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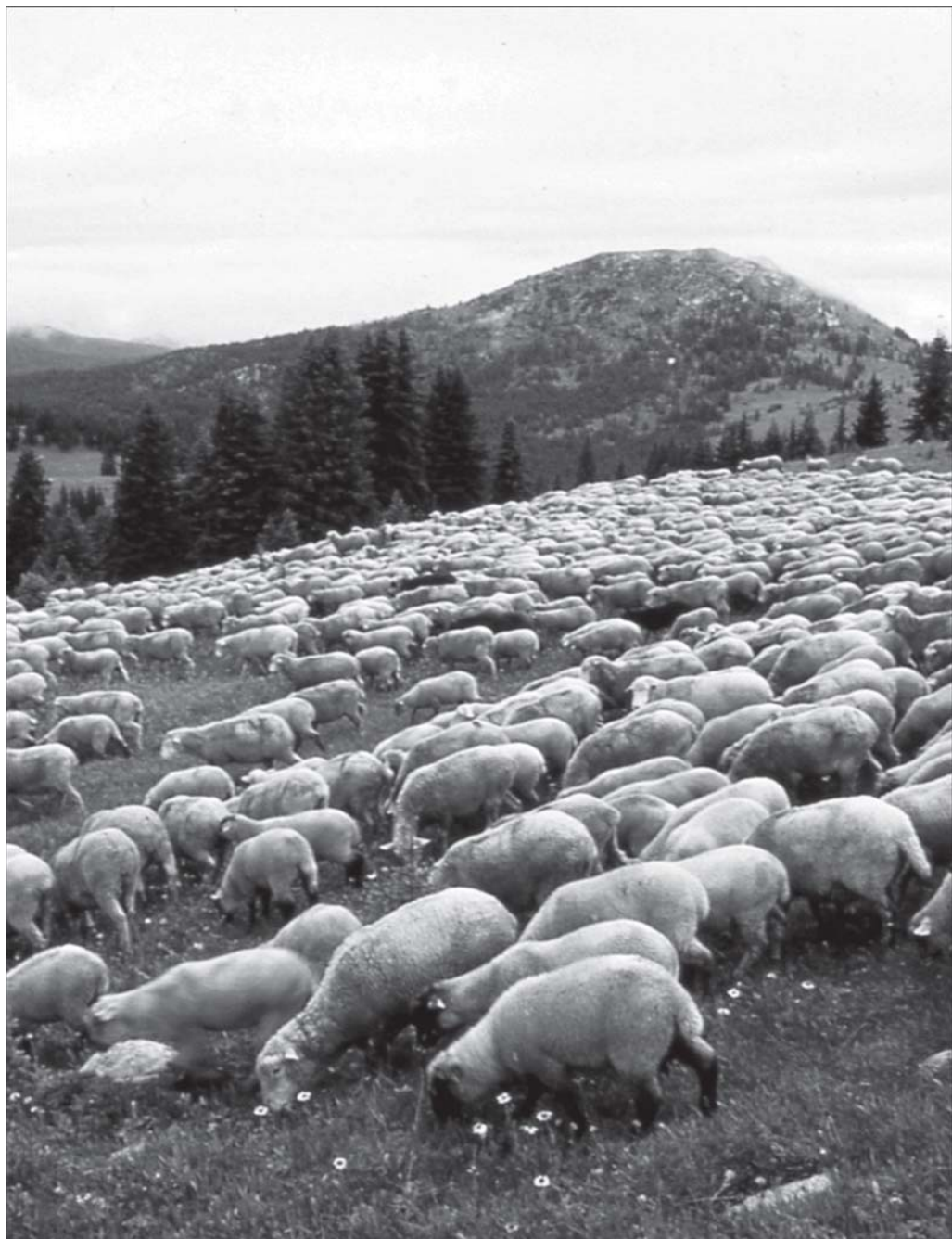
Veterinary
Services

National
Animal Health
Monitoring
System

May 2011



Sheep and Lamb Nonpredator Death Loss in the United States, 2009



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Items of Note

Adult sheep

Nonpredator sheep death loss accounted for 4.4 percent of adult sheep inventory in 2009. Overall, the percentage of loss was higher on operations with fewer than 1,000 sheep and lambs compared with operations with 1,000 or more sheep and lambs.

Weather-related causes in 2009 accounted for 15.7 percent of total adult sheep death losses, which was higher than in previous studies (1994, 1999, and 2004). The Central and West Central regions had a higher percentage of weather-related losses (18.9 and 20.3 percent, respectively) than the Pacific and Northeast regions (4.0 and 2.2 percent, respectively).

Lambs

Overall, producers lost 6.2 percent of their lamb crop to nonpredator causes in 2009. Operations with 1 to 24 sheep and lambs lost a higher percentage of their lamb crop (10.2 percent) to nonpredator causes than did operations with 100 or more head.

In 2009, respiratory problems accounted for a lower percentage of lamb deaths than in 1994 through 2004, while weather-related causes accounted for a higher percentage of losses. In the Central region in 2009, weather-related lamb losses accounted for 34.4 percent of all nonpredator lamb losses, a higher percentage than in any other region.

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).

Thank you to the NASS enumerators who telephoned and visited sheep operations and collected the data. Their hard work and dedication were invaluable. Thanks also to the personnel at the USDA–APHIS–Veterinary Services' Centers 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 black ink, appearing to read "L. Granger".

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Suggested bibliographic citation for this report:

USDA. 2010. Sheep and Lamb Nonpredator Death Loss in the United States, 2009.
USDA–APHIS–VS–CEAH. Fort Collins, CO
591.0511

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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 April via the NASS "Meat Animals Production, Disposition, and Income" report.

For NASS' January 1995, 2000, 2005, and 2010 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) are published in May via the NASS "Sheep and Goats Death Loss" report.

This report provides a breakdown of sheep and lamb death losses in 2009 for all causes by size group and by region, with special emphasis on nonpredator causes of loss. Where possible, the 1994, 1999, and 2004 death losses are provided for comparison. For specific State-level information on death losses by cause, refer to NASS report "Sheep and Goats Death Loss" released May 27, 2010, and available at: www.nass.usda.gov.

**Terms Used in
This Report**

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

Lamb crop: For the Central, Northeast, and Southeast/Other regions (see regions listed below), all lambs born alive during the calendar year. For the Pacific and West Central regions, all lambs after docking or branding during the calendar year.

Lambs: Animals less than 1 year old.

Lamb losses: For the Central, Northeast, and Southeast regions, lamb losses were tallied for all lambs born alive. In the Pacific and West Central regions, lamb losses were tallied for lambs after docking or branding.

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

Regions:

Pacific: California, Oregon, Washington

West Central: Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Texas, Utah, Wyoming

Central: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Wisconsin

Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New York, Ohio, Pennsylvania, Rhode Island*, Virginia, Vermont, West Virginia

Southeast/Other: Alabama, Alaska, Arkansas, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, New Jersey, North Carolina, South Carolina, Tennessee

*For the 1994 estimates, Rhode Island was included in the Southeast/Other region. In 1999, 2004 and 2009, Rhode Island was included in the Northeast region.

Size of Operation: Number of sheep and lambs on the operation January 1 of the respective year. Size groups are: 1 to 24; 25 to 99; 100 to 999; and 1,000 head or more.

Section I: Population Estimates—Demographics and Annual Death Loss

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

A. U.S. Demographics*

1. Inventory, January 1, 1995 to 2010

Number of sheep and lambs by class and by year:

Class	January 1 Number (1,000 Head)			
	Year			
	1995	2000	2005 ¹	2010 ²
All sheep and lambs	8,989.3	7,036.0	6,135.0	5,630.0
Breeding ewes 1 year and older	5,403.6	4,234.0	3,545.0	3,340.0
Breeding rams 1 year and older	257.0	208.5	192.0	195.0
Market sheep	96.8	80.0	74.1	85.0
Breeding ewes and rams 1 year and older and market sheep	5,757.4	4,522.5	3,811.1	3,620.0

¹Sheep and Goats Final Estimates 2004–2008, NASS.

²Sheep and Goats January 29, 2010, NASS.

2. Operations, 1994 to 2009

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

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

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

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

* “Sheep and Goats” annual January reports, NASS.

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
1 to 99	89.6	90.6	91.9	93.7
100 to 499	8.2	7.3	6.6	5.2
500 to 4,999	2.1	2.0	1.4	1.0
5,000 or more	0.1	0.1	0.1	0.1
Total	100.0	100.0	100.0	100.0

c. Percentage of breeding-sheep inventory by size of operation and by year:

Percent Inventory				
Year				
Size of Operation (Number of Breeding Sheep)	1994	1999	2004	2009
1 to 99	22.3	25.9	30.3	36.2
100 to 499	22.9	20.4	22.0	20.8
500 to 4,999	38.4	39.0	33.5	31.3
5,000 or more	16.4	14.7	14.2	11.7
Total	100.0	100.0	100.0	100.0

3. Lamb crop—1994 to 2009

Lamb crop and lamb crop per 100 ewes on hand by year:

	Year			
	1994	1999	2004 ¹	2009 ²
Lamb crop (1,000 head)	5,968.2	4,754.0	4,040.0	3,690.0
Lamb crop per 100 ewes on hand (January 1)	102	110	113	108

¹Sheep and Goats Final Estimates 2004–2008¹, NASS.²Sheep and Goats January 29, 2010², NASS.

B. Regional Demographics

For this report, the United States was divided into five regions (see Terms Used in This Report, p 2) in order to provide data on smaller geographic areas. NASS does not publish inventory and death loss data for small sheep-producing States individually, but collapses the data into an “Other States” group. For estimates in this report, the Other States were combined with the Southeast region. About 4.5 percent of U.S. sheep and lamb death loss occurred in the Other States.

1. Adult sheep inventory—January 1, 1995, 2000, 2005, and 2010

Nationally, the sheep population declined from approximately 5.8 million head on January 1, 1995, to approximately 3.6 million head on January 1, 2010. Regionally, only the Southeast/Other region showed an increase in sheep population from 1995 to 2010. A similar trend occurred for lamb crop during the same period (see next table).

Number of adult sheep (and number of adult sheep in 2010 as a percentage of adult sheep inventory in 2000 and 2005), by region:

Region	January 1 Number (1,000 Head)				Percent	
	1995	2000	2005	2010	2010 as a percentage of 2000	2010 as a percentage of 2005
Pacific	740.0	506.5	447.2	460.5	90.9	103.0
West Central	3,237.0	2,547.0	1,974.0	1,785.5	70.1	90.5
Central	1,258.0	1,032.5	957.8	886.0	85.8	92.5
Northeast	400.0	309.5	314.9	322.0	104.0	102.3
Southeast/Other	122.4	127.0	142.7	166.0	130.7	116.3
Total	5,757.4	4,522.5	3,836.6	3,620.0	80.0	94.4

2. Lamb crop—1994, 1999, 2004, and 2009

Calendar year lamb crop (and 2009 lamb crop as a percentage of 1999 and 2004 lamb crops), by region:

Region	Lamb Crop (1,000 Head)				Percent	
	1994	1999	2004	2009	2009 as a percentage of 1999	2009 as a percentage of 2004
Pacific	695.0	494.0	466.0	461.0	93.3	98.9
West Central	3,124.0	2,495.0	1,929.0	1,640.0	65.7	85.0
Central	1,574.0	1,298.0	1,180.0	1,116.0	86.0	94.6
Northeast	470.7	367.0	343.0	337.0	91.8	98.3
Southeast/Other	104.5	100.0	122.0	136.0	136.0	111.5
Total	5,968.2	4,754.0	4,040.0	3,690.0	77.6	91.3

C. U.S. Annual Death Loss

1. Death loss from all causes—1994 to 2009

A total of 234,500 sheep and 400,000 lambs were lost due to predator and nonpredator causes in 2009. These totals represent 6.5 and 10.8 percent of sheep inventory and lamb crop, respectively. Sheep and lamb death loss percentages increased from 2004 to 2009.

a. Sheep and lamb death loss due to all causes, by year:

Number (1,000 Head)				
Year				
	1994¹	1999¹	2004¹	2009²
Sheep	332.8	259.8	214.3	234.5
Lamb	614.7	488.6	385.0	400.0
Total	947.5	748.4	599.3	634.5

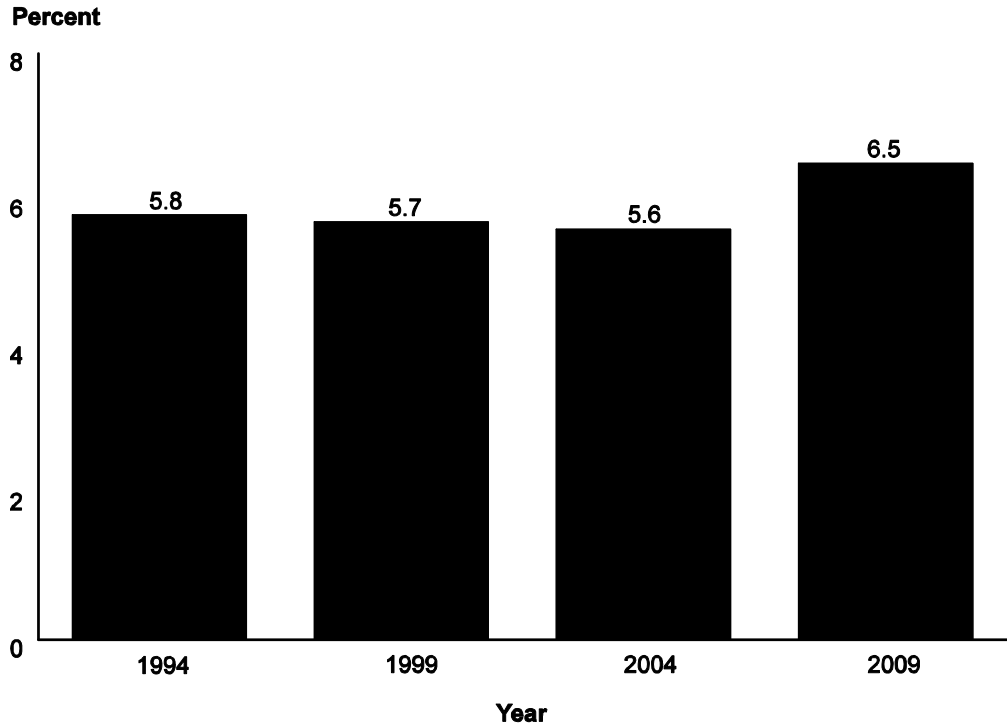
¹ "Meat Animal Production, Disposition, and Income," Final Estimates 2003–2007, NASS.

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

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	
5.8	5.7	5.6	6.5	

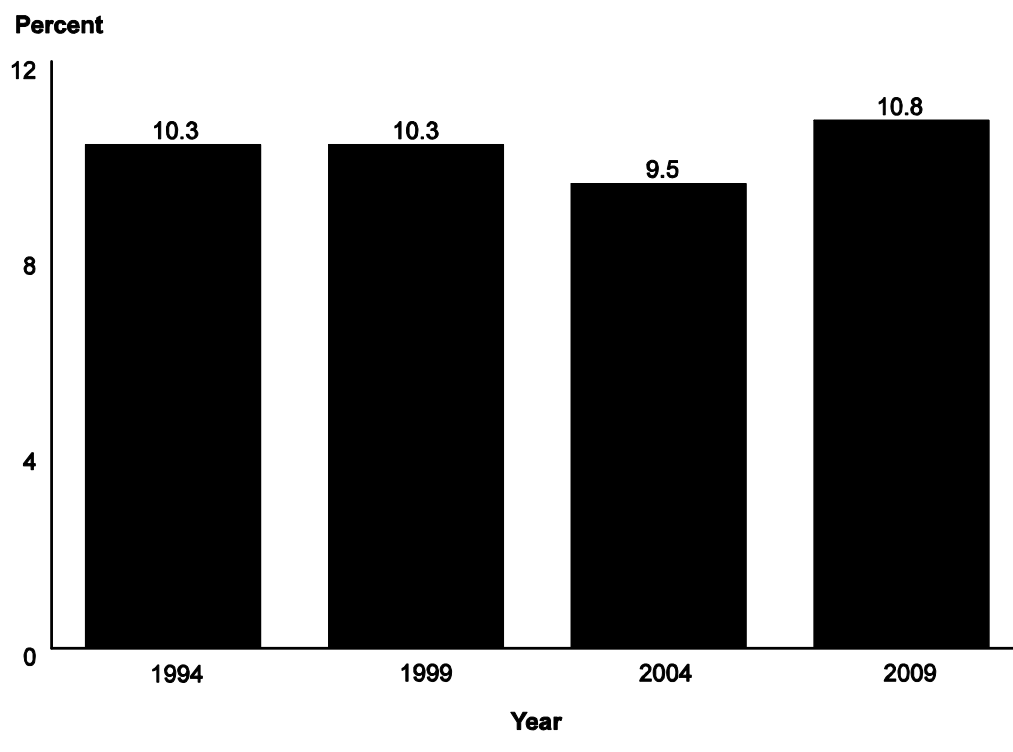
**Sheep Death Loss as a Percentage of Adult Sheep Inventory on January 1
of the Following Year, by Year**



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

Percent Lamb Crop			
Year			
1994	1999	2004	2009
10.3	10.3	9.5	10.8

Lamb Death Loss as a Percentage of Lamb Crop, by Year



2. U.S. nonpredator and predator death loss—1994, 1999, 2004, and 2009

Since 1994, the sum of all combined nonpredator causes has accounted for the majority of sheep and lamb death loss. In 2009, 61.0 percent of losses were due to nonpredator causes.

a. Number and percentage of sheep and lamb death losses by cause and by year:

Cause	Number and Percent Loss							
	Year							
	1994 ¹		1999 ¹		2004 ²		2009	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Nonpredator	577,950	61.1	472,700	63.2	375,700	62.7	387,300	61.0
Predator	368,050	38.9	275,700	36.8	223,600	37.3	247,200	39.0
Total	946,000	100.0	748,400	100.0	599,300	100.0	634,500	100.0

¹Total sheep and lamb death losses for 1994 have been revised, although the revisions are not shown further in this publication since detailed cause of loss estimates were not similarly adjusted and republished. Sheep losses were revised from 336.6 to 332.8 (thousand head), and lamb losses were revised from 609.4 to 614.7; as a result, total losses were revised from 946.0 to 947.5 thousand head. Total sheep and lamb death losses for 1999 were revised from 260,900 to 259,800 sheep lost and from 482,000 to 488,600 lambs lost. Since the predator loss publication was not reissued, adjustments (reflecting the revised total sheep and total lamb losses) were made appropriately to the nonpredator loss category.

²The 2004 sheep death loss was revised from 215,300 to 214,300 head (Nevada revised from 6,000 to 5,000 head). Since the 2005 death loss report was not re-issued, the original relationship of predator and nonpredator losses was maintained and losses rounded to the nearest 100 head for this report.

As in previous years, a higher percentage of lamb losses (42.9 percent) than sheep losses (32.3 percent) were due to predators in 2009.

b. Number and percentage of sheep death losses by cause and by year:

Number and Percent Loss								
Year								
1994								
1999								
2004								
2009								
Cause	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
Predator	106,575	31.7	76,400*	29.4	65,800	30.7	75,700	32.3
Total	336,600	100.0	259,800	100.0	214,300	100.0	234,500	100.0

*Initial NASS publication showed predator sheep losses of 77,000 head. Subsequent publication only revised 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.

c. Number and percentage of lamb death losses by cause and by year:

Number and Percent Loss								
Year								
1994								
1999								
2004								
2009								
Cause	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
Predator	261,475	42.9	199,300*	40.8	157,800	41.0	171,500	42.9
Total	609,400	100.0	488,600	100.0	385,000	100.0	400,000	100.0

*Initial NASS publication showed predator lamb losses of 196,000 head. Subsequent publication only revised 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.

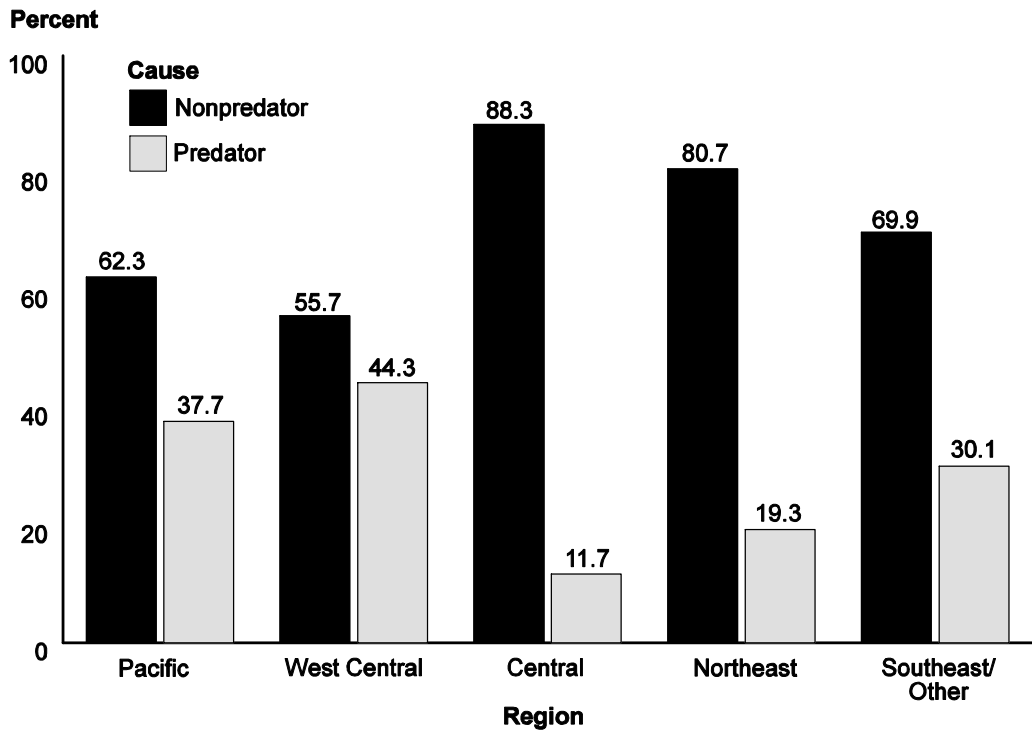
3. Regional predator and nonpredator death loss—1994, 1999, 2004, and 2009

Total sheep death losses increased from 2004 to 2009 in three of the five regions (West Central, Central, and Southeast/Other). Losses in the Pacific and Northeast regions were relatively stable from 2004 to 2009. In every region, nonpredator losses of sheep were higher than predator losses. For the West Central region in 2009, 50,900 sheep (44.3 percent of all sheep losses) were lost to predators compared with the Central region where only 7,000 sheep (11.7 percent of all sheep losses) were lost to predators.

a. Number and percentage of sheep death losses by cause, region, and year:

		Number and Percent Loss							
		Year							
		1994		1999		2004		2009	
Region	Cause	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Pacific	Nonpredator	25,625	64.1	17,700	61.0	18,300	70.4	16,200	62.3
	Predator	14,375	35.9	11,300	39.0	7,700	29.6	9,800	37.7
	Total	40,000	100.0	29,000	100.0	26,000	100.0	26,000	100.0
West Central	Nonpredator	116,325	62.2	87,500	66.8	64,100	61.0	64,100	55.7
	Predator	70,675	37.8	43,500	33.2	40,900	39.0	50,900	44.3
	Total	187,000	100.0	131,000	100.0	105,000	100.0	115,000	100.0
Central	Nonpredator	59,800	83.2	54,900	81.9	43,700	82.5	53,000	88.3
	Predator	12,100	16.8	12,100	18.1	9,300	17.5	7,000	11.7
	Total	71,900	100.0	67,000	100.0	53,000	100.0	60,000	100.0
Northeast	Nonpredator	21,875	76.1	15,900	80.3	15,600	78.0	15,500	80.7
	Predator	6,875	23.9	3,900	19.7	4,400	22.0	3,700	19.3
	Total	28,750	100.0	19,800	100.0	20,000	100.0	19,200	100.0
Southeast/ Other	Nonpredator	6,400	71.5	7,400	56.9	6,800	66.0	10,000	69.9
	Predator	2,550	28.5	5,600	43.1	3,500	34.0	4,300	30.1
	Total	8,950	100.0	13,000	100.0	10,300	100.0	14,300	100.0

Percentage of 2009 Sheep Death Loss by Cause and by Region

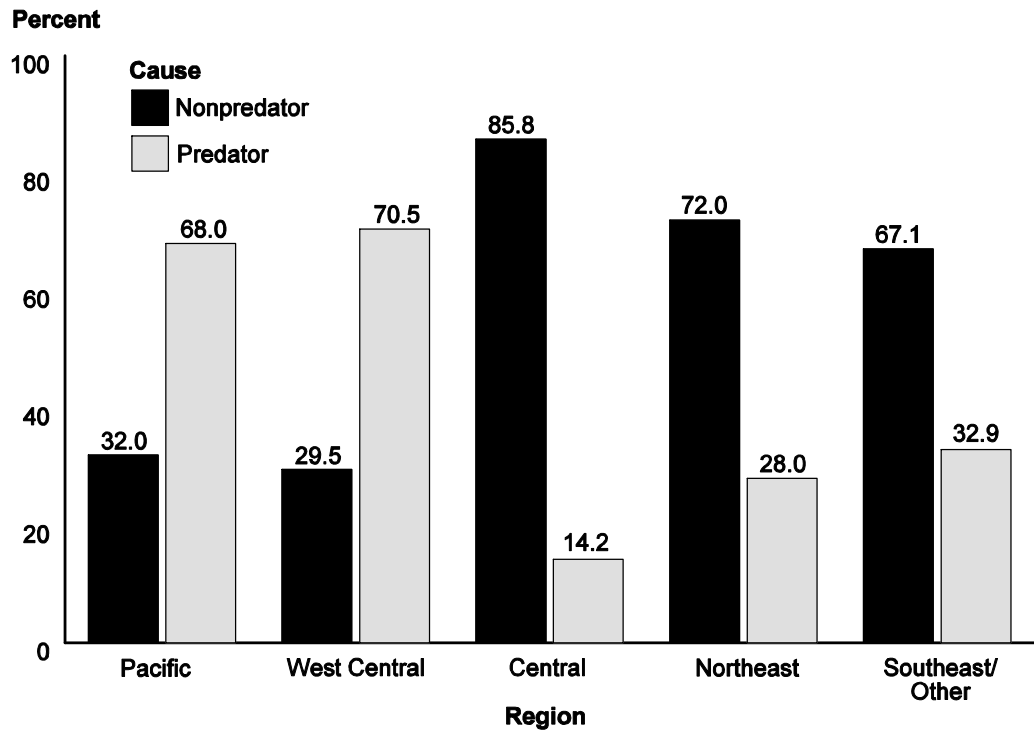


In the Pacific and West Central regions in 2009, the percentage of lamb death loss due to predators was higher than the percentage of loss due to nonpredator reasons (approximately two-thirds predator and one-third nonpredator). The proportions of predator and nonpredator losses in the other three regions were reversed, with two-thirds or more of losses due to nonpredator causes. The percentage of lamb death loss due to predators in the Northeast region was higher in 2009 compared with the previous study periods. The highest percentage of lamb loss due to nonpredator causes (85.8 percent) occurred in the Central region.

b. Number and percentage of lamb death losses by cause, region, and year:

		Number and Percent Loss							
		Year							
		1994		1999		2004		2009	
Region	Cause	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Pacific	Nonpredator	18,825	39.2	11,200	37.3	6,800	32.4	6,400	32.0
	Predator	29,175	60.8	18,800	62.7	14,200	67.6	13,600	68.0
	Total	48,000	100.0	30,000	100.0	21,000	100.0	20,000	100.0
West Central	Nonpredator	108,525	36.9	97,300	42.1	53,000	33.3	48,600	29.5
	Predator	185,475	63.1	133,700	57.9	106,000	66.7	116,400	70.5
	Total	294,000	100.0	231,000	100.0	159,000	100.0	165,000	100.0
Central	Nonpredator	156,175	83.7	132,700	81.2	117,300	84.1	124,800	85.8
	Predator	30,525	16.3	30,800	18.8	22,200	15.9	20,700	14.2
	Total	186,700	100.0	163,500	100.0	139,500	100.0	145,500	100.0
Northeast	Nonpredator	50,000	81.9	35,700	81.0	36,300	80.5	29,900	72.0
	Predator	11,050	18.1	8,400	19.0	8,800	19.5	11,600	28.0
	Total	61,050	100.0	44,100	100.0	45,100	100.0	41,500	100.0
Southeast/ Other	Nonpredator	14,400	73.3	12,400	62.0	13,800	67.6	18,800	67.1
	Predator	5,250	26.7	7,600	38.0	6,600	32.4	9,200	32.9
	Total	19,650	100.0	20,000	100.0	20,400	100.0	28,000	100.0

Percentage of 2009 Lamb Death Loss by Cause and by Region



Section II: Population Estimates—Nonpredator Losses

Note: Data in this section are primarily from analyses performed by NAHMS.

A. Nonpredator Sheep Death Loss

1. Losses—2009

Nonpredator sheep death loss accounted for 4.4 percent of adult sheep inventory. Overall, the percentage of loss was higher on operations with fewer than 1,000 sheep and lambs compared with operations with 1,000 or more sheep and lambs.

a. Sheep death loss as a percentage of adult sheep inventory on January 1, 2010, by size of operation and by region:

Region	Percent Inventory									
	Size of Operation (Number of Sheep and Lambs)									
	1–24		25–99		100–999		1,000 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Pacific	4.5	(1.2)	4.8	(0.6)	4.3	(0.5)	2.7	(0.3)	3.6	(0.3)
West Central	9.4	(3.8)	4.6	(1.0)	4.3	(0.4)	2.5	(0.1)	3.6	(0.3)
Central	7.7	(0.7)	6.5	(0.4)	5.5	(0.4)	4.8	(0.9)	6.0	(0.3)
Northeast	6.1	(1.3)	5.3	(0.8)	4.1	(0.2)	4.6	(0.4)	5.2	(0.5)
Southeast/ Other	5.4	(0.8)	6.4	(0.8)	3.5	(1.1)	*		5.2	(0.7)
All operations	7.1	(1.1)	5.5	(0.4)	4.7	(0.2)	2.8	(0.1)	4.4	(0.2)

*Too few operations to report.

2. Cause of loss—1994, 1999, 2004, and 2009

“Other” nonpredator causes of loss (such as old age, lameness, and being on back) accounted for more losses than any other category in 1994 and 1999 (34.7 percent and 34.0 percent of losses, respectively). In 1999, “other diseases” were removed from the “other” category, and in 2004 old age and being on back were removed from the “other” category. In 2009, old age accounted for more sheep losses than any other cause (24.7 percent of losses). Weather-related causes in 2009 were the highest of all four study periods (15.7 percent), while respiratory and metabolic problems showed declines.

a. Percentage of sheep death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss			
	1994	1999	2004	2009
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	9.3	11.6	12.9	¹ 13.2
Enterotoxemia ²				1.8
Internal parasites ²				7.7
Other digestive problems (bloat, scours, acidosis, etc.) ²				3.7
Respiratory problems (pneumonia, shipping fever, etc.)	6.9	8.5	9.4	4.8
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	3.6	3.2	3.7	0.6
Weather-related causes (chilling, drowning, lightning, etc.)	8.4	6.7	3.9	15.7
Theft (stolen)	2.0	0.8	0.5	0.5
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	5.3	4.0	3.9	3.1
Lambing problems	9.9	11.3	13.4	12.5
Old age			26.8	24.7
Being on back			2.0	1.8
Other diseases (mastitis, footrot, boils, etc.)		5.6	6.6	4.9
Other ³	34.7	34.0	4.8	4.3
Unknown	19.9	14.3	12.1	13.9
Total	100.0	100.0	100.0	100.0

¹Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

²In 2009, the category “digestive problems” was broken out into “enterotoxemia,” “internal parasites,” and “other digestive problems.”

³Lameness, etc. (includes old age and being on back in 1994 and 1999, and “other diseases” in 1994).

The percentage of inventory lost due to all nonpredator causes remained at about 4 percent from 1994 to 2009. The percentage loss due to weather increased substantially in 2009, while losses due to respiratory and metabolic problems declined.

Losses due to old age, being on back, and other diseases for 2009 were at about the same level as 2004. It should be noted that the category “old age” is subjective and probably includes sheep that died from an undiagnosed illness that the producer was unaware of.

b. Percentage of January 1 following-year adult sheep inventory lost, by cause and by year:

Nonpredator Cause	Percent Inventory			
	1994	1999	2004	2009
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	0.37	0.43	0.50	¹ 0.58
Enterotoxemia ²				0.08
Internal parasites ²				0.34
Other digestive problems (bloat, scours, acidosis, etc.) ²				0.16
Respiratory problems (pneumonia, shipping fever, etc.)	0.27	0.31	0.36	0.21
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.14	0.12	0.14	0.02
Weather-related causes (chilling, drowning, lightning, etc.)	0.34	0.25	0.15	0.69
Theft (stolen)	0.08	0.03	0.02	0.02
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.21	0.15	0.15	0.14
Lambing problems	0.39	0.42	0.52	0.55
Old age			1.04	1.08
Being on back			0.08	0.08
Other diseases (mastitis, footrot, boils, etc.)		0.21	0.26	0.21
Other ³	1.39	1.26	0.19	0.19
Unknown	0.79	0.53	0.47	0.61
All nonpredator causes	3.99	3.70	3.88	4.38

¹Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

²In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

³Lameness, etc. (includes old age and being on back in 1994 and 1999, and “other diseases” in 1994).

3. Cause of loss by region—1994, 1999, 2004, and 2009

In the Pacific region, nonpredator sheep death loss due to metabolic problems declined from 6.1 percent of losses in 1994 to 0.1 percent in 2009.

a. For the *Pacific* region, percentage of sheep death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss							
	1994 ¹		1999		2004		2009	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	10.5		11.3	(1.6)	9.9	(3.1)	² 13.9	
Enterotoxemia ³							2.0	(0.7)
Internal parasites ³							3.7	(2.3)
Other digestive problems (bloat, scours, acidosis, etc.) ³							8.2	(2.0)
Respiratory problems (pneumonia, shipping fever, etc.)	9.7		10.8	(1.8)	11.7	(2.4)	3.3	(0.7)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	6.1		2.1	(0.5)	2.7	(0.6)	0.1	(0.0)
Weather-related causes (chilling, drowning, lightning, etc.)	3.9		4.8	(1.8)	2.4	(1.4)	4.0	(2.0)
Theft (stolen)	0.8		0.1	(0.1)	0.3	(0.1)	1.2	(1.0)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	2.4		4.5	(1.7)	3.4	(1.4)	1.8	(0.5)
Lambing problems	8.0		10.9	(2.3)	7.4	(1.4)	11.7	(1.4)
Old age					31.9	(4.0)	30.1	(2.7)
Being on back					1.7	(0.3)	2.0	(0.3)
Other diseases (mastitis, footrot, boils, etc.)			12.9	(3.5)	8.3	(2.8)	4.7	(1.3)
Other ⁴	44.7		32.9	(2.6)	11.7	(3.8)	6.7	(1.7)
Unknown	13.9		9.7	(1.6)	8.6	(1.7)	20.5	(3.5)
All nonpredator causes	100.0		100.0		100.0		100.0	

¹Standard errors not available.

²Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

³In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

⁴Lameness, etc. (includes old age and being on back in 1994 and 1999, and other diseases in 1994).

In the West Central region, a higher percentage of nonpredator sheep death loss was due to weather-related causes in 2009 compared with 1994, 1999, and 2004. Conversely, metabolic problems accounted for a lower percentage of nonpredator sheep death loss in 2009 than in 1994, 1999, and 2004.

b. For the **West Central** region, percentage of sheep death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss							
	1994 ¹		1999		2004		2009	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	8.4		10.3	(0.8)	15.6	(2.3)	² 17.1	
Enterotoxemia ³							1.5	(0.5)
Internal parasites ³							5.6	(1.5)
Other digestive problems (bloat, scours, acidosis, etc.) ³							10.0	(6.6)
Respiratory problems (pneumonia, shipping fever, etc.)	3.9		4.1	(0.4)	6.4	(1.1)	2.7	(0.4)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	2.6		2.0	(0.1)	3.7	(0.8)	0.3	(0.1)
Weather-related causes (chilling, drowning, lightning, etc.)	10.3		9.5	(1.1)	3.4	(0.4)	20.3	(3.2)
Theft (stolen)	3.4		1.1	(0.2)	0.5	(0.1)	1.2	(0.3)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	9.0		6.3	(0.4)	6.0	(0.6)	4.5	(0.5)
Lambing problems	7.5		9.5	(0.7)	12.8	(1.4)	10.0	(1.1)
Old age					22.6	(1.7)	17.6	(1.7)
Being on back					2.5	(0.3)	1.7	(0.2)
Other diseases (mastitis, footrot, boils, etc.)			5.1	(0.4)	8.6	(2.2)	5.0	(0.9)
Other ⁴	33.6		34.1	(1.3)	4.3	(0.6)	3.5	(0.5)
Unknown	21.3		18.0	(1.2)	13.6	(1.1)	16.1	(2.3)
All nonpredator causes	100.0		100.0		100.0		100.0	

¹Standard errors not available.

²Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

³In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

⁴Lameness, etc. (includes old age and being on back in 1994 and 1999, and other diseases in 1994).

In the Central region, the percentages of nonpredator sheep deaths due to respiratory and metabolic problems were lower in 2009 than in 1994, 1999, and 2004. Conversely, the percentage of sheep deaths due to weather-related causes was higher in 2009 than in 1994, 1999, and 2004.

c. For the **Central** region, percentage of sheep death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss							
	1994 ¹		1999		2004		2009	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	9.2		12.1	(1.4)	11.7	(0.9)	² 12.3	
Enterotoxemia ³							2.8	(0.4)
Internal parasites ³							6.6	(0.8)
Other digestive problems (bloat, scours, acidosis, etc.) ³							2.9	(0.3)
Respiratory problems (pneumonia, shipping fever, etc.)	11.2		12.2	(1.4)	12.2	(1.1)	6.5	(0.6)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	4.0		4.8	(0.7)	3.5	(0.6)	0.6	(0.1)
Weather-related causes (chilling, drowning, lightning, etc.)	8.3		3.8	(0.6)	4.5	(1.3)	18.9	(1.3)
Theft (stolen)	0.7		0.8	(0.2)	0.2	(0.1)	0.0	(0.0)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.8		1.7	(0.3)	1.5	(0.3)	1.3	(0.4)
Lambing problems	11.9		13.5	(1.3)	15.2	(1.0)	11.8	(0.9)
Old age					30.8	(1.4)	28.0	(1.9)
Being on back					1.1	(0.1)	1.2	(0.2)
Other diseases (mastitis, footrot, boils, etc.)			3.6	(0.4)	4.1	(0.5)	4.6	(1.6)
Other ⁴	37.4		35.8	(1.6)	4.0	(0.5)	3.5	(0.6)
Unknown	16.5		11.7	(1.4)	11.2	(1.2)	11.3	(1.6)
All nonpredator causes	100.0		100.0		100.0		100.0	

¹ Standard errors not available.

² Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

³ In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

⁴ Lameness, etc. (includes old age and being on back in 1994 and 1999, and other diseases in 1994).

In the Northeast region, nonpredator sheep death loss due to metabolic problems declined from about 4 percent of losses annually from 1994 to 2004 to about 1 percent in 2009.

d. For the **Northeast** region, percentage of sheep death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss							
	1994 ¹		1999		2004		2009	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	10.8		12.0	(2.0)	10.7	(1.4)	² 16.9	
Enterotoxemia ³							1.4	(0.4)
Internal parasites ³							13.3	(2.2)
Other digestive problems (bloat, scours, acidosis, etc.) ³							2.2	(0.6)
Respiratory problems (pneumonia, shipping fever, etc.)	7.8		11.1	(1.7)	6.7	(1.2)	5.4	(1.2)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	4.4		4.0	(0.7)	3.7	(1.0)	0.9	(0.3)
Weather-related causes (chilling, drowning, lightning, etc.)	4.2		4.0	(2.0)	3.5	(0.9)	2.2	(1.0)
Theft (stolen)	0.5		0.0	(0.0)	0.0	(0.0)	0.1	(0.1)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	1.4		2.0	(0.6)	2.3	(1.0)	0.6	(0.2)
Lambing problems	19.0		12.1	(1.6)	17.0	(2.1)	22.6	(6.8)
Old age					31.0	(2.9)	25.3	(3.0)
Being on back					2.0	(0.5)	3.4	(2.1)
Other diseases (mastitis, footrot, boils, etc.)			5.5	(1.4)	5.7	(2.2)	3.3	(0.6)
Other ⁴	27.8		36.4	(2.6)	4.6	(1.0)	6.7	(3.7)
Unknown	24.1		12.9	(2.8)	12.8	(1.6)	12.6	(2.4)
All nonpredator causes	100.0		100.0		100.0		100.0	

¹Standard errors not available.

²Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

³In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

⁴Lameness, etc. (includes old age and being on back in 1994 and 1999 and other diseases in 1994).

In the Southeast/Other region, the percentage of sheep death loss for individual nonpredator causes remained relatively constant from 1994 to 2009.

e. For the **Southeast/Other** region, percentage of sheep death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss							
	1994 ¹		1999		2004		2009	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	15.2		21.4	(5.6)	21.2	(9.4)	² 26.1	
Enterotoxemia ³							1.2	(0.3)
Internal parasites ³							22.6	(4.1)
Other digestive problems (bloat, scours, acidosis, etc.) ³							2.3	(0.8)
Respiratory problems (pneumonia, shipping fever, etc.)	5.5		9.5	(3.2)	5.1	(2.1)	4.4	(1.2)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	3.5		3.9	(2.0)	1.4	(0.6)	1.1	(0.4)
Weather-related causes (chilling, drowning, lightning, etc.)	7.8		13.5	(5.8)	2.0	(0.7)	9.7	(3.1)
Theft (stolen)	0.4		0.2	(0.1)	0.7	(0.5)	0.1	(0.1)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	6.3		3.2	(1.5)	0.3	(0.2)	2.4	(1.2)
Lambing problems	10.5		10.1	(3.7)	11.6	(5.3)	13.5	(4.1)
Old age					18.7	(4.2)	14.2	(2.2)
Being on back					0.3	(0.1)	1.0	(0.4)
Other diseases (mastitis, footrot, boils, etc.)			5.8	(1.8)	3.4	(1.0)	2.7	(1.2)
Other	15.6		17.4	(3.0)	5.0	(1.2)	3.3	(0.8)
Unknown	35.2		15.0	(4.0)	30.3	(6.7)	21.5	(4.8)
All nonpredator causes	100.0		100.0		100.0		100.0	

¹ Standard errors not available.

² Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

³ In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

⁴ Lameness, etc. (includes old age and being on back in 1994 and 1999, and other diseases in 1994).

4. Cause of loss by size of operation—2009

While the percentage of nonpredator losses was similar across all operation sizes for many causes of loss, operations with 1,000 or more sheep and lambs reported a lower percentage of loss due to internal parasites (2.9 percent) and a higher percentage of loss due to poisoning (6.2 percent) compared with other operation sizes. Operations with 100 or more sheep and lambs had a much higher percentage of loss due to weather than operations with fewer than 100 sheep and lambs; however, this finding might be due to the presence of larger flocks in areas prone to severe weather conditions.

a. Percentage of sheep death loss by cause and by size of operation:

Nonpredator Cause	Percent Nonpredator 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
Enterotoxemia	2.4	(1.0)	1.7	(0.4)	2.1	(0.3)	1.7	(0.3)
Internal parasites	10.6	(3.5)	7.9	(1.4)	8.7	(0.9)	2.9	(0.2)
Other digestive problems (bloat, scours, acidosis, etc.)	18.0	(13.2)	2.5	(0.4)	2.9	(0.3)	5.4	(0.9)
Respiratory problems (pneumonia, shipping fever, etc.)	3.7	(1.1)	5.5	(0.7)	4.5	(0.4)	3.6	(0.4)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.4	(0.2)	0.6	(0.2)	0.5	(0.1)	0.5	(0.1)
Weather-related causes (chilling, drowning, lightning, etc.)	5.5	(1.6)	9.8	(1.8)	22.9	(3.5)	20.7	(1.6)
Theft (stolen)	0.0	(0.0)	0.2	(0.1)	1.1	(0.4)	1.1	(0.3)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	1.3	(0.6)	2.0	(0.5)	1.3	(0.2)	6.2	(0.4)
Lambing problems	14.7	(4.8)	14.7	(1.5)	8.2	(0.7)	12.9	(0.8)
Old age	22.0	(4.2)	27.8	(2.0)	23.0	(1.5)	18.4	(1.8)
Being on back	1.9	(1.2)	1.3	(0.2)	1.6	(0.1)	2.0	(0.1)
Other diseases (mastitis, footrot, boils, etc.)	3.2	(1.1)	5.1	(1.2)	4.5	(1.6)	4.9	(0.4)
Other*	3.1	(0.9)	6.0	(1.7)	3.1	(0.5)	4.4	(0.7)
Unknown	13.2	(3.0)	14.9	(2.2)	15.6	(2.4)	15.3	(1.6)
Total	100.0		100.0		100.0		100.0	

Operations with 1,000 or more sheep and lambs lost less inventory to old age (0.51 percent) than operations with fewer than 1,000 sheep and lambs (1.08 to 1.57 percent), presumably because large operations were more likely to cull sheep before the sheep reached old age. Also, operations with 1,000 or more sheep and lambs lost less inventory to internal parasites than the other-sized operations.

b. Percentage of January 1 following-year adult sheep inventory lost, by cause and by size of operation:

Nonpredator Cause	Percent Inventory							
	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
Enterotoxemia	0.17	(0.06)	0.09	(0.02)	0.10	(0.02)	0.05	(0.01)
Internal parasites	0.75	(0.24)	0.44	(0.08)	0.41	(0.04)	0.08	(0.01)
Other digestive problems (bloat, scours, acidosis, etc.)	1.27	(1.10)	0.14	(0.02)	0.13	(0.01)	0.15	(0.03)
Respiratory problems (pneumonia, shipping fever, etc.)	0.26	(0.07)	0.30	(0.04)	0.21	(0.02)	0.10	(0.01)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.03	(0.01)	0.04	(0.01)	0.02	(0.00)	0.01	(0.00)
Weather-related causes (chilling, drowning, lightning, etc.)	0.39	(0.10)	0.54	(0.11)	1.08	(0.20)	0.58	(0.05)
Theft (stolen)	0.00	(0.00)	0.01	(0.01)	0.05	(0.02)	0.03	(0.01)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.09	(0.04)	0.11	(0.03)	0.06	(0.01)	0.17	(0.01)
Lambing problems	1.05	(0.32)	0.81	(0.10)	0.39	(0.03)	0.36	(0.02)
Old age	1.57	(0.18)	1.52	(0.14)	1.08	(0.06)	0.51	(0.05)
Being on back	0.14	(0.08)	0.07	(0.01)	0.07	(0.01)	0.06	(0.00)
Other diseases (mastitis, footrot, boils, etc.)	0.23	(0.07)	0.28	(0.07)	0.21	(0.08)	0.14	(0.01)
Other*	0.22	(0.05)	0.33	(0.10)	0.14	(0.02)	0.12	(0.02)
Unknown	0.95	(0.16)	0.81	(0.14)	0.72	(0.11)	0.43	(0.05)
All nonpredator causes	7.11	(1.11)	5.50	(0.40)	4.68	(0.25)	2.79	(0.09)

*Lameness, etc.

5. Cause of loss by region—2009

The Central and West Central regions had a higher percentage of weather-related losses (18.9 and 20.3 percent, respectively) than the Pacific and Northeast regions (4.0 and 2.2 percent, respectively). Percentage of loss also differed by region for internal parasites, with the Northeast and Southeast/Other regions having higher losses than the other three regions. Death loss due to internal parasites ranged from 3.7 percent in the Pacific region to 22.6 percent in the Southeast/Other region. The percentage of losses due to old age ranged from 14.2 percent in the Southeast/Other region to 30.1 percent in the Pacific region.

a. Percentage of sheep death loss by cause and by region:

Nonpredator Cause	Percent Nonpredator Loss									
	Region									
	Pacific		West Central		Central		Northeast		Southeast/Other	
	Std. Pct.	Error	Std. Pct.	Error	Std. Pct.	Error	Std. Pct.	Error	Std. Pct.	Error
Enterotoxemia	2.0	(0.7)	1.5	(0.5)	2.8	(0.4)	1.4	(0.4)	1.2	(0.3)
Internal parasites	3.7	(2.3)	5.6	(1.5)	6.6	(0.8)	13.3	(2.2)	22.6	(4.1)
Other digestive problems (bloat, scours, acidosis, etc.)	8.2	(2.0)	10.0	(6.6)	2.9	(0.3)	2.2	(0.6)	2.3	(0.8)
Respiratory problems (pneumonia, shipping fever, etc.)	3.3	(0.7)	2.7	(0.4)	6.5	(0.6)	5.4	(1.2)	4.4	(1.2)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.1	(0.0)	0.3	(0.1)	0.6	(0.1)	0.9	(0.3)	1.1	(0.4)
Weather-related causes (chilling, drowning, lightning, etc.)	4.0	(2.0)	20.3	(3.2)	18.9	(1.3)	2.2	(1.0)	9.7	(3.1)
Theft (stolen)	1.2	(1.0)	1.2	(0.3)	0.0	(0.0)	0.1	(0.1)	0.1	(0.1)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	1.8	(0.5)	4.5	(0.5)	1.3	(0.4)	0.6	(0.2)	2.4	(1.2)
Lambing problems	11.7	(1.4)	10.0	(1.1)	11.8	(0.9)	22.6	(6.8)	13.5	(4.1)
Old age	30.1	(2.7)	17.6	(1.7)	28.0	(1.9)	25.3	(3.0)	14.2	(2.2)
Being on back	2.0	(0.3)	1.7	(0.2)	1.2	(0.2)	3.4	(2.1)	1.0	(0.4)
Other diseases (mastitis, footrot, boils, etc.)	4.7	(1.3)	5.0	(0.9)	4.6	(1.6)	3.3	(0.6)	2.7	(1.2)
Other*	6.7	(1.7)	3.5	(0.5)	3.5	(0.6)	6.7	(3.7)	3.3	(0.8)
Unknown	20.5	(3.5)	16.1	(2.3)	11.3	(1.6)	12.6	(2.4)	21.5	(4.8)
Total	100.0		100.0		100.0		100.0		100.0	

*Lameness, etc.

A higher percentage of sheep inventory was lost to nonpredator causes in the Central region (5.97 percent) than in the Pacific and West Central regions (3.55 and 3.64 percent, respectively). The Pacific region had a lower percentage of inventory lost to internal parasites (0.13 percent) than the Southeast/Other region (1.16 percent) and the Northeast region (0.69 percent).

b. Percentage of January 1 following-year sheep inventory lost, by cause and by region:

Nonpredator Cause	Percent Inventory									
	Region									
	Pacific		West Central		Central		Northeast		Southeast/Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	0.07	(0.03)	0.06	(0.02)	0.16	(0.03)	0.07	(0.02)	0.06	(0.02)
Internal parasites	0.13	(0.09)	0.21	(0.05)	0.39	(0.05)	0.69	(0.10)	1.16	(0.26)
Other digestive problems (bloat, scours, acidosis, etc.)	0.29	(0.07)	0.36	(0.27)	0.17	(0.02)	0.11	(0.03)	0.12	(0.04)
Respiratory problems (pneumonia, shipping fever, etc.)	0.12	(0.02)	0.10	(0.01)	0.39	(0.04)	0.29	(0.06)	0.23	(0.07)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.00	(0.00)	0.01	(0.00)	0.04	(0.01)	0.05	(0.01)	0.06	(0.02)
Weather-related causes (chilling, drowning, lightning, etc.)	0.14	(0.07)	0.74	(0.12)	1.15	(0.10)	0.11	(0.05)	0.50	(0.18)
Theft (stolen)	0.04	(0.04)	0.04	(0.01)	0.00	(0.00)	0.01	(0.00)	0.01	(0.00)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.07	(0.02)	0.16	(0.01)	0.08	(0.03)	0.03	(0.01)	0.12	(0.06)
Lambing problems	0.42	(0.05)	0.36	(0.03)	0.70	(0.06)	1.16	(0.41)	0.70	(0.23)
Old age	1.07	(0.11)	0.64	(0.04)	1.67	(0.11)	1.31	(0.12)	0.74	(0.14)
Being on back	0.07	(0.01)	0.06	(0.01)	0.07	(0.01)	0.17	(0.11)	0.05	(0.02)
Other diseases (mastitis, footrot, boils, etc.)	0.17	(0.04)	0.18	(0.03)	0.27	(0.10)	0.17	(0.03)	0.14	(0.06)
Other *	0.24	(0.06)	0.13	(0.02)	0.21	(0.04)	0.36	(0.21)	0.17	(0.05)
Unknown	0.73	(0.14)	0.59	(0.08)	0.67	(0.10)	0.65	(0.13)	1.12	(0.30)
All nonpredator causes	3.55	(0.25)	3.64	(0.30)	5.97	(0.30)	5.18	(0.50)	5.19	(0.68)

*Lameness, etc.

6. Cause of loss by region and by size of operation—2009

In the Pacific region, old age and unknown nonpredator causes accounted for the highest percentage of sheep death loss.

a. For the *Pacific* region, percentage of sheep death loss by cause and by size of operation:

Nonpredator Cause	Percent Nonpredator Loss									
	Size of Operation (Number of Sheep and Lambs)									
	1–24		25–99		100–999		1,000 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	0.0	(0.0)	0.6	(0.4)	0.4	(0.2)	4.5	(1.7)	2.0	(0.7)
Internal parasites	0.4	(0.3)	11.7	(9.3)	3.7	(2.0)	0.5	(0.1)	3.7	(2.3)
Other digestive problems (bloat, scours, acidosis, etc.)	0.6	(0.6)	2.2	(0.9)	2.4	(0.8)	17.6	(3.8)	8.2	(2.0)
Respiratory problems (pneumonia, shipping fever, etc.)	0.9	(0.7)	4.3	(2.2)	2.6	(0.7)	3.9	(1.0)	3.3	(0.7)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.0	(--)	0.2	(0.1)	0.1	(0.0)	0.0	(0.0)	0.1	(0.0)
Weather-related causes (chilling, drowning, lightning, etc.)	3.4	(1.9)	12.5	(8.1)	1.5	(0.6)	1.0	(0.3)	4.0	(2.0)
Theft (stolen)	0.0	(--)	0.0	(--)	5.5	(4.4)	0.0	(--)	1.2	(1.0)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.0	(--)	1.8	(1.2)	0.2	(0.1)	3.5	(0.9)	1.8	(0.5)
Lambing problems	13.5	(4.4)	9.8	(2.6)	10.1	(3.9)	12.9	(1.5)	11.7	(1.4)
Old age	38.5	(10.0)	34.2	(6.4)	36.0	(6.7)	21.4	(2.6)	30.1	(2.7)
Being on back	2.1	(1.3)	1.2	(0.5)	3.3	(0.8)	1.7	(0.4)	2.0	(0.3)
Other diseases (mastitis, footrot, boils, etc.)	1.8	(1.3)	4.1	(1.9)	6.4	(4.3)	5.1	(1.6)	4.7	(1.3)
Other*	5.2	(2.2)	8.2	(3.9)	3.5	(1.4)	8.2	(3.5)	6.7	(1.7)
Unknown	33.6	(13.0)	9.2	(2.9)	24.3	(8.1)	19.7	(3.7)	20.5	(3.5)
Total	100.0		100.0		100.0		100.0		100.0	

*Lameness, etc.

In the West Central region, weather, old age, and unknown nonpredator causes combined accounted for 54.0 percent of sheep death loss.

b. For the **West Central** region, percentage of sheep death loss by cause and by size of operation:

Nonpredator Cause	Percent Nonpredator Loss									
	Size of Operation (Number of Sheep and Lambs)									
	1–24		25–99		100–999		1,000 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	3.3	(2.7)	0.5	(0.2)	1.6	(0.7)	1.2	(0.2)	1.5	(0.5)
Internal parasites	13.5	(9.7)	2.5	(1.0)	7.2	(1.7)	2.4	(0.3)	5.6	(1.5)
Other digestive problems (bloat, scours, acidosis, etc.)	46.2	(24.7)	1.6	(0.7)	3.0	(0.6)	3.4	(0.4)	10.0	(6.6)
Respiratory problems (pneumonia, shipping fever, etc.)	1.9	(1.3)	3.2	(0.8)	2.4	(0.5)	3.1	(0.5)	2.7	(0.4)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.4	(0.4)	0.8	(0.7)	0.1	(0.0)	0.3	(0.1)	0.3	(0.1)
Weather-related causes (chilling, drowning, lightning, etc.)	5.0	(3.3)	14.1	(5.4)	32.1	(7.6)	20.2	(1.9)	20.3	(3.2)
Theft (stolen)	0.0	(--)	0.5	(0.5)	1.6	(0.8)	1.7	(0.4)	1.2	(0.3)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.2	(0.1)	2.3	(0.7)	2.7	(0.5)	8.7	(0.5)	4.5	(0.5)
Lambing problems	4.7	(3.0)	9.7	(3.3)	6.3	(1.0)	15.2	(1.1)	10.0	(1.1)
Old age	12.4	(6.3)	24.4	(4.1)	18.3	(2.4)	16.4	(0.8)	17.6	(1.7)
Being on back	0.3	(0.2)	2.2	(0.7)	1.3	(0.2)	2.3	(0.2)	1.7	(0.2)
Other diseases (mastitis, footrot, boils, etc.)	1.1	(1.1)	12.4	(4.3)	2.6	(0.4)	5.5	(0.5)	5.0	(0.9)
Other*	3.5	(2.4)	1.2	(0.3)	3.4	(0.9)	4.4	(0.4)	3.5	(0.5)
Unknown	7.5	(3.8)	24.6	(6.6)	17.4	(4.5)	15.2	(2.2)	16.1	(2.3)
Total	100.0		100.0		100.0		100.0		100.0	

*Lameness, etc.

For operations with fewer than 100 head in the Central region, old age accounted for the highest percentage of sheep death loss. On operations with 100 to 999 head, weather and old age accounted for the highest percentages of losses.

c. For the **Central** region, percentage of sheep death loss by cause and by size of operation:

Nonpredator Cause	Percent Nonpredator Loss									
	Size of Operation (Number of Sheep and Lambs)									
	1–24		25–99		100–999		1,000 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	3.1	(1.0)	3.0	(1.0)	2.9	(0.4)	1.0	(0.2)	2.8	(0.4)
Internal parasites	9.7	(3.7)	5.0	(0.9)	6.6	(0.9)	6.1	(0.8)	6.6	(0.8)
Other digestive problems (bloat, scours, acidosis, etc.)	3.4	(1.1)	3.8	(0.8)	2.5	(0.3)	1.2	(0.3)	2.9	(0.3)
Respiratory problems (pneumonia, shipping fever, etc.)	4.6	(2.2)	7.8	(1.4)	6.8	(0.7)	4.9	(0.9)	6.5	(0.6)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.6	(0.4)	0.6	(0.2)	0.8	(0.2)	0.2	(0.1)	0.6	(0.1)
Weather-related causes (chilling, drowning, lightning, etc.)	7.4	(2.6)	9.9	(1.6)	22.6	(2.1)	45.5	(6.5)	18.9	(1.3)
Theft (stolen)	0.1	(0.0)	0.0	(0.0)	0.1	(0.0)	0.0	(--)	0.0	(0.0)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	2.5	(1.5)	2.6	(1.1)	0.3	(0.1)	0.1	(0.0)	1.3	(0.4)
Lambing problems	14.4	(3.0)	16.8	(2.0)	8.9	(0.9)	5.3	(0.9)	11.8	(0.9)
Old age	32.5	(4.4)	33.2	(3.2)	25.0	(2.0)	18.9	(9.9)	28.0	(1.9)
Being on back	1.4	(0.8)	0.9	(0.2)	1.2	(0.2)	1.4	(0.3)	1.2	(0.2)
Other diseases (mastitis, footrot, boils, etc.)	6.0	(2.5)	2.6	(0.5)	6.1	(3.7)	2.3	(0.5)	4.6	(1.6)
Other*	2.7	(0.7)	6.2	(1.8)	2.6	(0.7)	0.5	(0.2)	3.5	(0.6)
Unknown	11.6	(2.5)	7.6	(1.1)	13.6	(3.6)	12.6	(2.1)	11.3	(1.6)
Total	100.0		100.0		100.0		100.0		100.0	

*Lameness, etc.

In the Northeast region, the percentage of sheep death loss due to internal parasites was higher for operations with 1,000 or more head than for operations with 1 to 24 head (22.5 and 7.3 percent, respectively).

d. For the *Northeast* region, percentage of sheep death loss by cause and by flock size:

Nonpredator Cause	Percent Nonpredator Loss									
	Size of Operation (Number of Sheep and Lambs)									
	1–24		25–99		100–999		1,000 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	1.6	(0.9)	0.9	(0.4)	1.6	(0.6)	4.5	(0.7)	1.4	(0.4)
Internal parasites	7.3	(3.8)	13.1	(2.7)	22.1	(4.0)	22.5	(3.3)	13.3	(2.2)
Other digestive problems (bloat, scours, acidosis, etc.)	1.3	(0.8)	1.9	(1.3)	3.9	(0.7)	4.8	(0.7)	2.2	(0.6)
Respiratory problems (pneumonia, shipping fever, etc.)	6.1	(3.1)	4.3	(1.1)	6.0	(1.0)	9.8	(0.8)	5.4	(1.2)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.2	(0.2)	1.3	(0.6)	0.8	(0.4)	6.4	(1.0)	0.9	(0.3)
Weather-related causes (chilling, drowning, lightning, etc.)	3.3	(2.9)	1.1	(0.3)	2.8	(0.7)	0.0	(--)	2.2	(1.0)
Theft (stolen)	0.0	(--)	0.0	(--)	0.4	(0.4)	0.0	(--)	0.1	(0.1)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.5	(0.3)	0.5	(0.4)	1.0	(0.4)	0.0	(--)	0.6	(0.2)
Lambing problems	35.8	(16.0)	17.3	(3.2)	12.9	(1.6)	8.0	(1.2)	22.6	(6.8)
Old age	20.5	(6.0)	26.6	(3.9)	30.7	(2.7)	27.4	(3.6)	25.3	(3.0)
Being on back	6.1	(5.8)	1.2	(0.4)	2.9	(0.5)	3.5	(0.8)	3.4	(2.1)
Other diseases (mastitis, footrot, boils, etc.)	2.0	(1.2)	3.0	(0.9)	5.0	(1.0)	11.2	(1.2)	3.3	(0.6)
Other*	1.7	(1.4)	13.5	(8.5)	2.8	(0.6)	0.9	(0.4)	6.7	(3.7)
Unknown	13.6	(5.9)	15.3	(3.0)	7.1	(1.2)	1.0	(0.1)	12.6	(2.4)
Total	100.0		100.0		100.0		100.0		100.0	

*Lameness, etc.

e. For the **Southeast/Other** region, percentage of sheep death loss by cause and by size of operation:

Nonpredator Cause	Percent Nonpredator Loss									
	Size of Operation (Number of Sheep and Lambs)									
	1–24		25–99		100–999		1,000 or More ¹		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	0.1	(0.0)	2.2	(0.9)	1.1	(0.1)			1.2	(0.3)
Internal parasites	19.0	(5.5)	23.0	(8.7)	30.5	(2.1)			22.6	(4.1)
Other digestive problems (bloat, scours, acidosis, etc.)	3.7	(1.7)	0.3	(0.2)	4.8	(2.7)			2.3	(0.8)
Respiratory problems (pneumonia, shipping fever, etc.)	5.1	(2.8)	5.5	(2.2)	2.7	(0.3)			4.4	(1.2)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.3	(0.3)	0.0	(--)	1.0	(0.3)			1.1	(0.4)
Weather-related causes (chilling, drowning, lightning, etc.)	7.9	(4.0)	10.2	(6.7)	12.9	(1.3)			9.7	(3.1)
Theft (stolen)	0.2	(0.2)	0.2	(0.1)	0.1	(0.0)			0.1	(0.1)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	5.1	(3.9)	1.7	(1.0)	0.6	(0.4)			2.4	(1.2)
Lambing problems	11.0	(4.0)	19.9	(8.7)	7.5	(1.8)			13.5	(4.1)
Old age	13.0	(3.3)	9.2	(2.4)	10.9	(1.2)			14.2	(2.2)
Being on back	1.2	(0.8)	0.3	(0.2)	2.2	(1.5)			1.0	(0.4)
Other diseases (mastitis, footrot, boils, etc.)	6.6	(4.1)	0.8	(0.3)	1.9	(0.4)			2.7	(1.2)
Other ²	3.9	(2.3)	2.8	(1.0)	4.3	(1.0)			3.3	(0.8)
Unknown	22.9	(5.9)	23.9	(10.0)	19.5	(2.3)			21.5	(4.8)
Total	100.0		100.0		100.0				100.0	

¹Too few operations to report.

²Lameness, etc.

B. Nonpredator Lamb Death Loss

1. Losses—2009

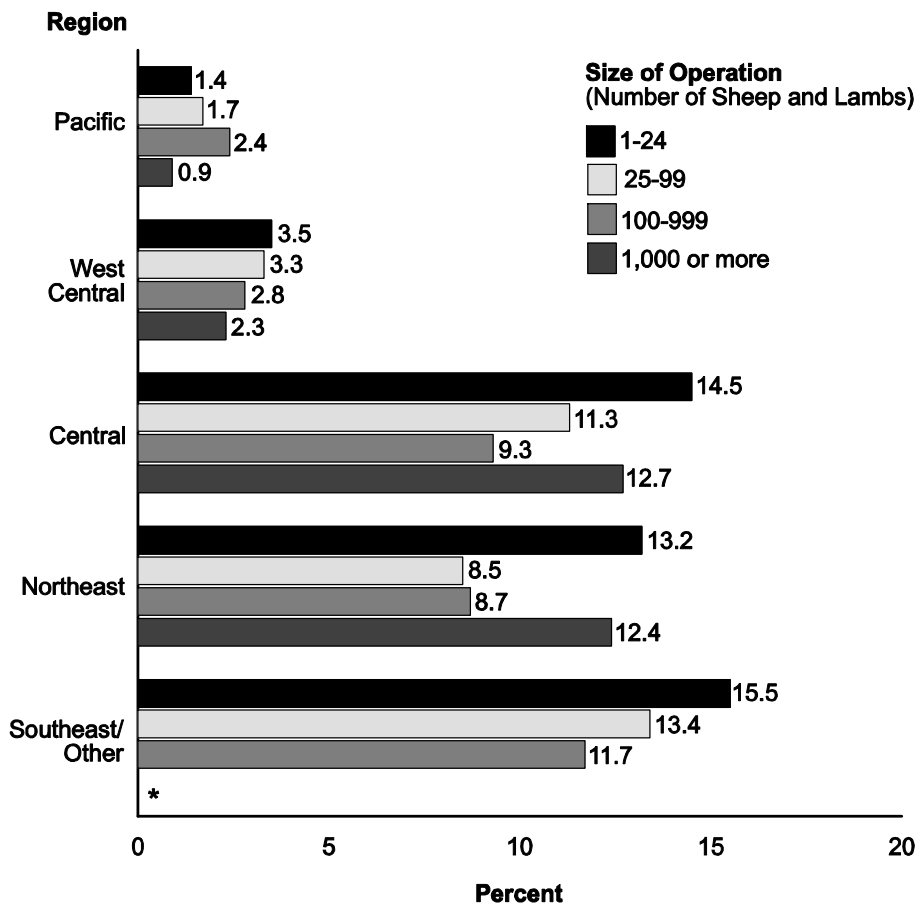
Overall, producers lost 6.2 percent of their lamb crop to nonpredator causes. As seen for sheep losses, operations with fewer than 1,000 sheep and lambs had the highest percentage of nonpredator losses. The Pacific and West Central regions lost a substantially lower percentage of their lamb crop (1.4 and 2.6 percent, respectively) than the Central, Northeast, and Southeast/Other regions (11.0, 9.8, and 13.2 percent, respectively). However, loss estimates for the Pacific and West Central regions were made postdocking, while estimates for the Central, Northeast, and Southeast regions were made from birth, which may partially explain the difference. Due to the way sheep are managed in these regions, predocking losses are difficult for producers to quantify accurately. For a discussion of predocking losses see Appendix I, p 55.

a. Percentage of lamb crop lost, by size of operation and by region:

Percent Lamb Crop										
Size of Operation (Number of Sheep and Lambs)										
Region	1–24		25–99		100–999		1,000 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Pacific	1.4	(0.5)	1.7	(0.3)	2.4	(0.3)	0.9	(0.1)	1.4	(0.1)
West Central	3.5	(1.1)	3.3	(0.6)	2.8	(0.3)	2.3	(0.2)	2.6	(0.1)
Central	14.5	(1.4)	11.3	(0.9)	9.3	(0.4)	12.7	(1.0)	11.0	(0.4)
Northeast	13.2	(2.6)	8.5	(0.8)	8.7	(0.4)	12.4	(1.6)	9.8	(0.7)
Southeast/Other	15.5	(2.3)	13.4	(2.7)	11.7	(1.2)	*		13.2	(1.2)
All operations	10.2	(1.0)	8.4	(0.5)	6.5	(0.2)	3.2	(0.2)	6.2	(0.2)

*Too few operations to report.

Percentage of Lamb Crop Lost, by Operation Size and by Region



*Too few operations to report.

2. Cause of loss—1994, 1999, 2004, and 2009

In 2009, respiratory problems accounted for a lower percentage of lamb deaths than in 1994 through 2004, while weather-related causes accounted for a higher percentage.

a. Percentage of lamb death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss			
	Year			
	1994	1999	2004	2009
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	19.3	17.4	19.8	¹ 20.1
Enterotoxemia ²				6.3
Internal parasites ²				7.9
Other digestive problems (bloat, scours, acidosis, etc.) ²				5.9
Respiratory problems (pneumonia, shipping fever, etc.)	19.4	21.9	22.8	12.6
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	3.9	3.2	2.8	0.8
Weather-related causes (chilling, drowning, lightning, etc.)	16.9	12.8	14.8	25.6
Theft (stolen)	1.8	0.9	0.7	0.5
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	2.5	1.8	2.0	2.2
Lambing problems ³	10.5	10.4	14.7	14.5
Other diseases (mastitis, footrot, boils, etc.)		3.8	3.3	2.7
Other ⁴	8.2	13.1	5.8	6.9
Unknown	17.5	14.7	13.3	14.1
Total	100.0	100.0	100.0	100.0

¹Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

²In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

³Does not include Pacific and West Central regions.

⁴Being on back, lameness, etc. (includes "other diseases" in 1994).

Across all four study years, producers lost about 6 percent of their lamb crop to nonpredator causes.

b. Percentage of lamb crop lost, by cause and by year:

Nonpredator Cause	Percent Lamb Crop			
	Year			
	1994	1999	2004	2009
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	1.12	0.97	1.10	1.25 ¹
Enterotoxemia ²				0.39
Internal parasites ²				0.49
Other digestive problem (bloat, scours, acidosis, etc.) ²				0.37
Respiratory problems (pneumonia, shipping fever, etc.)	1.13	1.21	1.26	0.78
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.23	0.18	0.15	0.05
Weather-related causes (chilling, drowning, lightning, etc.)	0.98	0.71	0.82	1.58
Theft (stolen)	0.11	0.05	0.04	0.03
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.15	0.10	0.11	0.14
Lambing problems ³	0.61	0.57	0.82	0.90
Other diseases (mastitis, footrot, boils, etc.)		0.21	0.19	0.17
Other ⁴	0.48	0.73	0.32	0.42
Unknown	1.02	0.82	0.74	0.87
All nonpredator causes	5.83	5.55	5.55	6.19

¹Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

²In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

³Does not include Pacific and West Central regions.

⁴Being on back, lameness, etc. (includes "other diseases" in 1994).

3. Cause of loss by region—1994, 1999, 2004, and 2009

In the Pacific region, lamb death loss due to respiratory problems declined from 35.1 percent of total nonpredator losses in 1994 to 13.1 percent in 2009.

a. For the *Pacific* region, percentage of lamb death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss							
	1994 ¹		1999		2004		2009	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	22.3		22.5	(2.4)	19.6	(2.9)	19.8 ²	
Enterotoxemia ³							4.4	(1.8)
Internal parasites ³							1.8	(0.5)
Other digestive problems (bloat, scours, acidosis, etc.) ³							13.6	(6.0)
Respiratory problems (pneumonia, shipping fever, etc.)	35.1		21.8	(2.2)	30.8	(2.7)	13.1	(1.9)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	5.1		3.3	(1.4)	3.4	(1.1)	0.5	(0.2)
Weather-related causes (chilling, drowning, lightning, etc.)	10.2		13.3	(2.0)	12.0	(3.7)	9.9	(2.1)
Theft (stolen)	3.3		0.1	(0.1)	0.9	(0.5)	0.0	(--)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	1.2		0.6	(0.2)	2.2	(1.1)	0.6	(0.2)
Lambing Problems								
Other diseases (mastitis, footrot, boils, etc.)			3.1	(1.4)	3.7	(0.9)	5.2	(1.6)
Other ⁴	7.0		6.3	(1.2)	7.9	(2.2)	9.2	(2.8)
Unknown	15.8		29.0	(3.5)	19.5	(3.2)	41.7	(4.6)
All nonpredator causes	100.0		100.0		100.0		100.0	

¹ Standard errors not available.

² Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

³ In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

⁴ Being on back, lameness, etc. (includes "other diseases" in 1994).

In the West Central region, the percentage of lamb death loss for individual nonpredator causes remained relatively steady from 1994 to 2009.

b. For the **West Central** region, percentage of lamb death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss							
	1994 ¹		1999		2004		2009	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	25.9		15.4	(1.0)	27.9	(1.4)	23.5 ²	
Enterotoxemia ³							7.5	(0.8)
Internal parasites ³							6.6	(1.2)
Other digestive problems (bloat, scours, acidosis, etc.) ³							9.4	(0.7)
Respiratory problems (pneumonia, shipping fever, etc.)	13.6		16.0	(1.2)	20.5	(1.1)	12.5	(2.4)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	3.2		2.7	(0.8)	2.0	(0.3)	0.6	(0.1)
Weather-related causes (chilling, drowning, lightning, etc.)	8.8		11.3	(1.5)	13.1	(1.1)	18.9	(2.0)
Theft (stolen)	3.5		2.1	(0.5)	2.2	(1.0)	1.1	(0.6)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	6.5		3.8	(0.3)	5.2	(0.5)	4.7	(0.5)
Lambing Problems	N/A		N/A		N/A		N/A	
Other diseases (mastitis, footrot, boils, etc.)			5.3	(2.2)	3.4	(0.4)	2.3	(0.3)
Other ⁴	11.5		26.3	(2.2)	5.2	(0.6)	9.7	(1.9)
Unknown	27.0		17.1	(1.1)	20.5	(1.2)	26.7	(2.3)
All nonpredator causes	100.0		100.0		100.0		100.0	

¹Standard errors not available.

²Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

³In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

⁴Being on back, lameness, etc. (includes "other diseases" in 1994).

In the Central region, weather-related causes accounted for the highest percentage of nonpredator lamb death loss in 2009. The percentage of lamb death loss due to respiratory problems was lower in 2009 than in 1994, 1999, and 2004.

c. For the **Central** region, percentage of lamb death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss							
	1994 ¹		1999		2004		2009	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	15.9		18.8	(1.1)	16.0	(1.0)	15.3 ²	
Enterotoxemia ³							4.8	(0.5)
Internal parasites ³							6.0	(0.6)
Other digestive problems (bloat, scours, acidosis, etc.) ³							4.5	(0.6)
Respiratory problems (pneumonia, shipping fever, etc.)	24.7		26.8	(1.3)	25.1	(1.7)	13.7	(0.9)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	3.8		3.5	(0.4)	2.1	(0.3)	0.8	(0.1)
Weather-related causes (chilling, drowning, lightning, etc.)	20.9		12.4	(1.1)	13.1	(0.9)	34.4	(2.2)
Theft (stolen)	1.0		0.5	(0.1)	0.2	(0.1)	0.4	(0.2)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.6		0.8	(0.2)	0.8	(0.3)	0.7	(0.3)
Lambing problems	13.7		15.3	(1.5)	20.9	(1.2)	16.2	(1.1)
Other diseases (mastitis, footrot, boils, etc.)			2.0	(0.2)	3.2	(0.4)	2.4	(0.7)
Other ⁴	6.7		7.4	(1.2)	6.0	(0.8)	6.1	(1.1)
Unknown	12.7		12.5	(1.1)	12.6	(1.8)	10.0	(0.9)
All nonpredator causes	100.0		100.0		100.0		100.0	

¹Standard errors not available.

²Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

³In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

⁴Being on back, lameness, etc. (includes "other diseases" in 1994).

Lambing problems accounted for 34.2 percent nonpredator lamb death loss in the Northeast region in 2009.

d. For the **Northeast** region, percentage of lamb death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss							
	1994 ¹		1999		2004		2009	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	14.9		15.6	(1.7)	14.4	(1.9)	21.5 ²	
Enterotoxemia ³							2.8	(0.5)
Internal parasites ³							12.7	(1.6)
Other digestive problems (bloat, scours, acidosis, etc.) ³							6.0	(1.8)
Respiratory problems (pneumonia, shipping fever, etc.)	13.1		22.2	(1.9)	15.4	(2.1)	8.1	(1.1)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	5.8		2.9	(0.6)	3.7	(1.0)	1.2	(0.3)
Weather-related causes (chilling, drowning, lightning, etc.)	21.3		14.8	(2.9)	22.2	(2.8)	14.4	(2.5)
Theft (stolen)	0.2		0.0	(0.0)	0.6	(0.3)	0.2	(0.1)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.7		1.0	(0.3)	1.1	(0.4)	0.8	(0.5)
Lambing problems	25.0		14.7	(1.9)	19.3	(2.6)	34.2	(5.8)
Other diseases (mastitis, footrot, boils, etc.)			3.8	(1.0)	1.3	(0.6)	2.3	(0.5)
Other ⁴	7.1		9.1	(1.2)	6.1	(1.1)	6.1	(2.0)
Unknown	11.9		15.9	(1.7)	15.9	(2.0)	11.2	(1.8)
All nonpredator causes	100.0		100.0		100.0		100.0	

¹Standard errors not available.

²Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

³In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

⁴Being on back, lameness, etc. (includes "other diseases" in 1994).

In the Southeast/Other region, the percentage of lamb death loss for individual nonpredator causes remained relatively steady from 1994 to 2009.

e. For the **Southeast/Other** region, percentage of lamb death loss by cause and by year:

Nonpredator Cause	Percent Nonpredator Loss							
	1994 ¹		1999		2004		2009	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (bloat, scours, parasites, enterotoxemia, acidosis, etc.)	16.8		17.3	(4.5)	38.0	(14.6)	40.5 ²	
Enterotoxemia ³							17.2	(13.1)
Internal parasites ³							21.1	(5.0)
Other digestive problems (bloat, scours, acidosis, etc.) ³							2.2	(0.7)
Respiratory problems (pneumonia, shipping fever, etc.)	8.0		7.7	(2.0)	9.5	(3.7)	4.6	(1.1)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	2.3		4.5	(1.9)	3.5	(2.6)	0.5	(0.2)
Weather-related causes (chilling, drowning, lightning, etc.)	28.3		19.0	(4.8)	15.2	(5.0)	8.9	(2.3)
Theft (stolen)	1.0		0.3	(0.1)	0.0	(0.0)	0.1	(0.0)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.9		2.1	(1.1)	0.0	(0.0)	9.5	(7.3)
Lambing problems	18.1		20.1	(9.8)	12.6	(4.9)	12.5	(3.8)
Other diseases (mastitis, footrot, boils, etc.)			13.2	(5.4)	1.8	(0.7)	2.1	(0.9)
Other ³	5.5		7.2	(3.1)	6.9	(2.9)	6.2	(2.3)
Unknown	19.1		8.6	(2.6)	12.5	(3.5)	15.1	(3.9)
All nonpredator causes	100.0		100.0		100.0		100.0	

¹Standard errors not available.

²Percentage represents the sum of 2009 estimates for cause of loss due to enterotoxemia, internal parasites, and other digestive problems.

³In 2009, the category digestive problems was broken out into enterotoxemia, internal parasites, and other digestive problems.

⁴Being on back, lameness, etc. (includes "other diseases" in 1994).

4. Cause of loss by size of operation—2009

Lambing problems accounted for a substantially lower percentage of lamb losses on operations with 1,000 or more sheep and lambs compared with the other operation sizes, which might be because questions about losses due to lambing problems were not asked in the Pacific and West Central regions where many of the largest operations exist. In addition, losses as a result of lambing may be harder to observe on large operations. This same reasoning might explain why this largest flock size had a higher percentage of losses due to unknown nonpredator causes compared with the smaller flock sizes.

a. Percentage of lamb death loss by cause and by size of operation:

Nonpredator Cause	Percent Nonpredator 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
Enterotoxemia	2.5	(0.7)	3.8	(0.8)	8.9	(3.7)	7.9	(0.8)
Internal parasites	9.0	(1.9)	8.7	(1.3)	9.6	(0.8)	4.7	(0.6)
Other digestive problems (bloat, scours, acidosis, etc.)	6.4	(1.8)	4.8	(0.8)	4.8	(0.6)	8.2	(0.6)
Respiratory problems (pneumonia, shipping fever, etc.)	10.1	(1.8)	11.4	(1.4)	13.8	(1.0)	10.5	(2.2)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.4	(0.2)	0.7	(0.2)	1.0	(0.2)	0.7	(0.1)
Weather-related causes (chilling, drowning, lightning, etc.)	16.2	(2.3)	25.7	(3.8)	27.3	(1.7)	30.9	(3.6)
Theft	0.9	(0.5)	0.0	(0.0)	0.7	(0.3)	0.4	(0.1)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	1.7	(0.8)	3.8	(2.3)	0.4	(0.1)	4.0	(0.4)
Lambing problems ¹	26.9	(5.5)	18.0	(1.8)	12.6	(1.0)	3.4	(0.4)
Other diseases (mastitis, footrot, boils, etc.)	1.3	(0.4)	4.0	(1.2)	1.5	(0.2)	2.8	(0.4)
Other ²	11.8	(3.2)	5.7	(1.1)	5.8	(1.1)	6.1	(0.7)
Unknown	12.8	(1.9)	13.4	(1.5)	13.6	(1.6)	20.4	(1.6)
Total	100.0		100.0		100.0		100.0	

¹Does not include Pacific and West Central regions.

²Being on back, lameness, etc.

Operations with 1 to 24 head lost a substantially higher percentage of their lamb crop to nonpredator causes than operations with 100 or more head.

b. Percentage of lamb crop lost, by cause and by size of operation:

Nonpredator Cause	Percent Lamb Crop							
	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
Enterotoxemia	0.26	(0.07)	0.32	(0.07)	0.57	(0.25)	0.25	(0.03)
Internal parasites	0.92	(0.20)	0.73	(0.11)	0.61	(0.05)	0.15	(0.02)
Other digestive problems (bloat, scours, acidosis, etc.)	0.65	(0.19)	0.40	(0.07)	0.31	(0.04)	0.26	(0.02)
Respiratory problems (pneumonia, shipping fever, etc.)	1.03	(0.20)	0.97	(0.11)	0.89	(0.06)	0.34	(0.08)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.04	(0.02)	0.06	(0.01)	0.06	(0.01)	0.02	(0.00)
Weather-related causes (chilling, drowning, lightning, etc.)	1.66	(0.24)	2.16	(0.39)	1.79	(0.12)	1.00	(0.15)
Theft	0.09	(0.05)	0.00	(0.00)	0.05	(0.02)	0.01	(0.00)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.17	(0.08)	0.31	(0.20)	0.02	(0.00)	0.13	(0.01)
Lambing problems ¹	2.75	(0.71)	1.53	(0.15)	0.82	(0.07)	0.11	(0.01)
Other diseases (mastitis, footrot, boils, etc.)	0.14	(0.04)	0.33	(0.10)	0.10	(0.02)	0.09	(0.01)
Other ²	1.20	(0.36)	0.49	(0.10)	0.37	(0.08)	0.20	(0.02)
Unknown	1.32	(0.20)	1.13	(0.12)	0.87	(0.09)	0.65	(0.05)
All nonpredator causes	10.25	(1.03)	8.43	(0.51)	6.45	(0.25)	3.21	(0.17)

¹Does not include Pacific and West Central regions.

²Being on back, lameness, etc.

5. Cause of loss by region—2009

Operations in the Pacific and West Central regions had a substantially higher percentage of lamb losses due to unknown nonpredator causes (41.7 and 26.7 percent, respectively) than operations in the other regions, where losses due to unknown nonpredator causes ranged from 10 to 15 percent.

a. Percentage of lamb death loss, by cause and by region:

Nonpredator Cause	Percent Nonpredator Loss									
	Region									
	Pacific		West Central		Central		Northeast		Southeast/ Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	4.4	(1.8)	7.5	(0.8)	4.8	(0.5)	2.8	(0.5)	17.2	(13.1)
Internal parasites	1.8	(0.5)	6.6	(1.2)	6.0	(0.6)	12.7	(1.6)	21.1	(5.0)
Other digestive problems (bloat, scours, acidosis, etc.)	13.6	(6.0)	9.4	(0.7)	4.5	(0.6)	6.0	(1.8)	2.2	(0.7)
Respiratory problems (pneumonia, shipping fever, etc.)	13.1	(1.9)	12.5	(2.4)	13.7	(0.9)	8.1	(1.1)	4.6	(1.1)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.5	(0.2)	0.6	(0.1)	0.8	(0.1)	1.2	(0.3)	0.5	(0.2)
Weather-related causes (chilling, drowning, lightning, etc.)	9.9	(2.1)	18.9	(2.0)	34.4	(2.2)	14.4	(2.5)	8.9	(2.3)
Theft	0.0	(--)	1.1	(0.6)	0.4	(0.2)	0.2	(0.1)	0.1	(0.0)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.6	(0.2)	4.7	(0.5)	0.7	(0.3)	0.8	(0.5)	9.5	(7.3)
Lambing problems					16.2	(1.1)	34.2	(5.8)	12.5	(3.8)
Other diseases (mastitis, footrot, boils, etc.)	5.2	(1.6)	2.3	(0.3)	2.4	(0.7)	2.3	(0.5)	2.1	(0.9)
Other*	9.2	(2.8)	9.7	(1.9)	6.1	(1.1)	6.1	(2.0)	6.2	(2.3)
Unknown	41.7	(4.6)	26.7	(2.3)	10.0	(0.9)	11.2	(1.8)	15.1	(3.9)
Total	100.0		100.0		100.0		100.0		100.0	

*Being on back, lameness, etc.

NA = not available for Pacific and West Central regions because lamb losses in those regions are measured after docking.

The percentages of lamb crop lost to weather-related causes and respiratory problems were higher in the Central region compared with all other regions.

b. Percentage of lamb crop lost, by cause and by region:

Nonpredator Cause	Percent Nonpredator Loss									
	Region									
	Pacific		West Central		Central		Northeast		Southeast/ Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	0.06	(0.02)	0.19	(0.02)	0.53	(0.06)	0.27	(0.04)	2.27	(1.76)
Internal parasites	0.02	(0.01)	0.17	(0.03)	0.65	(0.07)	1.22	(0.12)	2.78	(0.61)
Other digestive problems (bloat, scours, acidosis, etc.)	0.19	(0.09)	0.24	(0.02)	0.50	(0.06)	0.59	(0.17)	0.30	(0.09)
Respiratory problems (pneumonia, shipping fever, etc.)	0.18	(0.02)	0.32	(0.07)	1.51	(0.10)	0.80	(0.08)	0.61	(0.13)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.01	(0.00)	0.01	(0.00)	0.08	(0.01)	0.12	(0.03)	0.07	(0.02)
Weather-related causes (chilling, drowning, lightning, etc.)	0.14	(0.03)	0.49	(0.06)	3.81	(0.31)	1.41	(0.23)	1.19	(0.29)
Theft	0.00	(--)	0.03	(0.01)	0.05	(0.02)	0.01	(0.01)	0.01	(0.01)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.01	(0.00)	0.12	(0.01)	0.08	(0.03)	0.08	(0.05)	1.25	(1.04)
Lambing problems					1.78	(0.13)	3.32	(0.76)	1.66	(0.47)
Other diseases (mastitis, footrot, boils, etc.)	0.07	(0.02)	0.06	(0.01)	0.27	(0.07)	0.23	(0.05)	0.28	(0.11)
Other*	0.13	(0.04)	0.25	(0.05)	0.66	(0.12)	0.60	(0.21)	0.82	(0.31)
Unknown	0.57	(0.07)	0.69	(0.06)	1.10	(0.09)	1.09	(0.15)	1.99	(0.51)
All nonpredator causes	1.37	(0.11)	2.60	(0.14)	11.01	(0.41)	9.76	(0.73)	13.23	(1.19)

*Being on back, lameness, etc.

NA = not available for Pacific and West Central regions because lamb losses in those regions are measured after docking.

6. Cause of loss by region and by size of operation—2009

In the Pacific region, unknown nonpredator causes accounted for one-third to two-thirds of all nonpredator lamb deaths across operation size.

a. For the *Pacific* region, percentage of lamb death loss by cause and by size of operation:

Nonpredator Cause	Percent Nonpredator Loss									
	Size of Operation (Number of Sheep and Lambs)									
	1–24		25–99		100–999		1,000 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	0.0	(--)	3.3	(1.6)	7.0	(4.7)	3.4	(1.2)	4.4	(1.8)
Internal parasites	0.0	(--)	3.2	(2.4)	1.8	(0.6)	1.3	(0.5)	1.8	(0.5)
Other digestive problems (bloat, scours, acidosis, etc.)	7.2	(5.2)	5.4	(2.2)	20.4	(15.2)	12.9	(3.4)	13.6	(6.0)
Respiratory problems (pneumonia, shipping fever, etc.)	5.7	(4.4)	15.0	(5.5)	16.0	(4.2)	10.9	(1.6)	13.1	(1.9)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.0	(--)	1.1	(0.7)	0.7	(0.4)	0.2	(0.0)	0.5	(0.2)
Weather-related causes (chilling, drowning, lightning, etc.)	19.1	(13.7)	15.5	(6.8)	3.7	(1.3)	10.8	(2.1)	9.9	(2.1)
Theft (stolen)	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(--)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.0	(--)	0.0	(--)	0.9	(0.5)	0.7	(0.4)	0.6	(0.2)
Other diseases (mastitis, footrot, boils, etc.)	0.0	(--)	5.6	(3.2)	3.6	(2.2)	7.7	(3.3)	5.2	(1.6)
Other*	3.1	(3.1)	18.6	(11.3)	9.3	(3.5)	5.4	(2.0)	9.2	(2.8)
Unknown	64.9	(14.7)	32.3	(11.3)	36.6	(9.6)	46.7	(4.1)	41.7	(4.6)
Total	100.0		100.0		100.0		100.0		100.0	

*Being on back, lameness, etc.

In the West Central region, operations with 1,000 or more head had a higher percentage of lamb death loss due to poisoning than the other operation sizes.

b. For the **West Central** region, percentage of lamb death loss by cause and by size of operation:

Percent Nonpredator Loss										
Size of Operation (Number of Sheep and Lambs)										
Nonpredator Cause	1–24		25–99		100–999		1,000 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	2.1	(1.4)	5.7	(2.1)	5.4	(0.8)	9.9	(1.3)	7.5	(0.8)
Internal parasites	23.5	(9.7)	6.2	(3.8)	7.1	(1.9)	3.7	(0.7)	6.6	(1.2)
Other digestive problems (bloat, scours, acidosis, etc.)	10.1	(5.7)	4.0	(1.3)	5.6	(0.9)	12.7	(0.8)	9.4	(0.7)
Respiratory problems (pneumonia, shipping fever, etc.)	23.3	(9.6)	4.9	(1.4)	11.1	(2.7)	13.3	(4.1)	12.5	(2.4)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.1	(0.1)	1.0	(0.5)	0.7	(0.2)	0.4	(0.1)	0.6	(0.1)
Weather-related causes (chilling, drowning, lightning, etc.)	11.6	(4.4)	29.6	(10.0)	25.9	(4.6)	13.7	(1.2)	18.9	(2.0)
Theft (stolen)	1.1	(1.0)	0.2	(0.1)	2.4	(1.9)	0.7	(0.2)	1.1	(0.6)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.9	(0.6)	2.4	(1.3)	1.6	(0.3)	7.6	(0.9)	4.7	(0.5)
Other diseases (mastitis, footrot, boils, etc.)	0.5	(0.4)	4.1	(1.8)	1.3	(0.3)	2.8	(0.3)	2.3	(0.3)
Other*	5.7	(2.3)	7.5	(2.8)	14.4	(6.2)	8.3	(0.9)	9.7	(1.9)
Unknown	21.1	(8.6)	34.4	(7.6)	24.5	(5.7)	26.9	(2.5)	26.7	(2.3)
Total	100.0		100.0		100.0		100.0		100.0	

*Being on back, lameness, etc.

In the Central region, weather-related causes, respiratory problems, and lambing problems combined accounted for nearly two-thirds of nonpredator lamb death loss, regardless of operation size.

c. For the **Central** region, percentage of lamb death loss by cause and by size of operation:

Nonpredator Cause	Percent Nonpredator Loss									
	Size of Operation (Number of Sheep and Lambs)									
	1–24		25–99		100–999		1,000 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	3.0	(1.2)	4.7	(1.3)	5.2	(0.5)	6.2	(1.1)	4.8	(0.5)
Internal parasites	7.0	(2.4)	5.2	(0.9)	7.0	(0.9)	3.7	(0.7)	6.0	(0.6)
Other digestive problems (bloat, scours, acidosis, etc.)	5.2	(2.0)	5.5	(1.3)	4.2	(0.4)	2.3	(0.4)	4.5	(0.6)
Respiratory problems (pneumonia, shipping fever, etc.)	11.8	(2.5)	14.3	(2.1)	16.7	(1.0)	6.7	(1.1)	13.7	(0.9)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.7	(0.5)	0.6	(0.2)	0.9	(0.2)	0.8	(0.2)	0.8	(0.1)
Weather-related causes (chilling, drowning, lightning, etc.)	20.0	(3.0)	30.2	(5.5)	35.4	(1.8)	57.9	(5.4)	34.4	(2.2)
Theft (stolen)	1.3	(0.8)	0.0	(0.0)	0.5	(0.2)	0.0	(0.0)	0.4	(0.2)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	2.3	(1.4)	0.9	(0.4)	0.1	(0.0)	0.1	(0.0)	0.7	(0.3)
Lambing problems	22.8	(3.0)	19.8	(2.6)	14.2	(1.3)	5.7	(1.0)	16.2	(1.1)
Other diseases (mastitis, footrot, boils, etc.)	0.8	(0.4)	4.8	(2.0)	1.2	(0.2)	2.3	(0.7)	2.4	(0.7)
Other*	15.8	(5.4)	4.4	(0.8)	4.0	(0.5)	3.9	(1.2)	6.1	(1.1)
Unknown	9.3	(2.1)	9.6	(1.4)	10.6	(1.8)	10.4	(1.3)	10.0	(0.9)
Total	100.0		100.0		100.0		100.0		100.0	

*Being on back, lameness, etc.

In the Northeast region, lambing problems generally accounted for the highest percentage of lamb death loss.

d. For the **Northeast** region, percentage of lamb death loss by cause and by size of operation:

Nonpredator Cause	Percent Nonpredator Loss									
	Size of Operation (Number of Sheep and Lambs)									
	1–24		25–99		100–999		1,000 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia,	1.4	(0.8)	1.8	(0.5)	5.1	(0.9)	5.3	(1.4)	2.8	(0.5)
Internal parasites	3.3	(1.4)	13.0	(2.3)	17.9	(1.9)	39.8	(7.3)	12.7	(1.6)
Other digestive problems (bloat, scours, acidosis, etc.)	8.0	(5.5)	4.9	(1.3)	5.8	(1.7)	3.6	(1.1)	6.0	(1.8)
Respiratory problems (pneumonia, shipping fever, etc.)	5.3	(2.2)	8.2	(1.6)	10.0	(1.2)	12.9	(2.9)	8.1	(1.1)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.0	(--)	1.5	(0.6)	2.2	(0.9)	0.0	(--)	1.2	(0.3)
Weather-related causes (chilling, drowning, lightning, etc.)	11.5	(5.1)	20.0	(4.8)	12.9	(2.3)	0.4	(0.2)	14.4	(2.5)
Theft (stolen)	0.4	(0.4)	0.0	(--)	0.1	(0.0)	0.0	(--)	0.2	(0.1)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	0.1	(0.1)	2.0	(1.5)	0.2	(0.1)	0.0	(--)	0.8	(0.5)
Lambing problems	51.1	(14.3)	25.6	(3.5)	26.8	(2.8)	37.0	(5.0)	34.2	(5.8)
Other diseases (mastitis, footrot, boils, etc.)	1.2	(0.8)	2.2	(0.7)	3.8	(1.2)	0.0	(--)	2.3	(0.5)
Other*	4.5	(2.2)	9.4	(5.1)	4.8	(0.7)	0.0	(--)	6.1	(2.0)
Unknown	13.2	(4.7)	11.4	(2.5)	10.4	(2.7)	1.0	(0.3)	11.2	(1.8)
Total	100.0		100.0		100.0		100.0		100.0	

*Being on back, lameness, etc.

For operations in the Southeast/Other region with 100 to 999 sheep and lambs, digestive causes, including enterotoxemia, internal parasites, and other digestive problems, accounted for 68.6 percent of lamb death loss.

e. For the **Southeast/Other** region, percentage of lamb death loss by cause and by size of operation:

Nonpredator Cause	Percent Nonpredator Loss									
	Size of Operation (Number of Sheep and Lambs)									
	1–24		25–99		100–999		1,000 or More ¹		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Enterotoxemia	3.2	(1.6)	0.9	(0.4)	45.8	(24.2)			17.2	(13.1)
Internal parasites	18.6	(5.4)	22.4	(8.7)	21.5	(9.7)			21.1	(5.0)
Other digestive problems (bloat, scours, acidosis, etc.)	5.2	(2.3)	1.2	(0.4)	1.3	(0.6)			2.2	(0.7)
Respiratory problems (pneumonia, shipping fever, etc.)	3.6	(1.4)	5.8	(1.9)	3.9	(2.0)			4.6	(1.1)
Metabolic problems (milk fever, twin lamb disease, pregnancy toxemia, etc.)	0.2	(0.2)	0.1	(0.0)	0.2	(0.1)			0.5	(0.2)
Weather-related causes (chilling, drowning, lightning, etc.)	13.1	(5.6)	9.9	(3.1)	5.0	(2.5)			8.9	(2.3)
Theft (stolen)	0.0	(--)	0.1	(0.1)	0.1	(0.1)			0.1	(0.0)
Poisoning (nitrate poisoning, noxious feeds, noxious weeds, etc.)	3.0	(2.6)	22.2	(15.7)	0.1	(0.1)			9.5	(7.3)
Lambing problems	17.7	(9.4)	13.0	(5.1)	8.4	(4.1)			12.5	(3.8)
Other diseases (mastitis, footrot, boils, etc.)	4.7	(2.4)	2.1	(1.4)	0.2	(0.1)			2.1	(0.9)
Other ²	15.0	(7.3)	3.9	(1.8)	2.4	(1.1)			6.2	(2.3)
Unknown	15.7	(5.4)	18.4	(7.4)	11.1	(5.1)			15.1	(3.9)
Total	100.0		100.0		100.0				100.0	

¹Too few operations to report.

²Being on back, lameness, etc.

Section III: Methodology

A. 2009 Death Loss Study

1. Survey procedures

A random sample of U.S. producers was surveyed by NASS to provide data for these estimates. Survey procedures ensured that all sheep producers, regardless of operation size, had an opportunity to be included in the survey. Large operations were sampled more heavily than small operations. About 23,000 operations were contacted during the first half of January 2010 by mail, telephone, and face-to-face interviews. For 2009, data were collected for known predator losses, unknown predator losses, and cause of loss for nonpredator losses. Detailed losses by predator type are available for Colorado, Idaho, Montana, Utah, and Wyoming. This information is provided through State-level funding. These data can be found by accessing the NASS home page at: www.nass.usda.gov and going to individual State Web sites.

2. Estimation procedures

Total death losses from all causes for sheep and lambs were reported in the “Meat Animals, Production, Disposition, and Income” 2009 report (released April 29, 2010). In setting the predator and nonpredator loss estimates, total predator and nonpredator losses were estimated as a percentage of total losses, then specific predator and nonpredator losses were estimated as a percentage of total predator and nonpredator losses. Death losses by predator and nonpredator cause of loss were published in the “Sheep and Goats Death Loss” report (released May 27, 2010).

Nonpredator cause of loss percentages, by cause of loss by region and size of operation, were generated by APHIS based on analysis of the data collected in January 2010.

3. Revision policy

Revisions to previous estimates of total death losses are made to improve the current estimate. Previous-year estimates are subject to revision when current estimates are made. Estimates for losses from all causes are subject to revision in the following year’s Meat Animals, Production, Disposition, and Income.

B. 2004 Death Loss Study

1. Survey procedures

A random sample of U.S. producers was surveyed by NASS to provide data for these estimates. Survey procedures ensured that all sheep producers, regardless of operation size, had an opportunity to be included in the survey. Large operations were sampled more heavily than small operations. About 22,000 operations were contacted during the first half of January 2005 by mail, telephone, and face-to-face interviews.

2. Estimation procedures

Total death losses from all causes for sheep and lambs were as reported in the “Meat Animals, Production, Disposition, and Income” 2004 report (released April 2005). In setting the predator and nonpredator loss estimates, total predator and nonpredator losses were estimated as a percentage of total losses, then specific predator and nonpredator losses were estimated as a percentage of total predator and nonpredator losses. Death losses by predator and nonpredator cause of loss were published in the “Sheep and Goats Death Loss” report (released May 6, 2005).

Nonpredator cause of loss percentages, by cause of loss by region and operation, were generated by APHIS based on analysis of the data collected in January 2005.

3. Revision policy

Revisions to previous estimates of total death losses are made to improve the current estimate. Previous-year estimates are subject to revision when current estimates are made. Estimates for losses from all causes are subject to revision in the following year’s “Meat Animals, Production, Disposition, and Income” report.

C. 1999 Death Loss Study

1. Survey procedures

A random sample of U.S. producers was surveyed by NASS to provide data for these estimates. Survey procedures ensured that all sheep producers, regardless of operation size, had an opportunity to be included in the survey. Large operations were sampled more heavily than small operations. About 13,800 producers were contacted during the first half of January by mail, telephone, and face-to-face interviews.

2. Estimation procedures

Total death losses from all causes for sheep and lambs were as reported in the “Meat Animals Production, Disposition, and Income” 2000 report (released April 27, 2000).

In setting predator loss estimates, total predator losses were estimated as a percentage of total losses, and specific predator losses were estimated as a percentage of total predator losses. The “Sheep and Goats Predator Loss” report was published May 5, 2000, by NASS. Nonpredator loss percentages by cause of loss were generated by APHIS based on analysis of the data collected in January 1999.

3. Revision policy

Revisions to previous estimates of total death losses are made to improve the current estimate. Previous-year estimates are subject to revision when current estimates are made. Estimates for losses from all causes are subject to revision in the following year’s “Meat Animals, Production, Disposition, and Income” report.

D. 1994 Death Loss Study

1. Survey procedures

A random sample of U.S. producers was surveyed by NASS to provide data for these estimates. Survey procedures ensured that all producers (except those in Alaska) had an opportunity to be included in the survey, regardless of operation size. Data were collected from approximately 75,000 cattle and sheep producers during the first half of January by mail, telephone, and face-to-face interviews. Large operations were sampled more heavily than small operations. An additional nonprobability survey was also conducted in a few western States. Regardless of when producers responded, they were asked to report death losses for sheep and lambs for the 1994 calendar year. Based on the original data collected during January, a report entitled "Sheep and Goat Predator Loss" was issued April 27, 1995. This report contained data for death loss by cause for predators only and was on a State and regional level. Value of the losses was also included.

2. Estimation procedures

Total sheep and lamb death losses from all causes were published in the "Meat Animals Production, Disposition, and Income" 1994 Summary report by NASS released April 13, 1995. In setting the estimates for the report, total predator and nonpredator losses were estimated as a percentage of total losses set previously, and specific predator and nonpredator losses were estimated as a percentage of total predator and nonpredator losses, respectively.

3. Reliability

Since all sheep producers were not included in the sample, survey estimates are subject to sampling variability. Survey results are also subject to nonsampling errors, such as omissions, duplications, and mistakes in reporting, recording, and data processing. The effects of these nonsampling errors cannot be measured directly. They are minimized through rigid quality controls in the data collection process and through a careful review of all reported data for consistency and reasonableness.

Appendix I: Discussion of Pre- and Postdocking Losses

The National Agricultural Statistics Service defines lamb crop as those lambs marked, docked, or branded in the Western States (AZ, CA, CO, ID, OR, MT, NM, NV, TX, UT, WA, WY). These States make up the Pacific and West Central regions in this report. 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.

NASS also reports lamb losses only after docking or branding in the Pacific and West Central regions listed above. However, the questionnaire used in these States does include a question regarding the lambs lost before docking, branding, or marking. While the State level estimates published in the national report include only those losses that occurred postdocking, five States—Colorado, Idaho, Montana, Utah, and Wyoming—publish State-level losses separated into pre- and post docking. In addition, these States conduct cause-of- loss surveys on a yearly or biyearly basis (see table a.).

The exclusion of predocking losses from the national report is due to the fact that lambs in the Pacific and West Central regions are usually born on-range and, therefore, 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. However, this method 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 five States can give an estimate of the magnitude of losses that occur before docking.

With the exception of Colorado and Wyoming, over one-half of all reported lamb losses occurred in the predocking period. In Colorado, 37.0 percent of all losses occurred predocking. In Wyoming, 45.1 percent of all losses occurred predocking.

a. 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—2009				
State	Postdocking NASS Reported	Predocking State Reported	Total	Predocking Losses as a Percentage of Total Losses
Colorado	17,000	10,000	27,000	37.0
Idaho	10,000	11,000	21,000	52.4
Montana	20,000	21,000	41,000	51.2
Utah	16,000	17,700	33,700	52.5
Wyoming	18,000	14,800	32,800	45.1

Appendix II. Regional Breakouts by Flock Size—January 1, 2010

This table is intended to help explain some of the flock size and/or regional differences in causes of loss, particularly unknown nonpredator and weather-related causes. There are significant differences in the size distribution of sheep operations by region. For example, the West Central and Central regions have significantly higher proportions of operations with 100-999 head than the Pacific and Northeast regions. Also, operations with 1,000 or more head occur almost exclusively in the central and western parts of the country. Sheep on these large operations may be more exposed to severe weather. Also, larger operations may be less likely than smaller operations to observe the cause of death, which might explain the higher proportion of death loss attributed to unknown nonpredator causes on larger operations.

Percentage of operations by flock size and by region:

Flock Size (Number of Sheep and Lambs)	Percent Operations									
	Region									
	Pacific		West Central		Central		Northeast		Southeast/ Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
1 to 24	77.9	(4.1)	66.8	(3.9)	64.2	(2.2)	78.4	(2.4)	77.0	(3.3)
25 to 99	17.2	(3.4)	23.4	(3.3)	25.2	(1.8)	18.3	(2.2)	18.4	(3.0)
100 to 999	4.1	(1.0)	8.1	(1.0)	10.1	(1.4)	3.3	(0.4)	4.6	(1.8)
1,000 or more	0.8	(0.1)	1.7	(0.1)	0.5	(0.1)	0.0	(0.0)	0.0	(0.0)
Total	100.0		100.0		100.0		100.0		100.0	