH-NAHMS
NRRC Building B, M.S. 2E7
2150 Centre Avenue
Fort Collins, CO 80526-8117
970.494.7000
<http://www.aphis.usda.gov/nahms>

#721.0915

Cover photograph courtesy of Agricultural Research Service

Items of Note

Sheep and lamb death losses in 2014 amounted to 585,000 sheep and lambs at an approximate cost of \$102 million, which represents a decrease from 634,500 sheep and lamb deaths in 2009; however, death loss for sheep (as a percentage of adult sheep) and lambs (as a percentage of lamb crop) remained steady from 2009 to 2014.

Death losses are categorized by predator and nonpredator losses. Of all adult-sheep death losses, 71.9 percent were attributed to nonpredator causes and 28.1 percent were attributed to predators. For lambs, nonpredator losses accounted for 63.6 percent of all losses in 2014. For both age groups, predator-attributed death loss, as a percentage of all death loss, declined from 2009 to 2014. The number of lambs lost attributed to predators was lower in 2014 than in any other study year (1995, 2000, 2010).

Nonpredator causes of death loss

Sheep death loss due to nonpredator causes accounted for 4.7 percent of adult-sheep inventory and 6.8 percent of lamb crop in 2014. The top three causes of nonpredator death loss in adult sheep were: old age (24.3 percent of losses), unknown nonpredator causes (13.2 percent), and lambing problems (12.1 percent). The top three causes of nonpredator losses in lambs were: weather-related causes (19.0 percent of losses), unknown nonpredator causes (12.6 percent), and lambing problems (11.7 percent).

Predator causes of death loss

Losses attributed to predators accounted for 1.8 percent of adult-sheep inventory and 3.9 percent of lamb crop in 2014. The top two causes of predator loss were coyotes and dogs for both adult sheep (54.3 and 21.4 percent of losses, respectively) and lambs (63.7 and 10.3 percent of losses, respectively). Over half of all operations (58.0 percent) used one or more nonlethal methods for predator control in 2014. This percentage is higher than in 2004 when 31.9 percent of operations used one or more nonlethal methods to control predators. The most commonly used methods for predator control were fencing (54.8 percent of operations), guard dogs (40.5 percent), use of lamb sheds (34.4 percent), and night penning (33.7 percent).

Table of Contents

Introduction 1

Terms Used in This Report 3

Section I: Population Estimates—Inventory 5

A. U.S. Demographics 5

1. Inventory by class and year—January 1, 1995, to January 1, 2015 5
2. Operations—1994 to 2014 6
3. Lamb crop—1994 to 2014 7

B. State Demographics 8

1. Sheep and lamb inventory—January 1, 2015 8

Section II: Population Estimates—Death Losses 9

A. Predator and Nonpredator Sheep and Lamb Death Loss 9

1. Overall death losses—1994 to 2014 9
2. Overall death losses by State—2014 12

B. Nonpredator Sheep and Lamb Death Loss, 2014 20

C. Predator Sheep and Lamb Death Loss, 2014 32

D. Number and Value of Sheep and Lambs Injured but not Killed by Predators, 2014 44

E. Nonlethal Methods Used to Prevent Losses on Sheep Operations Due to Wildlife 45

Section III: Methodology 52

A. Survey Procedures 52

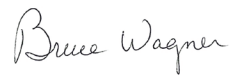
B. Estimation Procedures 52

Acknowledgments

This report was a cooperative effort between two U.S. Department of Agriculture (USDA) Agencies: the National Agricultural Statistics Service (NASS) and the Animal and Plant Health Inspection Service (APHIS).

We'd like to thank the NASS enumerators who telephoned and visited sheep operations and collected the data. Their hard work and dedication were invaluable. A thank you also goes to the personnel at the USDA–APHIS–Veterinary Services' Center for Epidemiology and Animal Health for their efforts in generating and distributing this report.

All participants are to be commended, particularly the producers whose voluntary efforts made this report possible.

A handwritten signature in cursive script that reads "Bruce Wagner".

Bruce Wagner
Director
Center for Epidemiology and Animal Health

Suggested bibliographic citation for this report:

USDA. 2015. "Sheep and Lamb Predator and Nonpredator Death Loss in the United States, 2015."

USDA-APHIS-VS-CEAH-NAHMS Fort Collins, CO
#721.0915

Contacts for further information:

Questions or comments on data analysis: Dr. Katherine Marshall (970) 494-7000.

Information on reprints or other reports: Ms. Abby Zehr (970) 494-7000.

Feedback

Feedback, comments, and suggestions regarding the Sheep Predator and Nonpredator Death Loss report are welcomed. You may submit feedback via online survey at: <http://www.aphis.usda.gov/nahms> (Click on "FEEDBACK on NAHMS reports.")

For questions about this report or additional copies, please contact:

USDA-APHIS-VS-CEAH-NAHMS
NRRC Building B, M.S. 2E7
2150 Centre Avenue
Fort Collins, CO 80526-8117
970-494-7000

Introduction

Each January, USDA's National Agricultural Statistics Service (NASS) collects data on sheep inventory, lamb crop, and total sheep and lamb death losses. Inventory and lamb crop estimates (number of head) are published in January via the NASS "Sheep and Goats" report. Total State-level sheep and lamb death losses (number of head) are published in the January report as well.

For NASS' January 1995, 2000, 2005, 2010, and 2015 sheep surveys, USDA's Animal and Plant Health Inspection Service's National Animal Health Monitoring System (NAHMS) provided funding for a detailed, retrospective breakdown of total sheep and lamb death losses by producer-attributed cause of loss occurring during the previous year. Sheep and lamb death losses by cause (number of head) were published in May via the NASS "Sheep and Goats Death Loss" report for years prior to 2015.

This report takes the place of NASS' "Sheep and Goat Death Loss" report for 2015. It provides a breakdown of sheep and lamb death losses by producer-attributed causes in 2014. Where possible, the 1994, 1999, 2004, and 2009 death losses are provided for comparison.

This report covers losses for adult sheep and for lambs. NASS defines lamb crop as lambs marked, docked, or branded in the Western States (Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Texas, Utah, Washington, Wyoming). In the remaining States, lamb crop is defined as lambs born. The individual-State versions of the NASS January 1 sheep and goats survey questionnaire reflect these differences.

In the Western States, NASS reports lamb losses only after docking or branding; however, the questionnaire NASS uses to collect data in some Western States does include a question regarding the lambs lost before marking, docking, or branding. While the State-level estimates published in the annual NASS "Sheep and Goats" national report include only those losses that occurred postdocking, four States—Colorado, Montana, Utah, and Wyoming—published State-level losses separated into pre- and postdocking for 2014.

The exclusion of predocking losses from the national report is due to the fact that lambs in the Western States are usually born on-range and, therefore, are less likely to be observed. Therefore, it is difficult for producers to accurately estimate the number of lambs both born and lost before marking, docking, or branding. This method, however, leads to the exclusion of a large number of lamb losses. In addition, no lambs lost due to lambing problems are counted in these States, as these losses would obviously all occur in the predocking period. Examination of the published predocking losses in the four States can give an estimate of the magnitude of losses that occur before docking.

Number of postdocking lamb losses, predocking lamb losses, and predocking lamb losses as a percentage of total lamb losses, by State:

Number of Lamb Losses—2014				
State	Postdocking	Predocking	Total	Predocking losses as a percentage of total losses
Colorado	19,000	21,000	40,000	52.5
Montana	15,000	12,000	27,000	44.4
Utah	16,000	16,500	32,500	50.8
Wyoming	9,000	14,000	23,000	60.9

Terms Used in This Report

Acidosis: A condition caused by excessive amounts of acid produced in the rumen, often due to ration change or grain overload.

Adult sheep inventory: Breeding rams and ewes 1 year and older, and market sheep.

Being on back: When overweight sheep in heavy fleece fall over and are unable to roll up from their backs.

Bloat: A condition in which ruminants cannot release the gas developed in the rumen as a result of fermentation.

Cull: Removing sheep no longer wanted from the flock.

Enterotoxemia: A condition in which normal clostridial bacteria in the gut rapidly reproduce, producing large quantities of toxins. Vaccination reduces the risk for enterotoxemia.

Fright tactics: Devices and strategies to frighten predators, including lights, bells, radios, vehicles, propane exploders, electronic guards, and others. Predators can become acclimated to these devices unless they are rotated or otherwise periodically changed.

Herding: Using herders for sheep in large pastures or on free range to help discourage predation.

Lamb crop: Lambs born in the Eastern States and lambs docked or branded in the Western States.

Lamb losses: For Eastern States, lamb losses are reported for all lambs born alive. For Western States, lamb losses are reported after docking or branding.

Lamb shed: Shed or pen providing protection from weather and, to some extent, predators.

Lambs: Sheep less than 1 year old.

Market sheep: Sheep 1 year and older for use as feeders or for slaughter.

Metabolic problems: Disease often associated with reduced availability of a nutrient and increased demand for it.

Milk fever: A metabolic problem associated with low calcium in late pregnancy or early lactation.

Night penning: Confining or concentrating flocks during the night when they are most vulnerable to predation.

Section I: Population Estimates—Inventory

Note: Data in this section were provided by the National Agricultural Statistics Service (NASS).

A. U.S. Demographics

1. Inventory by class and year—January 1, 1995, to January 1, 2015

With the exception of market sheep, the number of sheep and lambs has decreased each study year since 1995.

A.1. Number of sheep and lambs, by class and by year:

Class	January 1 Number (1,000 head)				
	Year				
	1995 ¹	2000 ²	2005 ³	2010 ⁴	2015 ⁵
All sheep and lambs	8,989	7,036	6,135	5,630	5,280
Breeding ewes 1 year and older	5,404	4,234	3,545	3,335	3,110
Breeding rams 1 year and older	257	209	192	195	175
Market sheep	97	80	74	80	85
Breeding ewes and rams 1 year and older and market sheep	5,758	4,523	3,811	3,610	3,370

¹Sheep and Goats Final Estimates, 1994–1998, NASS.

²Sheep and Goats Final Estimates, 1999–2003, NASS.

³Sheep and Goats Final Estimates, 2004–2008, NASS.

⁴Sheep and Goats Final Estimates, 2009–2013, NASS.

⁵Sheep and Goats, January 30, 2015, NASS.

2. Operations—1994 to 2014

While sheep and lamb inventories have generally trended downward, the number of sheep operations continued the trend upward from a low of 67,630 operations in 2004 to a high of 95,018 operations in 2014.

A.2.a. Number of operations with sheep and lambs, by year:

Number Operations				
Year				
1994	1999	2004 ¹	2009 ²	2014 ³
86,060	70,000	67,630	82,000	95,018

¹Farms, Land in Farms, and Livestock Operations, Final Estimates, 2003–2007, NASS.

²Farms, Land in Farms, and Livestock Operations, 2009 Summary, February 2010, NASS.

³Estimated by NAHMS (not published by NASS). Used the number of operations in the sample, weighted by the expansion weight (the number of operations in the population that each sampled operation represents).

The percentage of operations with 1 to 99 breeding sheep increased from 1994 to 2014. Conversely, the percentage of operations with 100 to 499 breeding sheep decreased from 1994 to 2014.

A.2.b. Percentage of operations with breeding sheep, by size of operation and by year:

Percent Operations					
Year					
Size of operation (number of breeding sheep)	1994	1999	2004	2009	2014
1 to 99	89.6	90.6	91.9	93.7	94.2
100 to 499	8.2	7.3	6.6	5.2	4.7
500 to 4,999	2.1	2.0	1.4	1.0	1.0
5,000 or more	0.1	0.1	0.1	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0

3. Lamb crop—1994 to 2014

A.3. Lamb crop and lamb crop per 100 ewes on hand, by year:

	Year				
	1994 ¹	1999 ²	2004 ³	2009 ⁴	2014 ⁵
Lamb crop (1,000 head)	5,968	4,754	4,040	3,690	3,440
Lamb crop per 100 ewes on hand (January 1)	102	110	113	108	111

¹Sheep and Goats Final Estimates, 1994–1998, NASS.²Sheep and Goats Final Estimates, 1999–2003, NASS.³Sheep and Goats Final Estimates, 2004–2008, NASS.⁴Sheep and Goats Final Estimates, 2009–2013, NASS.⁵Sheep and Goats, January 30, 2015, NASS.

B. State Demographics

1. Sheep and lamb inventory—January 1, 2015

B.1. Number of ewes, rams, market sheep, and lamb crop, by State:

State	January 1 Number (1,000 head)			Lamb crop (2014)
	Ewes	Rams	Market sheep	
AZ	76	7	4	49
CA	275	10	10	240
CO	184	6	5	200
ID	150	6	1	185
IL	38	3	1	50
IN	34	3	1	43
IA	100	5	1	150
KS	36	2	3	42
KY	30	2	0.5	40
MI	40	3	2	60
MN	73	4	3	125
MO	58	4	1	71
MT	153	6	2	200
NE	55	3	1	73
NV	48	2	1	47
New England ¹	26	2	3	29
NM	58	4	2	45
NY	51	3	2	55
NC	18	2	1	19
ND	42	2	1	55
OH	73	6	1	98
OK	31	3	1	36
OR	110	6	2	128
PA	56	5	3	61
SD	162	6	1	215
TN	28	3	0.5	34
TX	435	30	15	340
UT	220	10	2	235
VA	50	3	1	55
WA	31	3	2	41
WV	22	1	-	29
WI	50	3	2	68
WY	210	7	4	240
Other States ²	87	10	5	82
U.S.	3,110	175	85	3,440

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AK, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

Section II: Population Estimates–Death Losses

A. Predator and Nonpredator Sheep and Lamb Death Loss

1. Overall death losses—1994 to 2014

In 2014, 585,000 sheep and lambs died of all causes, costing the industry about \$102 million. Total losses declined from 634,500 sheep and lamb losses in 2009 to 585,000 losses in 2014; however, death loss as a percentage of inventory remained steady.

A.1.a. Number of sheep and lamb death losses due to all causes and total value of losses, by year:

Number (1,000 head) and Value (\$1,000)										
Year										
	1994¹	1994¹	1999¹	1999¹	2004¹	2004¹	2009²	2009²	2014³	2014³
	1994¹	value	1999¹	value	2004¹	value	2009²	value	2014³	value
Sheep	337.0	NA	259.8	NA	214.3	27,291	234.5	31,663	220.0	44,604
Lamb	609.5	NA	488.6	NA	385.0	24,290	400.0	25,156	365.0	57,281
Total	946.5	NA	748.4	NA	599.3	51,581	634.5	56,819	585.0	101,885

¹Meat Animal Production, Disposition, and Income, Final Estimates, 2003–07, NASS.

²Sheep and Goats Death Loss report, May 2010, NASS.

³Sheep and Goats, January 2015, NASS.

Death loss for sheep (as a percentage of adult sheep) and lambs (as a percentage of lamb crop) remained steady from 2009 to 2014.

A.1.b. Sheep death loss as a percentage of adult sheep inventory on January 1 of the following year, by year:

Percent Inventory				
Year				
1994	1999	2004	2009	2014
5.8	5.7	5.6	6.5	6.5

A.1.c. Lamb death loss as a percentage of lamb crop, by year:

Percent Lamb Crop				
Year				
1994	1999	2004	2009	2014
10.2	10.3	9.5	10.8	10.6

Nearly three-fourths of adult sheep losses (71.9 percent) were attributed to nonpredator causes, while just over one-fourth of losses (28.1 percent) were attributed to predators.

A.1.d. Number and percentage of adult sheep death losses, by cause and by year:

Number and Percent Loss										
Year										
	1994		1999		2004		2009		2014	
Cause of loss	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Nonpredator	230,025	68.3	183,400	70.6	148,500	69.3	158,800	67.7	158,288	71.9
Predator	106,575	31.7	76,400*	29.4	65,800	30.7	75,700	32.3	61,712	28.1
Total	336,600	100.0	259,800	100.0	214,300	100.0	234,500	100.0	220,000	100.0

*Initial NASS publication showed predator sheep losses of 77,000 head. Subsequent publication revised only total sheep loss. Relationship between predator and nonpredator loss was maintained at the State level, therefore deriving 76,400 head lost due to predators in the United States.

Nonpredator causes accounted for 63.6 percent of all lamb death losses in 2014, which was slightly higher than in previous study years. Lamb death loss attributed to predators declined from 2009 to 2014.

A.1.e. Number and percentage of all lamb death losses, by cause and by year:

Cause of loss	Number and Percent Loss									
	Year									
	1994		1999		2004		2009		2014	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Nonpredator	347,925	57.1	289,300	59.2	227,200	59.0	228,500	57.1	232,317	63.6
Predator	261,475	42.9	199,300*	40.8	157,800	41.0	171,500	42.9	132,683	36.4
Total	609,400	100.0	488,600	100.0	385,000	100.0	400,000	100.0	365,000	100.0

*Initial NASS publication showed predator sheep losses of 196,000 head. Subsequent publication revised only total lamb loss. Relationship between predator and nonpredator loss was maintained at the State level, therefore deriving 199,300 head lost due to predators in the United States.

2. Overall death losses by State—2014

When examining lamb death loss by State, it is important to remember that Western states (Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Texas, Utah, Washington, Wyoming) report lamb losses only after marking, docking, or branding, which underestimates the actual number of lambs that died.

A.2.a. Number of sheep and lambs that died, by State and by cause:

State	Number Cause of Loss					
	Nonpredator		Predator		All causes	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
AZ	3,096	2,300	4,904	1,700	8,000	4,000
CA	9,723	3,829	2,277	3,171	12,000	7,000
CO ³	4,900	11,446	5,100	7,554	10,000	19,000
ID	5,731	5,646	1,269	3,354	7,000	9,000
IL	2,819	7,153	181	847	3,000	8,000
IN	2,473	5,220	527	780	3,000	6,000
IA	7,556	16,798	1,444	1,202	9,000	18,000
KS	1,700	4,178	800	2,322	2,500	6,500
KY	1,634	4,366	366	1,134	2,000	5,500
MI	2,649	6,257	351	743	3,000	7,000
MN	7,280	14,800	720	1,200	8,000	16,000
MO	3,148	6,558	352	3,442	3,500	10,000
MT ³	9,850	7,530	3,000	7,470	12,000	15,000
NE	4,074	7,639	226	861	4,300	8,500
NV	2,067	715	2,933	9,285	5,000	10,000
New England ¹	1,221	2,431	279	569	1,500	3,000
NM	3,848	4,339	2,152	2,661	6,000	7,000
NY	2,645	5,148	355	852	3,000	6,000
NC	1,344	1,618	356	882	1,700	2,500
ND	2,020	4,947	480	2,053	2,500	7,000
OH	6,036	10,025	964	1,975	7,000	12,000
OK	2,566	4,059	1,434	1,941	4,000	6,000
OR	5,995	2,866	2,005	4,134	8,000	7,000
PA	3,858	8,195	142	805	4,000	9,000
SD	9,041	20,392	959	6,608	10,000	27,000
TN	2,405	3,586	595	1,414	3,000	5,000
TX	20,774	21,070	15,226	33,930	36,000	55,000
UT ³	5,800	3,900	5,200	12,100	11,000	16,000

table continued →

A.2.a. (cont'd.) Number of sheep and lambs that died, by State and by cause:

State	Number Cause of Loss					
	Nonpredator		Predator		Nonpredator	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
VA	2,834	6,076	1,166	2,924	4,000	9,000
WA	2,182	1,373	818	627	3,000	2,000
WV	1,160	3,012	840	1,988	2,000	5,000
WI	2,750	7,338	250	662	3,000	8,000
WY ³	5,300	3,300	1,700	5,700	7,000	9,000
Other States ²	5,951	12,446	5,049	7,554	11,000	20,000
U.S.	158,288	232,317	61,712	132,683	220,000	365,000

¹New England includes CT, ME, MA, NH, RI, and VT.²Other States include AL, AK, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.³CO, MT, UT, and WY publish their own State estimates. CO and MT publish combined pre- and postdocking estimates only. To be consistent with other Western States, postdocking losses were estimated for CO and MT using the same methods used for all other States (see estimation in methodology section).

A.2.b. Value of sheep and lambs that died, by State and by cause:

State	Value (\$1,000)					
	Cause of Loss					
	Nonpredator		Predator		All causes	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
AZ	503	278	797	206	1,300	484
CA	2,076	714	486	591	2,562	1,306
CO ³	1,004.5	2,289	1,045.5	1,511	2,050	3,800 ⁴
ID	1,160	1,098	257	652	1,418	1,751
IL	650	948	42	112	691	1,060
IN	543	799	116	119	658	918
IA	1,674	2,688	320	192	1,993	2,880
KS	370	792	174	440	544	1,232
KY	327	581	73	151	400	732
MI	587	1,123	78	133	665	1,257
MN	1,558	2,449	154	199	1,712	2,648
MO	590	898	66	472	656	1,370
MT ³	1,865.5	1,348	622.5	1,337 ⁴	2,490	2,685 ⁴
NE	1,063	1,104	59	124	1,122	1,228
NV	501	94	711	1,216	1,213	1,310
New England ¹	293	516	67	121	360	637
NM	689	731	385	448	1,074	1,180
NY	547	777	74	129	621	906
NC	286	215	76	117	361	333
ND	405	900	96	374	501	1,274
OH	1,419	1,449	226	285	1,645	1,734
OK	616	574	344	275	960	849
OR	1,106	430	370	620	1,476	1,050
PA	887	1,119	33	110	920	1,228
SD	1,894	3,681	201	1,193	2,095	4,874
TN	451	407	112	160	563	568

table continued →

A.2.b. (cont'd.) Value of sheep and lambs that died, by State and by cause:

State	Value (\$1,000)					
	Cause of Loss					
	Nonpredator		Predator		All causes	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
TX	3,594	2,697	2,634	4,343	6,228	7,040
UT ³	1,152	886	1,032	1,954 ⁴	2,184	2,840 ⁴
VA	567	890	233	428	800	1,319
WA	481	258	180	118	661	376
WV	232	449	169	296	401	745
WI	617	1,137	56	103	674	1,240
WY ³	978.1	632	313.9	799 ⁴	1,292	1,431 ⁴
Other States ²	1,253	1,867	1,063	1,133	2,315	3,000
U.S.	32,486	36,818	12,118	20,463	44,604	57,281

¹New England includes CT, ME, MA, NH, RI, and VT.²Other States include AL, AK, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.³Numbers are from State Publications; except for lambs in CO and MT.

Overall, 40.2 percent of operations lost sheep and 41.2 percent lost lambs from any cause in 2014. Some States had a much higher percentage of operations affected by death loss than others.

A.2.c. Percentage of operations that had any sheep or lamb deaths, by State and by cause:

State	Percent Operations Cause of Loss											
	Nonpredator				Predator				All causes			
	Sheep		Lambs		Sheep		Lambs		Sheep		Lambs	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
AZ	18.7	(5.4)	9.1	(2.8)	34.8	(9.2)	8.5	(2.8)	45.0	(9.4)	14.2	(3.4)
CA	21.3	(4.6)	6.1	(1.4)	5.6	(1.4)	6.1	(1.5)	25.1	(5.3)	10.2	(2.2)
CO	38.2	(6.0)	17.1	(3.4)	12.4	(2.1)	10.2	(1.6)	43.8	(6.6)	23.4	(4.0)
ID	18.9	(6.5)	10.5	(3.6)	5.5	(2.1)	5.1	(1.9)	21.5	(7.3)	13.1	(4.5)
IL	57.7	(7.0)	63.6	(7.3)	4.6	(2.0)	12.9	(3.8)	59.1	(7.0)	65.8	(7.3)
IN	30.6	(6.9)	35.1	(7.2)	5.5	(2.2)	9.3	(2.9)	34.6	(7.2)	41.1	(7.6)
IA	50.4	(5.9)	65.2	(5.8)	6.4	(3.0)	12.2	(5.0)	51.7	(6.0)	69.1	(5.9)
KS	60.4	(5.8)	59.8	(5.9)	15.6	(3.3)	15.4	(3.3)	66.7	(5.6)	67.0	(5.8)
KY	39.0	(8.0)	56.2	(8.1)	8.6	(3.9)	26.6	(7.6)	45.7	(8.1)	72.5	(6.6)
MI	24.0	(5.4)	36.2	(7.4)	3.8	(2.0)	4.5	(2.1)	26.4	(5.9)	38.8	(7.8)
MN	39.1	(13.7)	40.8	(14.1)	2.7	(1.1)	4.3	(1.8)	40.0	(14.0)	43.1	(14.9)
MO	47.5	(8.2)	40.8	(7.4)	8.8	(3.0)	16.9	(4.5)	53.0	(8.7)	50.0	(8.4)
MT	61.6	(5.4)	31.0	(3.6)	15.4	(2.1)	33.0	(4.2)	65.6	(5.6)	53.1	(5.0)
NE	64.2	(6.3)	73.8	(5.3)	7.3	(2.1)	8.8	(2.5)	65.3	(6.2)	76.6	(5.1)
NV	60.7	(13.3)	10.1	(3.2)	16.8	(4.8)	33.7	(13.1)	69.5	(13.1)	39.1	(13.3)
New England ¹	26.6	(5.5)	23.6	(4.9)	5.4	(2.2)	4.3	(2.0)	31.1	(5.9)	25.1	(5.0)
NM	18.2	(7.7)	13.1	(7.2)	12.4	(3.5)	10.4	(3.3)	29.5	(8.5)	22.6	(8.0)
NY	36.5	(11.7)	42.9	(12.0)	3.3	(1.4)	10.4	(4.1)	38.7	(11.8)	51.1	(12.5)
NC	21.1	(7.2)	17.3	(5.9)	6.0	(2.3)	4.2	(1.6)	26.2	(8.3)	19.7	(6.4)
ND	71.6	(5.6)	79.0	(5.1)	14.7	(3.3)	24.4	(4.9)	79.2	(5.1)	90.1	(3.5)
OH	41.9	(5.4)	51.9	(5.9)	3.0	(1.0)	12.9	(2.9)	43.3	(5.5)	58.2	(6.2)
OK	35.1	(6.0)	48.6	(7.4)	21.0	(4.8)	24.0	(5.4)	53.2	(7.6)	65.9	(6.1)
OR	25.8	(4.5)	13.1	(3.6)	5.3	(1.3)	5.4	(1.3)	29.1	(4.8)	15.8	(3.8)
PA	28.9	(5.2)	35.3	(5.9)	0.9	(0.5)	3.7	(1.4)	29.0	(5.2)	37.6	(6.1)
SD	73.9	(3.5)	75.9	(3.5)	12.3	(2.0)	21.1	(2.6)	78.9	(3.3)	82.1	(3.3)
TN	37.6	(7.4)	39.3	(7.4)	7.8	(3.1)	20.4	(5.8)	42.3	(7.8)	48.4	(8.3)
TX	35.7	(6.2)	40.6	(6.4)	17.6	(6.5)	20.5	(2.7)	44.6	(6.3)	56.4	(6.5)

table continued →

A.2.c. (cont'd.) Percentage of operations that had any sheep or lamb deaths, by State and by cause:

State	Percent Operations Cause of Loss											
	Nonpredator				Nonpredator				Nonpredator			
	Sheep		Lambs		Sheep		Lambs		Sheep		Lambs	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	
UT	37.2	(15.3)	16.9	(7.3)	8.0	(3.1)	12.5	(4.8)	40.2	(16.1)	25.5	(10.1)
VA	39.3	(6.8)	44.9	(7.5)	7.8	(2.2)	18.0	(4.0)	42.9	(7.2)	51.9	(8.3)
WA	22.6	(5.9)	17.8	(6.4)	6.2	(2.9)	4.5	(2.4)	28.2	(6.6)	21.9	(6.8)
WV	32.4	(4.9)	53.8	(5.3)	8.6	(2.9)	16.1	(3.8)	39.8	(5.2)	63.4	(5.1)
WI	32.1	(7.1)	37.3	(6.6)	1.6	(0.8)	2.8	(0.9)	33.1	(7.2)	38.6	(6.8)
WY	62.0	(3.1)	36.8	(3.0)	17.9	(1.5)	28.3	(2.3)	68.2	(2.6)	48.9	(3.9)
Other States ²	27.1	(3.6)	38.0	(4.4)	11.7	(2.3)	14.7	(2.1)	36.3	(4.0)	46.6	(4.5)
U.S.	34.0	(1.6)	33.8	(1.5)	10.2	(1.3)	12.1	(0.7)	40.2	(1.8)	41.2	(1.7)

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AK, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

Overall, 4.7 percent of adult-sheep inventory was lost due to nonpredator causes and 1.8 percent was lost as a result of predation. In some States, such as Arizona and Nevada, losses attributed to predation were greater than losses attributed to nonpredation.

A.2.d. Percentage of January 1, 2015, adult-sheep inventory lost in 2014, as a percentage of adult-sheep inventory on January 1, 2015, by cause and by State:

State	Percentage of Adult Sheep Inventory Lost		
	Nonpredator loss	Predator loss	All causes
AZ	3.6	5.6	9.2
CA	3.3	0.8	4.1
CO	2.5	2.6	5.1
ID	3.7	0.8	4.5
IL	6.7	0.4	7.1
IN	6.5	1.4	7.9
IA	7.1	1.4	8.5
KS	4.1	2.0	6.1
KY	5.0	1.1	6.2
MI	5.9	0.8	6.7
MN	9.1	0.9	10.0
MO	5.0	0.6	5.6
MT	6.1	1.9	7.5
NE	6.9	0.4	7.3
NV	4.1	5.8	9.8
New England ¹	3.9	0.9	4.8
NM	6.0	3.4	9.4
NY	4.7	0.6	5.4
NC	6.4	1.7	8.1
ND	4.5	1.1	5.6
OH	7.5	1.2	8.8
OK	7.3	4.1	11.4
OR	5.1	1.7	6.8
PA	6.0	0.2	6.3
SD	5.3	0.6	5.9
TN	7.6	1.9	9.5
TX	4.3	3.2	7.5
UT	2.5	2.2	4.7
VA	5.2	2.2	7.4
WA	6.1	2.3	8.3
WV	5.0	3.7	8.7
WI	5.0	0.5	5.5
WY	2.4	0.8	3.2
Other States ²	5.8	5.0	10.8
U.S.	4.7	1.8	6.5

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AK, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

Overall, 6.8 percent of the lamb crop was lost to nonpredator causes and 3.9 percent was lost due to predation. In some States, such as Nevada and Texas, the percentage of lamb crop lost to predators was higher than the percentage of losses attributed to nonpredator causes.

A.2.e. Percentage of 2014 lamb crop lost due to nonpredator, predator, and all causes as a percentage of lamb crop, by State:

State	Percentage of Lamb Crop Lost		
	Nonpredator loss	Predator loss	All causes
AZ	4.7	3.5	8.2
CA	1.6	1.3	2.9
CO	5.7	3.8	9.5
ID	3.1	1.8	4.9
IL	14.3	1.7	16.0
IN	12.1	1.8	14.0
IA	11.2	0.8	12.0
KS	9.9	5.5	15.5
KY	10.9	2.8	13.8
MI	10.4	1.2	11.7
MN	11.8	1.0	12.8
MO	9.2	4.8	14.1
MT	3.8	3.7	7.5
NE	10.5	1.2	11.6
NV	1.5	19.8	21.3
New England ¹	8.4	2.0	10.3
NM	9.6	5.9	15.6
NY	9.4	1.5	10.9
NC	8.5	4.6	13.2
ND	9.0	3.7	12.7
OH	10.2	2.0	12.2
OK	11.3	5.4	16.7
OR	2.2	3.2	5.5
PA	13.4	1.3	14.8
SD	9.5	3.1	12.6
TN	10.5	4.2	14.7
TX	6.2	10.0	16.2
UT	1.7	5.1	6.8
VA	11.0	5.3	16.4
WA	3.3	1.5	4.9
WV	10.4	6.9	17.2
WI	10.8	1.0	11.8
WY	1.4	2.4	3.8
Other States ²	15.2	9.2	24.4
U.S.	6.8	3.9	10.6

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AK, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

B. Nonpredator Sheep and Lamb Death Loss, 2014

Overall, old age contributed to the highest percentage of death loss (24.3 percent) in sheep. This percentage was followed by “Unknown nonpredator causes” (13.2 percent) and lambing problems (12.1 percent). The largest operations had a higher percentage of unknown nonpredator causes of loss compared with the smallest operations (17.5 and 11.9 percent, respectively). Lambing problems contributed to a higher percentage of loss on the smallest operations compared with the largest operations (17.4 and 11.8 percent, respectively).

B.1. Number and percentage of sheep death losses, by nonpredator cause and by size of operation:

Nonpredator cause	Number and Percent Loss									
	Size of Operation (number of sheep and lambs)									
	1–24		25–99		100–999		1,000 or more		All operations	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Enterotoxemia	495	1.5	991	2.3	913	2.0	810	2.3	3,208	2.0
Internal parasites	2,348	6.9	4,537	10.5	5,635	12.4	1,023	2.9	13,543	8.6
Other digestive problems ¹	907	2.7	1,307	3.0	1,420	3.1	1,670	4.7	5,305	3.4
Respiratory problems	1,060	3.1	2,032	4.7	3,233	7.1	1,818	5.1	8,144	5.1
Metabolic problems ²	131	0.4	506	1.2	1,032	2.3	527	1.5	2,195	1.4
Other disease problems ³	1,111	3.3	1,607	3.7	1,713	3.8	2,038	5.7	6,469	4.1
Weather related ⁴	1,852	5.5	2,941	6.8	2,151	4.7	2,659	7.4	9,603	6.1
Starvation	30	0.1	155	0.4	207	0.5	297	0.8	690	0.4
Lambing problems	5,872	17.4	4,720	11.0	4,361	9.6	4,246	11.8	19,199	12.1
Old age	8,792	26.0	10,441	24.2	12,180	26.8	7,027	19.6	38,440	24.3
Being on back	236	0.7	571	1.3	837	1.8	846	2.4	2,490	1.6
Poisoning ⁵	591	1.7	590	1.4	553	1.2	2,314	6.4	4,048	2.6
Theft (stolen)	401	1.2	723	1.7	859	1.9	1,630	4.5	3,613	2.3
Other nonpredator causes ⁶	1,488	4.4	3,491	8.1	1,260	2.8	1,431	4.0	7,670	4.8
Found dead ⁷	4,504	13.3	3,581	8.3	3,480	7.7	1,245	3.5	12,811	8.1
Unknown nonpredator causes	4,025	11.9	4,888	11.3	5,655	12.4	6,294	17.5	20,862	13.2
Total	33,843	100.0	43,081	100.0	45,488	100.0	35,875	100.0	158,288	100.0

¹Such as bloat, scours, or acidosis.

²Such as milk fever.

³Such as mastitis or foot rot.

⁴Such as chilling, drowning, or lightning.

⁵Such as by nitrate, noxious feeds, or noxious weeds.

⁶Such as lameness.

⁷With cause undetermined.

The highest percentages of death loss in lambs were attributed to weather-related causes (19.0 percent), unknown nonpredator causes (12.6 percent), and lambing problems (11.7 percent). Weather and lambing problems contributed to a higher percentage of lamb death loss on the smallest operations (21.3 and 14.6 percent, respectively) than on the largest operations (12.1 and 2.0 percent, respectively).

B.2. Number and percentage of lamb death losses, by nonpredator cause and by size of operation:

Nonpredator cause	Number and Percent Loss									
	Size of Operation (number of sheep and lambs)									
	1–24		25–99		100–999		1,000 or more		All operations	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Enterotoxemia	1,804	4.0	2,533	3.4	3,858	5.6	4,054	9.2	12,249	5.3
Internal parasites	3,974	8.8	6,895	9.3	8,407	12.1	1,964	4.5	21,239	9.1
Other digestive problems ¹	1,018	2.3	2,934	4.0	3,615	5.2	2,678	6.1	10,244	4.4
Respiratory problems	1,856	4.1	5,221	7.1	8,587	12.4	5,469	12.5	21,133	9.1
Metabolic problems ²	455	1.0	639	0.9	522	0.8	294	0.7	1,911	0.8
Other disease problems ³	367	0.8	1,858	2.5	2,472	3.6	855	1.9	5,552	2.4
Weather related ⁴	9,618	21.3	17,436	23.6	11,799	17.0	5,296	12.1	44,148	19.0
Starvation	4,517	10.0	2,416	3.3	3,508	5.1	1,229	2.8	11,670	5.0
Lambing problems	6,598	14.6	11,650	15.7	8,102	11.7	882	2.0	27,232	11.7
Being on back	98	0.2	235	0.3	164	0.2	190	0.4	687	0.3
Poisoning ⁵	230	0.5	1,363	1.8	304	0.4	1,230	2.8	3,127	1.3
Theft (stolen)	579	1.3	372	0.5	612	0.9	3,799	8.7	5,363	2.3
Other nonpredator causes ⁶	3,602	8.0	5,798	7.8	2,733	3.9	5,823	13.3	17,956	7.7
Found dead ⁷	5,527	12.3	7,905	10.7	4,843	7.0	2,188	5.0	20,464	8.8
Unknown nonpredator causes	4,853	10.8	6,778	9.2	9,788	14.1	7,925	18.1	29,343	12.6
Total	45,095	100.0	74,034	100.0	69,312	100.0	43,875	100.0	232,317	100.0

¹Such as bloat, scours, or acidosis.

²Such as milk fever.

³Such as mastitis or foot rot.

⁴Such as chilling, drowning, or lightning.

⁵Such as by nitrate, noxious feeds, or noxious weeds.

⁶Such as lameness.

⁷With cause undetermined.

Compared with 2009, weather in 2014 contributed to a lower percentage of nonpredator losses in adult sheep, while theft and metabolic problems contributed to a higher percentage of nonpredator losses in adult sheep. In 2014, “Found dead (cause undetermined)” was added as a cause of loss, which likely contributed to the decrease in weather-related causes of loss in 2014.

B.3. Percentage of death loss in adult sheep, by nonpredator cause and by year:

Nonpredator cause	Percent Nonpredator Loss in Adult Sheep				
	Year				
	1994	1999	2004	2009	2014
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	9.3	11.6	12.9	13.2 ¹	13.9 ¹
Enterotoxemia (overeating)				1.8	2.0
Internal parasites				7.7	8.6
Other digestive problems (bloat, scours, acidosis, etc.)				3.7	3.4
Respiratory problems	6.9	8.5	9.4	4.8	5.1
Metabolic problems (milk fever, etc.)	3.6	3.2	3.7	0.6	1.4
Other disease problems (mastitis, foot rot, etc.)		5.6	6.6	4.9	4.1
Weather related (chilling, drowning, lightning, etc.)	8.4	6.7	3.9	15.7	6.1
Starvation					0.4
Lambing problems	9.9	11.3	13.4	12.5	12.1
Old age			26.8	24.7	24.3
Being on back			2.0	1.8	1.6
Poisoning (nitrate, noxious feeds, noxious weeds, etc.)	5.3	4.0	3.9	3.1	2.6
Theft (stolen)	2.0	0.8	0.5	0.5	2.3
Other nonpredator causes (lameness, etc.) ²	34.7	34.0	4.8	4.3	4.8
Found dead (cause undetermined)					8.1
Unknown nonpredator causes	19.9	14.3	12.1	13.9	13.2
Total	100.0	100.0	100.0	100.0	100.0

¹In 2009 and 2014, the category “Digestive problems” is the sum of “Enterotoxemia,” “Internal parasites,” and “Other digestive problems.”

²Lameness, etc. (includes old age and being on back in 1994 and 1999, and “Other diseases” in 1994).

Overall, 4.68 percent of adult sheep inventory was lost due to nonpredator causes in 2014, which was slightly higher than in previous study years.

B.4. Percentage of January 1, 2015, adult sheep inventory lost, by nonpredator cause and by year:

Nonpredator cause	Percent Inventory				
	Year				
	1994	1999	2004	2009	2014
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	0.37	0.43	0.50	0.58 ¹	0.65 ¹
Enterotoxemia (overeating)				0.08	0.09
Internal parasites				0.34	0.40
Other digestive problems (bloat, scours, acidosis, etc.)				0.16	0.16
Respiratory problems	0.27	0.31	0.36	0.21	0.24
Metabolic problems (milk fever, etc.)	0.14	0.12	0.14	0.02	0.07
Other disease problems (mastitis, foot rot, etc.)		0.21	0.26	0.21	0.19
Weather related (chilling, drowning, lightning, etc.)	0.34	0.25	0.15	0.69	0.28
Starvation					0.02
Lambing problems	0.39	0.42	0.52	0.55	0.58
Old age			1.04	1.08	1.14
Being on back			0.08	0.08	0.07
Poisoning (nitrate, noxious feeds, noxious weeds, etc.)	0.21	0.15	0.15	0.14	0.12
Theft (stolen)	0.08	0.03	0.02	0.02	0.10
Other nonpredator causes (lameness, etc.) ²	1.39	1.26	0.19	0.19	0.23
Found dead (cause undetermined)					0.38
Unknown nonpredator causes	0.79	0.53	0.47	0.61	0.61
All	3.99	3.70	3.88	4.38	4.68

¹In 2009 and 2014, the category "Digestive problems" is the sum of "Enterotoxemia," "Internal parasites," and "Other digestive problems."

²Lameness, etc. (includes old age and being on back in 1994 and 1999, and "Other diseases" in 1994).

As in 2009, weather-related causes contributed to the highest percentage of death loss (19.1 percent) in lambs in 2014, followed by digestive problems (18.9 percent).

B.5. Percentage of death loss in lambs, by nonpredator cause and by year:

Percent Nonpredator Death Loss in Lambs					
Nonpredator cause	Year				
	1994	1999	2004	2009	2014
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	19.3	17.4	19.8	20.1 ¹	18.9 ¹
Enterotoxemia (overeating)				6.3	5.3
Internal parasites				7.9	9.2
Other digestive problems (bloat, scours, acidosis, etc.)				5.9	4.4
Respiratory problems	19.4	21.9	22.8	12.6	9.1
Metabolic problems (milk fever, etc.)	3.9	3.2	2.8	0.8	0.8
Other disease problems (mastitis, foot rot, etc.)		3.8	3.3	2.7	2.4
Weather related (chilling, drowning, lightning, etc.)	16.9	12.8	14.8	25.6	19.1
Starvation					5.0
Lambing problems	10.5	10.4	14.7	14.5	11.8
Poisoning (nitrate, noxious feeds, noxious weeds, etc.)	2.5	1.8	2.0	2.2	1.4
Theft (stolen)	1.8	0.9	0.7	0.5	2.3
Other nonpredator causes (lameness, etc.) ²	8.2	13.1	5.8	6.9	7.8
Found dead (cause undetermined)					8.8
Unknown nonpredator causes	17.5	14.7	13.3	14.1	12.7
Total	100.0	100.0	100.0	100.0	100.0

¹In 2009 and 2014, the category "Digestive problems" is the sum of "Enterotoxemia," "Internal parasites," and "Other digestive problems."

²Lameness, etc. (includes "Other diseases" in 1994).

Overall, 6.80 percent of the lamb crop was lost due to nonpredator causes in 2014, which was slightly higher than in 2009 (6.19 percent).

B.6. Percentage of lamb crop lost, by nonpredator cause and by year:

Nonpredator cause	Percent Lamb Crop				
	Year				
	1994	1999	2004	2009	2014
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	1.12	0.97	1.10	1.25 ¹	1.28 ¹
Enterotoxemia (overeating)				0.39	0.36
Internal parasites				0.49	0.62
Other digestive problems (bloat, scours, acidosis, etc.)				0.37	0.30
Respiratory problems	1.13	1.21	1.26	0.78	0.62
Metabolic problems (milk fever, etc.)	0.23	0.18	0.15	0.05	0.06
Other disease problems (mastitis, foot rot, etc.)		0.21	0.19	0.17	0.16
Weather related (chilling, drowning, lightning, etc.)	0.98	0.71	0.82	1.58	1.30
Starvation					0.34
Lambing problems	0.61	0.57	0.82	0.90	0.80
Poisoning (nitrate, noxious feeds, noxious weeds, etc.)	0.15	0.10	0.11	0.14	0.09
Theft (stolen)	0.11	0.05	0.04	0.03	0.15
Other nonpredator causes (lameness, etc.) ²	0.48	0.73	0.32	0.42	0.53
Found dead (cause undetermined)					0.60
Unknown nonpredator causes	1.02	0.82	0.74	0.87	0.87
All	5.83	5.55	5.55	6.19	6.80

¹In 2009 and 2014, the category “Digestive problems” is the sum of “Enterotoxemia,” “Internal parasites,” and “Other digestive problems.”

²Lameness, etc. (includes “other diseases” in 1994).

B.7. Number and percentage of sheep and lamb death losses, by nonpredator cause:

Nonpredator cause	Number and Percent			
	Sheep		Lambs	
	Number	Percent	Number	Percent
Enterotoxemia (overeating)	3,208	2.0	12,249	5.3
Internal parasites	13,543	8.6	21,239	9.1
Other digestive problems (bloat, scours, acidosis, etc.)	5,305	3.4	10,244	4.4
Respiratory problems	8,144	5.1	21,133	9.1
Metabolic problems (milk fever, etc.)	2,195	1.4	1,911	0.8
Other disease problems (mastitis, foot rot, etc.)	6,469	4.1	5,552	2.4
Weather related (chilling, drowning, lightning, etc.)	9,603	6.1	44,148	19.0
Starvation	690	0.4	11,670	5.0
Lambing problems	19,199	12.1	27,232	11.7
Old age	38,440	24.3		
Being on back	2,490	1.6	687	0.3
Poisoning (nitrate, noxious feeds, noxious weeds, etc.)	4,048	2.6	3,127	1.3
Theft (stolen)	3,613	2.3	5,363	2.3
Other nonpredator causes (lameness, etc.)	7,670	4.8	17,956	7.7
Found dead (cause undetermined)	12,811	8.1	20,464	8.8
Unknown nonpredator causes	20,862	13.2	29,343	12.6
Total	158,288	100.0	232,317	100.0

B.8. Number of sheep and lambs that died due to enterotoxemia, internal parasites, or other digestive problems in 2014, by State:

State	Number Sheep and Lambs					
	Cause of Loss					
	Enterotoxemia		Internal parasites		Other digestive problems	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
AZ	158	37	(D)	29	256	38
CA	267	141	61	38	1,361	342
CO	100	1,405	150	105	211	782
ID	144	1,230	60	80	213	489
IL	59	265	330	1,139	81	113
IN	124	243	74	205	(D)	258
IA	174	671	469	1,043	211	780
KS	51	249	100	208	25	148
KY	(D)	42	813	752	67	302
MI	46	197	416	485	210	432
MN	312	926	647	822	103	540
MO	254	96	773	1,026	45	83
MT	200	637	393	566	134	221
NE	235	399	89	235	75	263
NV	(D)	0	0	0	0	0
New England ¹	22	89	117	229	59	70
NM	(D)	56	(D)	33	54	25
NY	49	254	509	539	141	334
NC	(D)	24	266	376	32	87
ND	0	383	81	247	123	332
OH	37	535	714	1,158	418	843
OK	(D)	78	431	503	52	51
OR	42	156	162	117	62	203
PA	42	192	264	581	209	662
SD	199	1,258	778	2,123	236	909
TN	(D)	43	745	701	50	249
TX	207	228	1,644	1,725	122	413
UT	100	200	106	146	319	189
VA	58	74	678	1,765	20	125
WA	119	103	(D)	59	0	33
WV	(D)	118	542	404	(D)	58
WI	(D)	307	86	404	133	285
WY	53	386	27	50	202	293
Other States ²	57	1,183	1,999	3,346	72	294
U.S. ³	3,208	12,249	13,543	21,239	5,305	10,244

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

³In some cases total US may be slightly different from sum of States due to CO, MT, UT, and WY, where numbers from State publications were used instead of NAHMS estimates.

(D) = Numbers greater than 0 but less than 20 are suppressed to avoid potential disclosure.

B.9. Number of sheep and lambs that died due to respiratory problems, metabolic problems, or other disease problems in 2014, by State:

State	Number Sheep and Lambs					
	Respiratory problems		Cause of Loss		Other disease problems	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
AZ	38	57	(D)	29	(D)	35
CA	560	623	138	21	611	78
CO	89	1,685	44	41	100	46
ID	495	491	99	(D)	565	207
IL	162	587	45	24	117	482
IN	137	608	24	246	283	138
IA	736	1,746	79	76	377	464
KS	191	421	(D)	38	50	113
KY	59	119	100	16	41	373
MI	165	999	43	22	115	132
MN	923	2,303	70	109	129	335
MO	183	260	(D)	(D)	20	94
MT	514	931	500	23	580	316
NE	300	552	50	(D)	246	222
NV	223	20	217	78	159	0
New England ¹	21	60	39	(D)	33	(D)
NM	33	60	(D)	(D)	32	39
NY	116	491	84	49	23	289
NC	117	210	40	44	0	(D)
ND	109	1,177	0	0	90	38
OH	428	1,037	59	45	486	241
OK	78	269	0	0	34	67
OR	386	582	127	0	105	281
PA	255	508	77	379	119	68
SD	626	2,607	54	75	167	113
TN	21	40	(D)	0	28	(D)
TX	387	1,079	138	199	907	100
UT	242	403	28	44	247	107
VA	67	124	(D)	35	93	188
WA	69	(D)	0	132	59	(D)
WV	29	37	0	46	(D)	120
WI	113	519	36	(D)	189	190
WY	193	200	29	62	341	145
Other States ²	76	309	20	27	114	485
U.S.	8,144	21,133	2,195	1,911	6,469	5,552

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

(D) = Numbers greater than 0 but less than 20 are suppressed to avoid potential disclosure.

B.10. Number of sheep and lambs that died due to weather-related problems, starvation, or lambing problems in 2014, by State:

State	Number Sheep and Lambs					
	Cause of Loss					
	Weather-related problems		Starvation		Lambing problems	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
AZ	364	1,043	0	161	114	0
CA	353	379	(D)	97	292	0
CO	400	523	146	147	800	0
ID	227	974	0	364	1,185	0
IL	329	1,556	(D)	208	463	1,284
IN	465	1,326	0	211	471	1,110
IA	329	3,509	26	503	1,012	2,598
KS	94	1,683	107	192	202	808
KY	0	1,083	(D)	437	79	514
MI	59	1,292	0	214	409	922
MN	143	2,735	25	774	984	2,634
MO	68	1,435	(D)	260	252	1,008
MT	700	1,410	236	742	800	0
NE	82	1,903	(D)	473	714	762
NV	119	252	0	0	33	0
New England ¹	(D)	323	(D)	119	71	812
NM	85	108	0	38	468	0
NY	24	1,172	0	266	463	1,004
NC	526	226	0	24	60	212
ND	114	575	0	48	82	1,351
OH	462	2,215	0	434	925	1,229
OK	51	931	0	44	258	573
OR	130	344	27	69	538	0
PA	293	2,270	0	199	398	1,186
SD	434	2,674	0	676	662	3,292
TN	500	927	0	40	387	803
TX	1,851	2,484	32	3,908	3,860	2,272
UT	200	400	(D)	95	900	0
VA	24	1,319	(D)	350	277	515
WA	0	459	(D)	(D)	194	0
WV	130	899	(D)	56	123	752
WI	158	2,822	(D)	155	418	830
WY	700	1,200	0	126	1,300	0
Other States ²	657	1,870	6	226	354	759
U.S.	9,603	44,148	690	11,670	19,199	27,232

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

³In some cases total U.S. may be slightly different from sum of States due to CO, MT, UT, and WY, where numbers from State publications were used instead of NAHMS estimates.

(D) = Numbers greater than 0 but less than 20 are suppressed to avoid potential disclosure.

B.11. Number of sheep and lambs that died due to old age, being on back, or poisoning in 2014, by State:

State	Number Sheep and Lambs					
	Cause of Loss					
	Old age		Being on back		Poisoning	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
AZ	279	NA	(D)	0	51	0
CA	3,722	NA	114	(D)	60	0
CO	1,800	NA	182	44	800	642
ID	1,651	NA	116	118	231	158
IL	695	NA	33	(D)	35	(D)
IN	301	NA	(D)	(D)	(D)	0
IA	1,375	NA	38	0	106	61
KS	603	NA	(D)	0	(D)	0
KY	140	NA	(D)	(D)	(D)	(D)
MI	527	NA	41	(D)	0	0
MN	2,062	NA	76	42	40	(D)
MO	602	NA	(D)	(D)	(D)	(D)
MT	2,600	NA	400	38	200	111
NE	638	NA	73	(D)	27	0
NV	446	NA	0	0	397	0
New England ¹	432	NA	53	(D)	66	65
NM	341	NA	32	0	180	54
NY	691	NA	64	(D)	22	(D)
NC	77	NA	(D)	0	60	0
ND	686	NA	60	(D)	0	0
OH	1,509	NA	101	(D)	78	0
OK	599	NA	(D)	125	118	(D)
OR	2,077	NA	383	0	312	234
PA	1,028	NA	37	0	0	187
SD	2,062	NA	225	(D)	50	(D)
TN	348	NA	(D)	0	37	(D)
TX	4,804	NA	85	105	222	468
UT	1,500	NA	100	37	900	300
VA	782	NA	28	0	(D)	40
WA	368	NA	86	0	0	0
WV	165	NA	0	0	0	0
WI	881	NA	71	0	50	(D)
WY	1,200	NA	100	59	300	100
Other States ²	688	NA	22	(D)	42	630
U.S.	38,440	NA	2,490	687	4,048	3,127

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

³In some cases total U.S. may be slightly different from sum of States due to CO, MT, UT, and WY, where numbers from State publications were used instead of NAHMS estimates.

(D) = Numbers greater than 0 but less than 20 are suppressed to avoid potential disclosure.

B.12. Number of sheep and lambs that died due to theft, other nonpredator causes, were found dead, or died from unknown nonpredator causes in 2014, by State:

State	Number Sheep and Lambs Cause of Loss							
	Theft		Other nonpredator causes		Found dead		Unknown nonpredator causes	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
AZ	919	392	718	296	161	184	22	0
CA	25	22	235	367	753	672	1,165	1,045
CO	(D)	220	59	3,629	538	702	443	1,475
ID	0	20	226	768	200	276	320	469
IL	0	0	75	442	255	845	132	200
IN	0	0	(D)	76	267	208	293	588
IA	68	62	193	1,763	1,032	1,594	1,331	1,928
KS	0	(D)	67	59	122	127	71	122
KY	36	0	43	203	64	331	141	166
MI	0	(D)	62	243	336	1,025	219	284
MN	0	0	222	800	719	1,075	826	1,700
MO	23	0	308	1,283	478	737	108	252
MT	1,900	935	88	206	604	704	921	690
NE	0	0	45	863	184	627	1,315	1,317
NV	0	0	0	20	93	157	369	189
New England ¹	0	(D)	49	59	145	407	101	162
NM	0	0	528	247	312	56	1,746	3,611
NY	0	0	146	251	218	229	93	259
NC	0	0	(D)	0	77	262	48	136
ND	0	0	(D)	(D)	94	77	568	701
OH	0	0	62	512	329	1,123	429	638
OK	174	150	120	93	214	470	404	697
OR	(D)	0	318	92	635	553	683	235
PA	0	0	109	372	496	726	529	865
SD	860	2,810	1,689	1,731	510	1,038	488	1,071
TN	(D)	69	34	111	179	250	66	330
TX	104	315	891	2,059	1,949	2,789	3,569	2,925
UT	34	100	331	414	251	262	1,443	2,259
VA	0	0	137	247	177	559	459	736
WA	0	(D)	622	117	189	81	465	337
WV	0	0	22	(D)	70	403	45	101
WI	0	0	85	150	323	575	188	1,078
WY	200	200	77	(D)	148	315	886	957
Other States ²	113	29	63	432	687	1,023	980	1,820
U.S. ³	3,613	5,363	7,670	17,956	12,811	20,464	20,862	29,343

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

³In some cases, total U.S. counts may be slightly different from State counts due to the numbers attributed to CO, MT, UT, and WY, which came from State publication estimates instead of NAHMS estimates.

(D) = Numbers greater than 0 but less than 20 are suppressed to avoid potential disclosure.

C. Predator Sheep and Lamb Death Loss, 2014

Coyotes were responsible for the highest percentage of predator losses on operations with more than 25 sheep. For operations with 24 or fewer sheep, dogs were responsible for the highest percentage of predator losses. For operations with 1,000 or more sheep, bears were the second highest cause of predator loss (14.3 percent) followed by mountain lions (10.8 percent).

1. Number and percentage of sheep death losses, by predator cause and by size of operation:

Predator cause	Number and Percent Loss									
	Size of Operation (number of sheep and lambs)									
	1–24		25–99		100–999		1,000 or more		All operations	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Bears	189	1.1	38	0.3	388	3.1	2,475	14.3	3,090	5.0
Bobcats or lynx	92	0.5	289	2.0	137	1.1	179	1.0	698	1.1
Coyotes	6,776	38.4	7,419	51.9	8,625	69.2	10,678	61.7	33,498	54.3
Dogs	7,400	41.9	3,857	27.0	1,619	13.0	347	2.0	13,223	21.4
Foxes	19	0.1	151	1.1	101	0.8	46	0.3	317	0.5
Mountain lions (cougars/pumas)	586	3.3	533	3.7	477	3.8	1,863	10.8	3,460	5.6
Wolves	117	0.7	315	2.2	29	0.2	369	2.1	830	1.3
Vultures	245	1.4	85	0.6	28	0.2	0	0.0	358	0.6
Ravens	104	0.6	0	0.0	47	0.4	91	0.5	242	0.4
Feral pigs	0	0.0	173	1.2	16	0.1	42	0.2	231	0.4
Eagles	0	0.0	4	0.0	58	0.5	38	0.2	100	0.2
Other known predator causes	110	0.6	127	0.9	45	0.4	107	0.6	389	0.6
Other unknown predator causes	2,013	11.4	1,299	9.1	898	7.2	1,068	6.2	5,278	8.6
Total	17,650	100.0	14,292	100.0	12,467	100.0	17,303	100.0	61,712	100.0

Coyotes were responsible for at least half of all lamb losses due to predators, regardless of operation size. Dogs were the second leading cause of lamb loss for operations with fewer than 100 sheep. As operation size increased, the percentage of lamb losses due to dogs decreased. A high percentage of predator-caused losses were caused by unknown predators.

C.2. Number and percentage of lamb death losses, by predator cause and by size of operation:

Number and Percent Loss										
Size of Operation (number of sheep and lambs)										
Predator cause	1–24		25–99		100–999		1,000 or more		All operations	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Bears	0	0.0	127	0.5	459	1.1	3,432	6.8	4,018	3.0
Bobcats or lynx	330	1.9	426	1.7	1,508	3.7	1,471	2.9	3,736	2.8
Coyotes	8,900	50.6	14,533	59.6	28,898	71.7	32,203	63.9	84,534	63.7
Dogs	5,636	32.0	5,835	23.9	1,402	3.5	828	1.6	13,701	10.3
Foxes	216	1.2	539	2.2	735	1.8	971	1.9	2,460	1.9
Mountain lions (cougars/pumas)	931	5.3	376	1.5	951	2.4	3,662	7.3	5,920	4.5
Wolves	1	0.0	225	0.9	75	0.2	199	0.4	500	0.4
Vultures	7	0.0	558	2.3	607	1.5	670	1.3	1,842	1.4
Ravens	126	0.7	179	0.7	161	0.4	1,522	3.0	1,988	1.5
Feral pigs	0	0.0	40	0.2	488	1.2	344	0.7	872	0.7
Eagles	121	0.7	399	1.6	1,375	3.4	3,077	6.1	4,971	3.7
Other known predator causes	33	0.2	163	0.7	458	1.1	173	0.3	827	0.6
Other unknown predator causes	1,290	7.3	988	4.1	3,178	7.9	1,859	3.7	7,315	5.5
Total	17,591	100.0	24,388	100.0	40,293	100.0	50,410	100.0	132,683	100.0

The major causes of predator loss in adult sheep have not changed since 1994: coyotes and dogs remain the largest causes of predator losses. The percentages of all predator death losses due to mountain lions have declined each study year since 1994. The percentage of losses attributed to eagles has declined since 2004, while causes attributed to “Other predators” has increased. In 2014, wolves and feral pigs were added as separate attributable causes of predator loss. Overall, their contribution to predator losses was small.

C.3. Percentage of adult-sheep death loss, by predator cause and by year:

Predator cause	Percent Predator Loss			
	Year			
	1994	1999	2004	2014 ²
Bears	4.3	4.6	4.5	5.0
Bobcats or lynx	2.7	3.0	3.3	1.1
Coyotes	58.5	51.7	51.7	54.3
Dogs	18.4	25.7	22.7	21.4
Foxes	0.8	0.9	0.5	0.5
Mountain lions (cougars/pumas)	10.7	7.6	7.7	5.6
Eagles	1.8	1.0	1.1	0.2
Other predators (wolves, ravens, vultures, other known and unknown predators) ¹	2.8	5.3	8.6	10.2
Wolves				1.3
Feral pigs				0.4
Total	100.0	100.0	100.0	100.0

¹Does not include wolves before 2014.

²No predator study done in 2009.

The percentage of adult sheep lost to predators remained relatively stable from 2004 to 2014.

C.4. Percentage of January 1, 2015, adult-sheep inventory lost, by predator cause and by year:

Predator cause	Percent Inventory			
	Year			
	1994	1999	2004	2014 ²
Bears	0.08	0.08	0.08	0.09
Bobcats or lynx	0.05	0.05	0.06	0.02
Coyotes	1.08	0.88	0.89	0.97
Dogs	0.34	0.44	0.39	0.38
Foxes	0.01	0.02	0.01	0.02
Mountain lions (cougars/pumas)	0.20	0.13	0.13	0.10
Eagles	0.03	0.02	0.02	0.00
Other predators (wolves, ravens, vultures, other known and unknown predators) ¹	0.05	0.09	0.15	0.19
Wolves				0.02
Feral pigs				0.00
All	1.84	1.71	1.73	1.79

¹Does not include wolves before 2014.

²No predator study done in 2009.

The percentages of losses in lambs due to the listed predators were similar in 2004 and 2014, with the exception of lamb losses due to bobcats and foxes, which declined, and “other predators,” which increased.

C.5. Percentage of lamb death loss, by predator cause and by year:

Predator cause	Percent Inventory			
	1994	1999	2004	2014 ²
Bears	2.9	2.1	3.5	3.0
Bobcats or lynx	2.4	5.3	5.6	2.8
Coyotes	69.4	64.3	64.2	63.7
Dogs	7.9	11	9.3	10.3
Foxes	4.4	3.8	2.5	1.9
Mountain lions (cougars/pumas)	6.5	4.9	4.8	4.5
Eagles	5.0	5.1	3.5	3.7
Other predators (wolves, ravens, vultures, other known and unknown predators) ¹	1.4	3.5	6.5	9.0
Wolves				0.4
Feral pigs				0.7
Total	100.0	100.0	100.0	100.0

¹Does not include wolves before 2014.

²No predator study done in 2009.

Overall, 3.88 percent of lamb inventory was lost to predators in 2014, which was essentially unchanged from the 3.86 percent lost in 2004 and the 4.13 percent lost in 1999.

C.6. Percentage of lamb crop lost, by predator cause and by year:

Predator cause	Percent Lamb Crop			
	1994	1999	2004	2014 ²
Bears	0.13	0.09	0.13	0.12
Bobcats or lynx	0.11	0.22	0.22	0.11
Coyotes	3.04	2.65	2.47	2.48
Dogs	0.35	0.45	0.36	0.40
Foxes	0.19	0.16	0.1	0.07
Mountain lions (cougars/pumas)	0.29	0.2	0.19	0.18
Eagles	0.22	0.21	0.14	0.14
Other predators (wolves, ravens, vultures, other known and unknown predators) ¹	0.06	0.15	0.25	0.35
Wolves				0.01
Feral pigs				0.02
All	4.39	4.13	3.86	3.88

¹Does not include wolves before 2014.

²No predator study done in 2009.

Coyotes caused 54.3 percent of losses in adult sheep due to predators and 63.7 percent of losses in lambs due to predators in 2014.

C.7. Number and percentage of sheep and lamb death losses, by predator cause:

Predator	Number and Percent			
	Sheep		Lambs	
	Number	Percent	Number	Percent
Bears	3,090	5.0	4,018	3.0
Bobcats or lynx	698	1.1	3,736	2.8
Coyotes	33,498	54.3	84,534	63.7
Dogs	13,223	21.4	13,701	10.3
Foxes	317	0.5	2,460	1.9
Mountain lions (cougars/pumas)	3,460	5.6	5,920	4.5
Wolves	830	1.3	500	0.4
Vultures	358	0.6	1,842	1.4
Ravens	242	0.4	1,988	1.5
Feral pigs	231	0.4	872	0.7
Eagles	100	0.2	4,971	3.7
Other known predator causes	389	0.6	827	0.6
Other unknown predator causes	5,278	8.6	7,315	5.5
Total	61,712	100.0	132,683	100.0

Bears caused a relatively large number of sheep and lamb deaths in Colorado, Utah, and Nevada. Dogs were attributed to more sheep and lamb deaths in New Mexico than coyotes.

C.8. Number of sheep and lambs that died by bears, bobcats or lynx, coyotes, or dogs, by State:

State	Number Cause of Loss							
	Bears		Bobcats or lynx		Coyotes		Dogs	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
AZ	0	0	51	0	2,245	893	1,334	714
CA	175	31	0	(D)	1,420	2,199	110	424
CO	1,900	1,391	22	102	2,600	4,944	200	61
ID	131	65	(D)	0	795	2,891	90	103
IL	0	0	(D)	0	142	487	34	155
IN	0	0	0	0	219	627	288	34
IA	0	0	0	(D)	256	633	760	464
KS	0	0	0	0	729	1,040	47	105
KY	0	0	0	(D)	156	787	120	162
MI	0	0	0	(D)	178	539	136	53
MN	0	0	0	0	614	861	70	200
MO	0	0	(D)	22	195	1,622	113	418
MT	200	114	(D)	62	2,500	6,300	100	120
NE	0	0	0	24	205	769	(D)	50
NV	59	629	0	63	2,102	5,370	0	73
New England ¹	26	0	(D)	(D)	245	509	(D)	44
NM	(D)	(D)	(D)	72	839	1,089	1,180	1,184
NY	0	0	0	0	347	794	(D)	27
NC	(D)	0	0	0	225	571	116	58
ND	0	0	0	0	480	1,995	0	0
OH	0	0	113	80	801	1,661	38	84
OK	0	0	0	(D)	790	1,092	388	677
OR	(D)	64	23	144	1,226	3,248	235	207
PA	32	(D)	0	0	84	713	26	(D)
SD	0	0	0	0	873	5,557	23	85
TN	0	0	(D)	(D)	232	209	258	1,088
TX	21	34	392	2,865	6,516	18,854	4,766	3,445
UT	1,100	1,700	100	200	2,800	8,500	200	200
VA	0	0	0	0	1,098	1,840	(D)	112
WA	0	0	0	(D)	109	77	57	87
WV	(D)	64	0	58	795	1,461	(D)	107
WI	0	0	0	0	59	279	186	217
WY	100	100	(D)	24	1,100	4,100	100	2005
Other States ²	0	0	0	(D)	2,101	3,309	2,324	2,713
U.S. ³	3,090	4,018	698	3,736	33,498	84,534	13,223	13,701

¹New England includes CT, ME, MA, NH, RI, and VT.²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.³In some cases total U.S. may be slightly different from sum of States due to CO, MT, UT, and WY, where numbers from State publications were used instead of NAHMS estimates.

(D) = Numbers greater than 0 but less than 20 are suppressed to avoid potential disclosure.

Producers in Arizona, Colorado, Idaho, Minnesota, Utah, Washington, West Virginia, and Wyoming reported a small number of sheep and lamb deaths due to wolves.

C.9. Number of sheep and lambs that died by , mountain lions (cougars/pumas), wolves, or vultures, by State:

State	Number Cause of Loss							
	Foxes		Mountain lions (cougars/pumas)		Wolves		Vultures	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
AZ	0	0	0	(D)	304	70	0	0
CA	0	28	387	132	0	0	0	(D)
CO	(D)	262	300	492	(D)	27	0	0
ID	0	0	(D)	49	208	69	0	24
IL	0	32	(D)	0	0	0	0	0
IN	0	0	0	0	0	0	0	(D)
IA	0	(D)	0	0	0	0	(D)	20
KS	24	59	0	0	0	0	0	0
KY	0	62	89	31	0	0	0	45
MI	(D)	(D)	(D)	0	(D)	(D)	0	0
MN	0	0	0	0	(D)	39	0	0
MO	0	0	0	834	0	0	0	0
MT	(D)	120	200	77	70	45	0	0
NE	0	(D)	0	0	0	0	0	0
NV	0	0	752	2,019	0	0	0	0
New England ¹	0	0	(D)	(D)	(D)	(D)	0	0
NM	90	0	(D)	(D)	0	0	0	0
NY	0	(D)	0	0	0	0	0	0
NC	0	48	0	0	0	0	0	164
ND	0	0	0	0	0	0	0	0
OH	0	0	0	0	0	0	0	(D)
OK	0	0	134	51	0	0	0	0
OR	0	(D)	146	244	(D)	(D)	0	0
PA	0	32	0	0	0	0	0	20
SD	(D)	506	(D)	(D)	0	0	0	0
TN	0	0	47	0	0	0	(D)	32

table continued →

C.9. (cont'd.) Number of sheep and lambs that died by , mountain lions (cougars/pumas), wolves, or vultures, by State:

State	Number Cause of Loss							
	Foxes		Mountain lions (cougar/pumas)		Wolves		Vultures	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
TX	108	672	787	829	0	0	82	1,057
UT	100	200	700	900	(D)	38	0	0
VA	(D)	39	0	0	0	0	23	265
WA	0	0	74	107	136	0	0	0
WV	0	0	0	46	0	107	0	0
WI	0	0	0	0	0	(D)	0	0
WY	(D)	200	100	200	28	33	0	(D)
Other States ²	(D)	169	0	32	29	23	247	169
U.S. ³	317	2,460	3,460	5,920	830	500	358	1,842

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

³In some cases total U.S. may be slightly different from sum of States due to CO, MT, UT, and WY, where numbers from State publications were used instead of NAHMS estimates.

(D) = Numbers greater than 0 but less than 20 are suppressed to avoid potential disclosure.

Feral pigs were responsible for sheep and lamb losses in Oklahoma, Texas, and one or more “other States.”

C.10. Number of sheep and lambs that died by ravens, feral pigs, eagles, other known predator causes, or other unknown predator causes, by State:

State	Number Cause of Loss									
	Ravens		Feral pigs		Eagles		Other known predator causes		Other unknown predator causes	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
AZ	0	0	0	0	0	(D)	0	0	971	0
CA	(D)	112	0	0	0	147	0	0	170	82
CO	0	90	0	0	(D)	147	(D)	(D)	26	37
ID	0	61	0	(D)	0	(D)	(D)	(D)	(D)	61
IL	0	0	0	0	0	0	0	32	0	141
IN	0	0	0	0	0	0	0	0	21	111
IA	0	0	0	0	0	61	42	0	384	D
KS	0	0	0	0	0	1,014	0	0	0	105
KY	0	0	0	0	0	0	0	0	0	43
MI	0	0	0	0	0	(D)	(D)	26	(D)	90
MN	0	0	(D)	0	0	43	0	51	(D)	D
MO	0	0	0	0	0	261	30	116	(D)	169
MT	(D)	24	0	0	(D)	239	(D)	107	38	262
NE	0	0	0	0	0	8	11	0	0	0
NV	20	1,132	0	0	0	0	0	0	0	0
New England ¹	0	0	0	0	0	0	0	0	0	0
NM	(D)	85	0	0	0	125	(D)	0	(D)	89
NY	0	0	0	0	0	23	(D)	0	0	0
NC	0	0	0	0	0	0	0	0	(D)	41
ND	0	0	0	0	0	0	0	0	0	57
OH	0	0	0	0	0	(D)	0	0	(D)	131
OK	0	0	0	36	0	(D)	(D)	30	104	48
OR	(D)	(D)	0	0	0	57	(D)	0	341	135
PA	0	0	0	0	0	(D)	0	0	0	D
SD	0	0	0	0	0	376	0	(D)	45	71
TN	0	(D)	0	0	0	(D)	0	0	47	59

table continued →

C.10. (cont'd.) Number of sheep and lambs that died by ravens, feral pigs, eagles, other known predator causes, or other unknown predator causes, by State:

State	Number Cause of Loss									
	Ravens		Feral pigs		Eagles		Other known predator causes		Other unknown predator causes	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
TX	46	171	214	802	50	1,506	67	219	2177	3474
UT	0	41	0	0	0	100	22	D	188	159
VA	0	(D)	0	0	0	0	0	57	21	594
WA	0	(D)	0	0	0	0	0	0	443	321
WV	0	0	0	0	0	(D)	0	20	20	107
WI	0	0	0	0	(D)	149	0	0	0	(D)
WY	39	100	0	0	33	600	77	0	36	185
Other States ²	104	120	(D)	31	0	126	65	136	171	713
U.S. ³	242	1,988	231	872	100	4,971	389	827	5,278	7,315

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

³In some cases total U.S. may be slightly different from sum of States due to CO, MT, UT, and WY, where numbers from State publications were used instead of NAHMS estimates.

(D) = Numbers greater than 0 but less than 20 are suppressed to avoid potential disclosure.

D. Number and Value of Sheep and Lambs Injured but not Killed by Predators, 2014

State	Number		Value (\$1,000)	
	Sheep	Lambs	Sheep	Lambs
AZ	1,130	1,044	184	126
CA	436	547	93	102
CO	194	419	40	84
ID	432	439	88	85
IL	45	42	10	6
IN	108	245	24	37
IA	232	365	51	58
KS	52	80	11	15
KY	62	370	12	49
MI	34	98	7	18
MN	142	169	30	28
MO	107	45	20	6
MT	301	435	62	78
NE	110	215	29	31
NV	7	87	2	11
New England ¹	83	36	20	8
NM	488	215	87	36
NY	107	137	22	21
NC	664	39	141	5
ND	15	76	3	14
OH	216	101	51	15
OK	311	51	75	7
OR	276	368	51	55
PA	128	111	29	15
SD	52	251	11	45
TN	54	118	10	13
TX	7,763	8,818	1,343	1,129
UT	292	447	58	79
VA	118	257	24	38
WA	34	18	8	3
WV	3	176	1	26
WI	34	29	8	4
WY	134	224	25	36
Other States ²	666	314	140	47
U.S.	14,828	16,387	2,770	2,330

¹New England includes CT, ME, MA, NH, RI, and VT.²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

**E. Nonlethal
Methods Used to
Prevent Losses
on Sheep
Operations Due
to Wildlife**

Overall, 58.0 percent of operations used one or more nonlethal methods for predator control in 2014, which was higher than in 2004 (31.9 percent).

E.1. Percentage of operations by nonlethal predator-control methods used, and by year:

Method	Percent Operations			
	2004		2014	
	Percent	Std. error	Percent	Std. error
Guard dogs	10.3	(1.0)	23.5	(1.2)
Llamas	4.4	(0.5)	5.4	(0.4)
Donkeys	3.0	(0.3)	8.2	(1.0)
Fencing	16.6	(1.4)	31.8	(1.5)
Lamb shed	9.9	(0.7)	20.0	(1.2)
Herding	1.9	(0.3)	6.4	(0.7)
Night penning	10.6	(0.8)	19.5	(1.1)
Fright tactics	0.7	(0.1)	1.8	(0.2)
Removing carrion	3.9	(0.4)	6.6	(0.5)
Culling older sheep to prevent death loss	4.4	(0.4)	9.6	(1.0)
Change bedding	2.8	(0.4)	6.3	(1.0)
Frequent checks	4.5	(0.4)	9.5	(1.0)
Altered breeding season			2.9	(0.9)
Other nonlethal methods	1.2	(0.1)	3.9	(0.5)
Any method	31.9	(1.4)	58.0	(1.9)

Over half of operations that used nonlethal predator control methods (54.8 percent) used fencing for predator control in 2014. A higher percentage of operations in 2014 than in 2004 used guard dogs, donkeys, lamb sheds, and culling older sheep to prevent predator loss.

E.2. For operations that used nonlethal predator control methods, percentage of operations by nonlethal method used and by year:

Nonlethal method	Percent Operations			
	1994	1999	2004	2014
Guard dogs	28.2*	28.2	31.8	40.5
Llamas		13.2	14.0	9.2
Donkeys		9.0	9.1	14.2
Fencing	29.6	57.0	52.5	54.8
Lamb shed		46.0	30.8	34.4
Herding		6.6	5.7	11.0
Night penning		42.6	32.9	33.7
Fright tactics	7.2	5.1	2.2	3.1
Removing carrion			11.7	11.4
Culling older sheep to prevent death loss			13.8	16.6
Change bedding			8.9	10.8
Frequent checks			14.0	16.4
Altered breeding season				5.0
Husbandry	29.6			
Other nonlethal methods	4.7	6.2	3.8	6.7

¹No predator study done in 2009.

*In 1994, this category was guard animals.

In 2014, a higher percentage of operations that used nonlethal predator-control methods used more than one method compared with operations in 2004.

E.3. For operations that used nonlethal predator control methods, percentage of operations by number of nonlethal methods used and by year:

Number of methods*	Percent Operations			
	Year		Year	
	2004		2014	
	Percent	Std. error	Percent	Std. error
1	43.8	(2.8)	33.4	(1.6)
2	24.2	(1.9)	25.2	(1.5)
3	11.1	(1.4)	14.5	(1.1)
4	9.3	(1.5)	9.3	(0.9)
5	5.0	(0.8)	5.9	(0.7)
6	3.5	(0.7)	4.0	(0.6)
7 or more	3.1	(0.3)	7.7	(1.5)
Total	100.0		100.0	

*In 2014, this included altering the breeding season so lambs were not born when predators such as coyotes were feeding their young.

E.4. For operations that used nonlethal predator control methods in 2014, percentage of operations by nonlethal method used and by State:

State	Percent Operations Nonlethal Method									
	Guard dogs		Llamas		Donkeys		Fencing		Lamb shed	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
AZ	71.9	(8.8)	4.3	(2.7)	0.0	(0.0)	17.6	(5.8)	27.4	(7.3)
CA	40.5	(9.2)	10.2	(2.7)	8.4	(2.5)	78.6	(4.8)	31.9	(7.5)
CO	50.5	(7.1)	14.0	(3.7)	4.5	(1.2)	60.9	(5.9)	43.7	(6.6)
ID	37.4	(15.8)	10.1	(4.5)	4.6	(2.8)	83.4	(6.7)	39.4	(16.1)
IL	46.9	(8.4)	11.3	(3.8)	22.3	(8.0)	52.3	(8.4)	28.4	(7.8)
IN	40.1	(10.3)	3.5	(2.5)	11.6	(4.6)	40.8	(9.3)	34.3	(10.7)
IA	24.9	(4.0)	5.4	(1.5)	6.7	(1.8)	38.6	(6.5)	55.7	(8.1)
KS	43.1	(6.9)	24.4	(5.8)	13.9	(3.7)	46.1	(7.4)	29.0	(6.0)
KY	68.2	(8.3)	2.2	(1.1)	8.6	(2.7)	66.0	(7.8)	37.1	(10.0)
MI	38.4	(10.5)	15.0	(6.1)	5.1	(2.7)	66.2	(8.2)	46.2	(9.9)
MN	30.9	(4.7)	7.0	(1.7)	12.5	(2.7)	63.4	(5.1)	56.5	(5.6)
MO	47.9	(7.2)	6.5	(3.2)	24.2	(6.5)	41.7	(7.0)	32.4	(6.5)
MT	38.9	(5.0)	24.0	(6.6)	9.3	(2.2)	37.2	(6.0)	49.0	(5.5)
NE	42.6	(11.7)	9.0	(4.1)	3.4	(1.7)	33.6	(8.0)	34.8	(8.0)
NV	29.5	(8.9)	2.7	(1.9)	22.3	(16.1)	60.0	(15.4)	27.1	(11.0)
New England ¹	24.5	(8.2)	14.0	(4.7)	5.8	(2.7)	78.5	(8.1)	17.3	(5.1)
NM	65.3	(8.3)	16.6	(10.7)	0.8	(0.4)	33.0	(8.2)	30.6	(8.0)
NY	28.9	(8.8)	10.8	(5.2)	22.5	(16.2)	82.0	(5.4)	41.7	(13.4)
NC	44.2	(16.4)	7.6	(4.6)	10.6	(5.1)	64.4	(16.7)	15.9	(7.1)
ND	56.2	(7.0)	24.6	(5.6)	19.3	(5.1)	44.0	(7.6)	31.7	(6.3)
OH	34.6	(6.1)	13.4	(4.2)	24.6	(5.5)	57.0	(6.2)	19.5	(4.5)
OK	55.3	(10.1)	6.1	(2.7)	10.8	(3.7)	47.2	(9.9)	13.7	(4.0)
OR	33.4	(6.6)	14.2	(3.1)	2.9	(1.4)	55.2	(6.5)	41.4	(7.0)
PA	15.5	(4.1)	2.1	(1.7)	11.7	(6.2)	65.7	(6.7)	37.8	(6.6)
SD	24.4	(3.9)	12.3	(2.3)	17.7	(2.9)	32.6	(4.4)	62.9	(4.0)
TN	70.2	(11.2)	9.2	(4.8)	15.6	(6.2)	50.9	(9.5)	17.5	(5.8)
TX	36.6	(4.8)	6.2	(1.9)	22.2	(4.2)	48.4	(5.2)	21.9	(4.5)
UT	25.0	(14.9)	9.0	(4.6)	48.6	(25.0)	75.4	(12.2)	78.2	(10.8)
VA	35.3	(5.4)	9.1	(2.3)	20.9	(5.1)	60.3	(5.7)	15.4	(3.7)
WA	49.3	(11.3)	16.6	(6.3)	22.6	(12.5)	68.0	(9.7)	24.9	(7.7)
WV	41.2	(6.8)	0.9	(0.5)	22.3	(5.8)	41.7	(7.0)	23.5	(6.1)
WI	26.7	(8.8)	16.2	(4.3)	11.1	(3.4)	57.4	(9.0)	45.3	(9.1)
WY	36.1	(3.5)	15.6	(1.6)	6.9	(0.8)	24.5	(2.5)	46.6	(5.2)
Other States ²	42.9	(5.4)	2.0	(0.8)	20.1	(3.5)	65.1	(5.2)	26.5	(4.0)
U.S. ³	40.5	(1.7)	9.2	(0.7)	14.2	(1.6)	54.8	(1.7)	34.4	(1.8)

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

E.5. For operations that used nonlethal predator control methods in 2014, percentage of operations by nonlethal method used and by State:

State	Percent Operations Nonlethal Method									
	Herding		Night penning		Fright tactics		Removing carriion		Culling	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
AZ	86.7	(4.7)	72.2	(9.6)	0.1	(0.1)	10.6	(4.7)	19.4	(6.2)
CA	9.0	(3.2)	38.9	(8.4)	7.6	(2.4)	12.6	(3.0)	10.9	(2.6)
CO	14.4	(3.9)	47.2	(6.8)	5.7	(1.4)	12.5	(2.3)	21.6	(3.5)
ID	3.0	(1.2)	37.9	(15.9)	5.1	(2.7)	12.6	(5.3)	8.4	(3.4)
IL	4.1	(2.5)	25.1	(5.6)	1.4	(0.9)	8.0	(3.4)	23.4	(8.0)
IN	5.3	(3.3)	30.8	(10.8)	6.8	(3.9)	5.5	(3.0)	9.5	(3.9)
IA	3.0	(1.2)	44.2	(8.6)	7.1	(5.1)	24.0	(7.9)	24.1	(5.4)
KS	1.5	(0.7)	47.9	(7.2)	4.0	(2.1)	15.3	(4.7)	23.6	(5.4)
KY	6.5	(4.8)	25.3	(9.8)	0.9	(0.6)	2.3	(1.0)	16.7	(9.1)
MI	7.2	(4.4)	34.0	(8.2)	0.5	(0.2)	16.9	(5.4)	13.9	(4.7)
MN	4.8	(1.8)	28.4	(4.5)	3.2	(1.5)	17.5	(3.5)	21.9	(3.9)
MO	8.0	(4.3)	25.4	(5.9)	0.4	(0.1)	8.2	(3.6)	13.9	(4.0)
MT	7.9	(1.2)	48.0	(5.5)	6.5	(1.8)	24.5	(4.5)	23.4	(3.3)
NE	5.1	(2.2)	43.1	(9.5)	3.9	(1.7)	8.8	(3.0)	22.8	(5.8)
NV	29.3	(15.6)	58.7	(12.8)	2.7	(1.9)	13.4	(5.0)	14.8	(5.1)
New England ¹	3.6	(1.3)	10.1	(2.5)	1.3	(1.0)	13.5	(5.4)	6.9	(2.3)
NM	21.3	(6.4)	68.6	(7.6)	4.2	(3.2)	5.1	(3.2)	16.5	(6.6)
NY	11.1	(6.1)	20.7	(7.2)	2.2	(1.5)	30.3	(15.1)	31.0	(15.0)
NC	3.0	(1.3)	11.9	(5.5)	0.0	(0.0)	3.4	(1.5)	4.4	(1.8)
ND	18.1	(6.8)	35.7	(6.7)	6.5	(3.7)	17.8	(5.3)	20.2	(5.2)
OH	3.3	(1.7)	23.3	(5.4)	2.1	(1.6)	10.7	(4.2)	10.6	(3.2)
OK	2.2	(1.5)	29.6	(7.1)	0.3	(0.1)	2.8	(1.1)	6.2	(2.4)
OR	10.2	(5.2)	42.2	(7.2)	6.0	(2.2)	12.9	(2.8)	19.5	(5.4)
PA	8.1	(3.2)	30.7	(6.7)	1.6	(1.1)	5.6	(2.2)	15.8	(6.3)
SD	6.0	(1.4)	56.3	(4.0)	8.5	(2.8)	34.7	(3.5)	52.5	(4.2)
TN	4.6	(4.0)	10.3	(3.9)	0.0	(0.0)	12.3	(5.8)	8.7	(3.2)
TX	2.8	(1.4)	27.1	(4.5)	1.4	(0.8)	4.1	(1.3)	9.6	(2.8)
UT	7.5	(3.8)	12.1	(6.2)	2.4	(1.3)	10.7	(5.5)	61.0	(19.9)
VA	1.8	(0.7)	22.2	(4.6)	2.6	(1.7)	3.7	(1.8)	8.0	(3.2)
WA	10.8	(5.1)	48.7	(11.3)	9.1	(4.5)	21.3	(7.1)	6.9	(3.6)
WV	5.7	(3.4)	21.1	(5.3)	0.6	(0.4)	3.3	(2.7)	6.8	(3.4)
WI	5.9	(2.4)	30.5	(9.1)	0.6	(0.3)	14.4	(3.9)	17.7	(4.4)
WY	13.5	(1.4)	33.9	(3.4)	7.1	(0.8)	19.9	(2.0)	34.0	(3.3)
Other States ²	4.1	(1.3)	19.7	(5.1)	1.7	(0.6)	6.2	(1.5)	6.3	(1.6)
U.S. ³	11.0	(1.1)	33.7	(1.6)	3.1	(0.4)	11.4	(0.9)	16.6	(1.6)

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

E.6. For operations that used nonlethal predator control methods in 2014, percentage of operations by nonlethal method used and by State:

State	Percent Operations Nonlethal Method							
	Change bedding		Frequent checks		Altered breeding season		Other nonlethal methods	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
AZ	22.1	(6.5)	19.7	(8.5)	7.6	(3.8)	2.9	(2.1)
CA	10.9	(3.5)	19.8	(4.9)	4.6	(2.8)	6.3	(2.1)
CO	9.5	(1.8)	23.4	(4.5)	3.6	(0.9)	2.3	(0.8)
ID	6.6	(3.2)	8.9	(3.9)	0.8	(0.4)	2.1	(1.6)
IL	3.7	(1.4)	19.1	(7.9)	1.6	(1.0)	0.9	(0.3)
IN	2.9	(2.1)	23.7	(11.1)	0.5	(0.3)	8.0	(4.0)
IA	6.4	(1.7)	8.7	(2.1)	4.3	(1.4)	11.9	(6.4)
KS	4.4	(2.2)	9.4	(2.6)	5.2	(2.2)	1.8	(0.8)
KY	18.2	(9.7)	17.4	(6.5)	0.3	(0.0)	3.0	(1.8)
MI	29.4	(11.0)	35.7	(10.6)	7.6	(3.7)	7.0	(3.7)
MN	8.4	(2.5)	12.7	(2.9)	3.1	(1.4)	2.1	(1.0)
MO	9.6	(4.0)	13.0	(4.9)	5.2	(2.6)	8.8	(3.8)
MT	12.2	(2.1)	34.5	(6.5)	0.6	(0.1)	9.3	(4.0)
NE	7.4	(3.7)	9.0	(3.2)	1.8	(0.4)	6.8	(3.7)
NV	9.8	(3.6)	14.8	(5.1)	0.0	(0.0)	2.7	(1.9)
New England ¹	10.0	(4.5)	17.3	(5.5)	5.1	(3.5)	7.1	(3.0)
NM	9.4	(4.0)	10.1	(3.9)	4.7	(4.1)	4.7	(3.4)
NY	29.8	(15.2)	15.5	(6.6)	3.0	(1.6)	5.1	(2.4)
NC	6.0	(4.2)	6.3	(2.7)	0.0	(0.0)	24.3	(17.5)
ND	18.8	(5.6)	18.1	(5.3)	2.5	(2.2)	3.3	(1.0)
OH	6.2	(2.8)	13.9	(4.3)	7.0	(3.4)	10.4	(4.2)
OK	3.4	(1.6)	8.8	(3.0)	0.5	(0.1)	3.5	(1.8)
OR	6.1	(1.4)	14.2	(2.9)	7.5	(5.1)	4.7	(2.2)
PA	4.8	(2.3)	15.2	(6.5)	3.0	(1.5)	10.0	(6.2)
SD	18.2	(2.7)	37.6	(3.7)	8.7	(2.0)	8.8	(4.0)
TN	7.3	(4.5)	13.0	(5.4)	1.2	(0.6)	2.1	(2.0)
TX	7.3	(3.0)	11.9	(3.2)	2.6	(1.0)	5.2	(2.0)
UT	54.5	(22.5)	56.9	(21.5)	48.9	(24.9)	15.5	(12.4)
VA	5.3	(2.8)	12.4	(3.6)	0.7	(0.3)	16.6	(4.6)
WA	0.3	(0.1)	9.6	(4.5)	3.0	(2.7)	3.8	(2.7)
WV	0.8	(0.4)	9.5	(4.2)	0.0	(0.0)	11.0	(4.4)
WI	5.3	(2.1)	8.6	(2.8)	3.6	(1.6)	3.5	(1.7)
WY	12.8	(1.3)	29.4	(2.9)	5.4	(0.6)	7.6	(0.9)
Other States ²	6.6	(2.4)	9.1	(1.8)	1.7	(0.7)	6.8	(1.8)
U.S. ³	10.8	(1.6)	16.4	(1.6)	5.0	(1.5)	6.7	(0.9)

¹New England includes CT, ME, MA, NH, RI, and VT.

²Other States include AL, AR, DE, FL, GA, HI, LA, MD, MS, NJ, and SC.

E.7. For operations that used nonlethal predator-control methods in 2014, percentage of operations by nonlethal method used and by size of operation:

Nonlethal method	Number and Percent Loss							
	Size of Operation (number of sheep and lambs)							
	1–24		25–99		100–999		1,000 or more	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Guard dogs for sheep	36.7	(2.2)	44.0	(3.5)	54.9	(2.7)	66.8	(2.0)
Llamas for guarding sheep	6.4	(0.7)	11.9	(1.4)	21.3	(3.8)	11.9	(1.1)
Donkeys for guarding sheep	12.2	(1.4)	18.8	(4.6)	15.0	(1.2)	9.2	(1.2)
Fencing (predator exclusion fencing)	58.0	(2.2)	53.3	(3.5)	39.2	(2.6)	35.0	(2.0)
Lamb shed	30.2	(2.1)	41.8	(3.9)	37.6	(2.5)	32.4	(1.8)
Herding	9.6	(1.3)	13.1	(2.8)	11.3	(1.9)	34.2	(1.9)
Night penning	31.4	(2.1)	36.1	(3.2)	38.2	(3.4)	29.6	(2.0)
Fright tactics	2.7	(0.5)	3.1	(0.5)	5.4	(0.8)	11.8	(1.1)
Removing carrion	9.2	(1.2)	13.3	(1.4)	21.3	(1.8)	23.7	(1.7)
Culling older sheep to prevent death loss	9.9	(1.3)	25.9	(4.3)	32.2	(2.2)	50.2	(2.2)
Changing bedding grounds	8.1	(1.3)	14.9	(4.7)	15.2	(1.8)	35.2	(2.1)
More frequent checks in high predation areas/ seasons	11.8	(1.4)	22.2	(4.4)	27.2	(2.3)	50.7	(2.2)
Altered breeding season so lambs are not born when predators such as coyotes are feeding their young	2.7	(0.6)	9.3	(4.9)	7.7	(1.7)	8.3	(1.2)
Other nonlethal methods	6.7	(1.3)	6.7	(1.2)	7.3	(1.4)	11.4	(1.0)

Section III: Methodology

A. Survey Procedures

Each year, a random sample of U.S. sheep producers is surveyed by NASS to provide data for these estimates. Survey procedures ensure that all sheep producers have an opportunity to be included in the survey. The sample is stratified so that large operations are sampled more heavily than small operations. Operations are contacted during January of each year by mail, telephone, and face-to-face interviews. Each year about 23,000 operations are contacted.

B. Estimation Procedures

For 2015, death losses by cause were estimated to match NASS' total death losses published in "Sheep and Goats," released January 30, 2015. Estimates were generated with SUDAAN® software (Research Triangle Institute, version 11.0.1). Standard errors, where shown, account for the stratified study design.

The number of operations with sheep in 2014 (table A.2.a) was estimated using the number of operations in the sample, weighted by the expansion weight (the number of operations in the population that each sampled operation represents). Similarly, the total number of deaths are estimated by expanding the number of deaths in the sampled operations. For lamb losses, pre- and postdocking losses are captured separately for CO, MT, UT, and WY, while all other Western States count only postdocking losses. The lamb loss estimates in this report are estimated by expanding the postdocking losses for sampled operations in Western States and all losses for sampled operations in Eastern States.

Table of Contents

Introduction 1

Terms Used in This Report 3

Section I: Population Estimates—Inventory 5

A. U.S. Demographics 5

1. Inventory by class and year—January 1, 1995 to 2015 5
2. Operations—1994 to 2014 6
3. Lamb crop—1994 to 2014 7

B. State Demographics 8

1. Sheep and lamb inventory—January 1, 2015 8

Section II: Population Estimates—Death Losses 9

A. Predator and Nonpredator Sheep and Lamb Death Loss 9

1. Overall death losses—1994 to 2014 9
2. Overall death losses by State—2014 12

B. Nonpredator Sheep and Lamb Death Loss, 2014 20

C. Predator Sheep and Lamb Death Loss, 2014 32

D. Number and Value of Sheep and Lambs Injured but not Killed by Predators, 2014 44

E. Nonlethal Methods Used to Prevent Losses on Sheep Operations Due to Wildlife 45

Section III: Methodology 52

A. Survey Procedures 52

B. Estimation Procedures 52