

# History and Status of Moose in Connecticut 2002

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Connecticut Department of Environmental Protection  
Bureau of Natural Resources - Wildlife Division



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# History and Status of Moose in Connecticut 2002

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## **General Information**

The moose (*Alces alces*) is one of North America's largest land mammals and the largest member of the deer family (Cervidae). An adult moose stands 6 feet tall at the shoulder and can weigh up to 1,400 pounds. The range of moose in North America extends from Canada south into the north region of the United States from eastern Washington to New England. Moose also occur in the Rocky Mountains south to Utah (Franzmann 1975). Four subspecies of moose exist in North America; the eastern subspecies inhabits New England. Moose are primarily plant-eaters, generally feeding on woody browse. Summer diets consist mainly of willow and aquatic vegetation. In winter, moose browse primarily on woody plants and bark. Moose are generally solitary, although several may gather near streams or lakes to feed (Whitaker 1998). A cow moose can breed as a yearling (16-18 months) and produce offspring annually for up to 18 years (Franzmann 1975). Most females produce single calves, but twins are not uncommon and triplets have been reported. Moose breed in late September to October and have a gestation period of 8 months, with peak calving occurring in late May and June (Franzmann 1975).

## **Status of Moose in Connecticut**

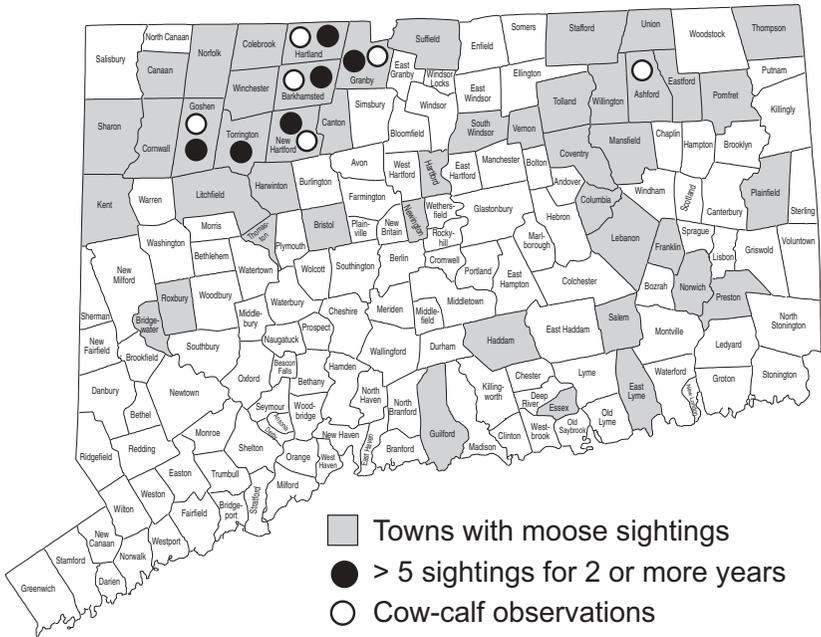
It is unclear whether moose were ever native to Connecticut. If moose did exist here during colonial times, they occurred in small numbers since they are at the southerly fringe of their range. In 1935, George Gilbert Goodwin wrote in *The Mammals of Connecticut*: "The moose, if ever a native to Connecticut, has long since disappeared from within the limits of this state."

During the 1980s and 1990s, moose populations in Maine, Vermont and New Hampshire increased dramatically because of favorable habitat conditions and limited hunting. This resulted in a southerly expansion of New England moose populations and an increased frequency of dispersing moose wandering into Connecticut. Most moose that wander into Connecticut are young males dispersing during the September-October breeding season. Since 1990, more female moose have been reported in Connecticut and most sightings have occurred in May and June, when young females tend to disperse into new habitats. These animals wander extensively, cross many roads and sometimes find their way into heavily populated areas. In 1988, the Department of Environmental Protection adopted a directive (revised in December 2000) that outlined procedures for responding to problem moose situations in Connecticut.

## **Expansion of Connecticut's Moose Population**

From the 1980s to the early 1990s, wandering moose occasionally were reported traveling through the state; however, no resident moose population was documented. Since 1992, the Wildlife Division has documented credible moose sightings reported by the public. From 1992 to June 2002, a total of 119 moose sightings were reported in 47 towns (Figure 1, Appendix I). From 1992 to 1997, reports of moose sightings averaged 4 per year. Moose sightings from the public

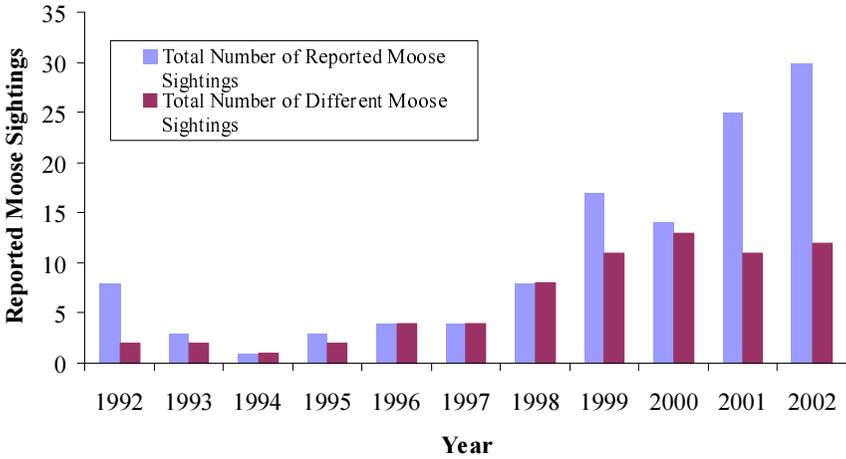
**Figure 1. Distribution of moose sightings reported by the public in Connecticut, 1992-2002.**



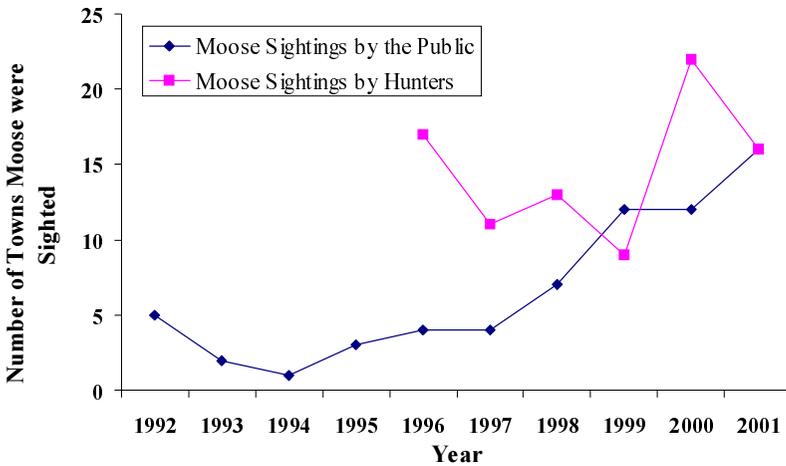
jumped to 8 per year in 1998 and to 17 per year in 1999 (Figure 2). During the first 6 months of 2002 (January-June), 32 moose sightings were reported by the public. Public sightings of moose have increased almost 6-fold during the past 10 years. Not only the frequency of moose sightings, but also the distribution of sightings has expanded. In the early to mid-1990s, sightings of moose were reported in less than 5 towns each year. By 2000, moose sightings were reported in at least 10 towns each year (Figure 3). Most sightings have occurred in the northwest region of Connecticut, although moose have been seen as far south as Guilford, East Lyme and Essex (Figure 1, Appendix I). After accounting for multiple sightings of the same moose, sightings of individual moose have increased from 2 to 4 moose per year in the early 1990s to 10 to 15 moose per year by 2000 (Figure 2).

In the early 1990s, moose sightings were reported only during late summer or early fall. By 2002, moose sightings were reported during all 12 months (Appendix II). Since 2000, sightings of bulls, cows and calves have been reported annually (Appendix II). In the first 6 months of 2002, 5 moose sightings were reported in January, 3 in February, 2 in March, 9 in April, 8 in May and 5 in June. Based on the frequency and distribution of these reports, the 32 sightings represent about 13 different animals. Based on these sightings, at least 11 moose were in northwestern Connecticut and 2 moose were in southern Connecticut. DEP conservation officers in northeastern Connecticut and hunter

**Figure 2. Reported moose sightings in Connecticut from the public, 1992-2002.**



**Figure 3. Number of towns with moose sightings reported by the public and hunters in Connecticut, 1992-2001.**

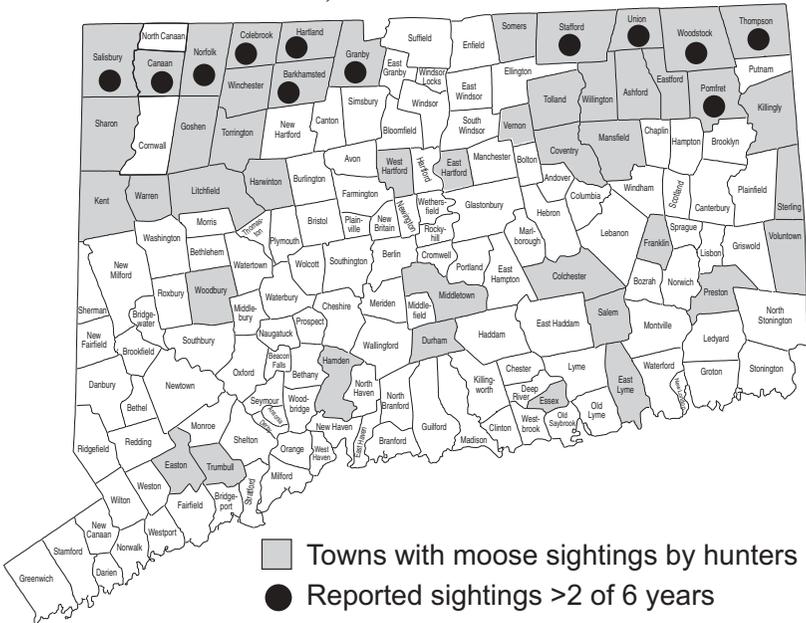


reports indicate that resident moose are present in northeast Connecticut, but are under reported by the public.

In 1996, a question regarding hunter observations of moose during the fall hunting season was added to the annual deer hunter survey card. Deer hunters reported a total of 141 moose sightings in 44 different towns during the years 1996 to 2001 (Appendix III). Since 1996, hunters reported moose sightings in 9

to 25 towns annually (Figure 4, Appendix III). Moose were reported in Hartland and Woodstock during 5 of 6 years and in Union during all 6 years. Over 17% of all moose sightings were reported in Union from 1996 to 2001. In 2001, 25 sightings were reported from 17 towns (Appendix III). The number of sightings per 1,000 hunter-days almost doubled from 1999 to 2000, then decreased in 2001 (Figure 5). In the mid-1990s, hunter sightings of moose averaged 20 per year. In 2000 and 2001, sightings averaged about 30 per year (Figure 5).

**Figure 4. Distribution of moose sightings reported by hunters in Connecticut, 1996-2001.**

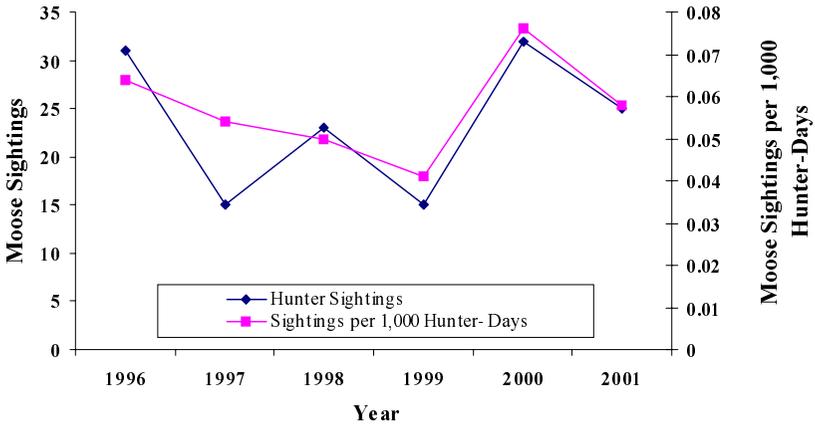


## Establishment of Connecticut’s Moose Population

Evidence of a resident moose population in Connecticut was first documented in 1998. The following observations support the conclusion that Connecticut now has a resident moose population:

- *November 1998:* A 4-year-old female moose was found dead in Yale Forest in Ashford. Tracks in the vicinity indicated that a calf also had been in the area.
- *July and September 2000:* First actual sighting of a cow moose and calves in Hartland.
- *October 2001:* A cow moose with calves was seen again in Hartland the following year.

**Figure 5. Reported moose sightings and sightings per 1,000 hunter-days based on reports from deer hunter surveys, 1996-2001.**



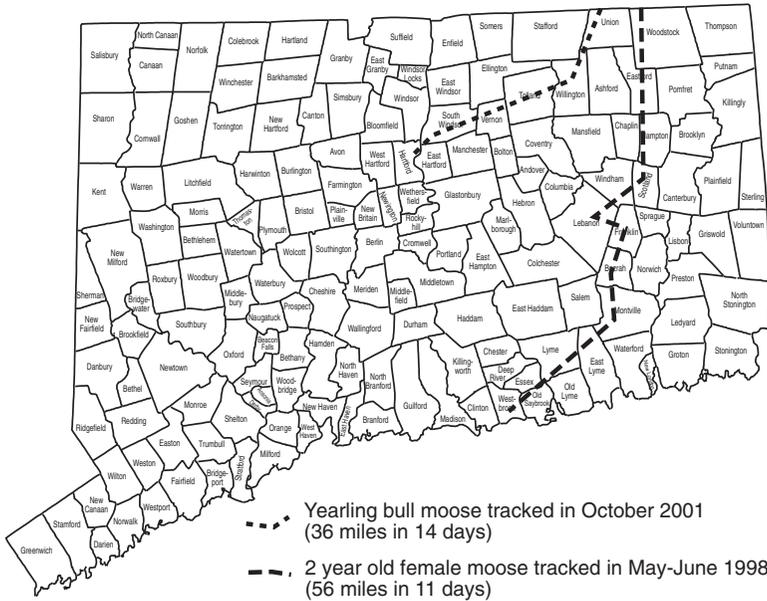
- *January 2002:* A cow moose and calves were reported in East Hartland and East Granby.
- *April 2002:* A cow and calves were seen by a DEP conservation officer at the Barkhamsted Reservoir.
- *May 2002:* 2 yearlings were reported in Granby.
- *June 2002:* Cow and calf reported by Wildlife Division staff at Goshen Wildlife Management Area.

Evidence suggests that new animals have been recruited into Connecticut’s moose population every year since 1998. Cows with calves have been reported in 6 different towns since 1998. With limited mortality, moose populations, just like deer populations, can grow and expand rapidly.

## **Movement Patterns of Dispersing Moose**

Moose sightings reported by the public provide the DEP with information on general movements of moose in Connecticut. In May 1998, a young female moose was first observed in Eastford, in northeastern Connecticut. In an 8-day period, the moose passed through Scotland, Lebanon, Franklin, Bozrah and Montville (Figure 6). After traveling at least 56 miles in 11 days, the moose was hit and killed by a car on Interstate 95 in Westbrook on June 5 (Figure 7). The vehicle was severely damaged and the passengers sustained non-life-threatening injuries. A physical examination of the moose indicated that she was 2 years old and had sustained internal injuries and three broken legs in the accident. Although most yearling moose disperse short distances, a 2-year old female

**Figure 6. Movements of 2 moose that dispersed into Connecticut in 1998 and 2001.**



**Figure 7. In 1998, a 2-year-old female moose was hit by a car on Interstate 95 in Westbrook. The moose sustained 3 broken legs and also died from its injuries.**



moose that travels a long distance in spring likely is dispersing from her natal home range to establish a new home range.

Another moose on the move was observed in late September 2001. A yearling 4-point bull moose was observed traveling from the Massachusetts-Connecticut border south through the towns of Willington, Tolland, Vernon and South Windsor over a two-week period (Figure 6). On October 7, 2001, the moose was observed in Hartford at Riverside Park behind the Hartford Police Station, which is bordered by Jennings Road, Interstates 91 and 84 and the Connecticut River. Overall, the moose traveled about 36 miles in 14 days. A young bull moose traveling extensive distances in the fall is related to increased breeding activity. A decision was made to immobilize and relocate the moose due to the high traffic volume in the Hartford area and the likelihood of a moose-vehicle accident. DEP staff successfully immobilized the moose, which was equipped with a radio-collar, packed with ice to prevent overheating, transported and released in upstate New York (Table 1).

## Moose-vehicle Accidents

The risk of a human fatality resulting from a moose-vehicle accident is much greater than the risk associated with a deer-vehicle collision. Adult moose may stand over 6 feet tall at the shoulders, can weigh over 1,000 pounds, are brownish-black in color and are most active at dawn, dusk and after dark. Because of these characteristics, encountering a moose in a vehicle, particularly at higher speeds and in the dark, can be dangerous.

Since the establishment of moose in Connecticut, the frequency of moose-vehicle accidents has increased. The first report of a moose hit by a motor vehicle in Connecticut occurred in June 1995. Between June 1995 and June 2002, 6 moose-vehicle accidents were reported in Connecticut. No moose-

**Table 1. Historic records of moose-vehicle accidents in Connecticut.**

Year	Month	Location	Fate of Moose	Fate of Motorist/Vehicle
1995 <sup>a</sup>	June	Northeastern, CT	Injured	1 vehicle severely damaged
1995	June	Willington	Killed	2 vehicles severely damaged
1998	May	Canton	Unknown	1 vehicle slightly damaged
1998	June	Westbrook	Killed	1 vehicle severely damaged non life-threatening head injuries to passengers
2000	Sept.	Litchfield	Unknown	2 vehicles, minimal damage
2000	Sept.	Goshen	Unknown	1 vehicle minimal damage

<sup>a</sup> First documented moose-vehicle accident in Connecticut

vehicle accidents were reported in the 1980s, 4 were reported in the 1990s and 2 have already been reported since 2000. Moose-vehicle accidents are expected to increase as the moose population expands. The 6 accidents reported already have resulted in 2 dead moose and 7 damaged vehicles (Table 1). Although 6 accidents may seem low, considering how few moose live in the state, the incidences of moose involved in motor-vehicle accidents is relatively high. A growing moose population can create a significant road safety problem because moose have large home ranges (about 10-15 square miles), Connecticut's landscape is fragmented and Connecticut roads experience high traffic volume. Because of this increased risk, moose sightings or encounters in developed areas of Connecticut are carefully monitored with full awareness of the potential outcomes.

## **Moose Relocation in Connecticut**

Due to the potential injury that moose can cause to humans and themselves, it is sometimes necessary to immobilize and remove moose from hazardous situations. Until 2002, New York was the only northeastern state willing to take moose from Connecticut. As of 2002, New York has joined other states in refusing to accept moose from outside their border. In the past 20 years, there have been 4 occasions when moose were immobilized and 2 occasions when moose were euthanized because of immediate public safety concerns (Table 2). Two of 4 immobilizations attempted were successful. The process of immobilizing a free-ranging animal of a moose's size and metabolism is difficult. Moose are very susceptible to heat stress and capture-related injuries. Much time, effort and manpower are needed to monitor movements of the moose, provide crowd control and immobilize and transport the moose to a safe location.

## **Moose Population Trends in Massachusetts**

Moose sightings in Massachusetts have increased over the past 35 years. In 1966, only 4 moose sightings were reported in Massachusetts. Over a 20-year period, moose sightings tripled (14 sightings in 1985). By 1992, 47 moose sightings were recorded, indicating yet another tripling of sightings in just a 7-year period. According to the 1997 fall hunter survey, 5% of 70,000 Massachusetts hunters reported seeing a moose. Two years later in 1999, the number of hunters reporting a moose sighting doubled to 10%. In 2001, Massachusetts's moose population was estimated at 500 to 700 moose. At least 11 road-killed moose were reported in Massachusetts in 2001 (mostly in North Worcester County). In addition, due to public safety concerns, 2 moose were immobilized and relocated within the state and 3 were euthanized.

Connecticut is now experiencing the same rapid growth and expansion of moose as did Massachusetts. The growing population in Massachusetts is contributing to the growth of Connecticut's moose population and is a portent of things to come.

**Table 2. Historic records of moose relocation and removal efforts.**

Year	Town	Drug Mix	Fate of Moose	Comments
1982	Southbury		Euthanized	Euthanized on Interstate 84 in Southbury by state trooper.
1987	Newtown		Relocated to NH	Tranquilized in the vicinity of Interstate 84 and transported to New Hampshire. Moose died shortly after release.
1993	Litchfield		Euthanized	Young bull moose euthanized by DEP conservation officer on-half mile from Route 202.
1996	Suffield	Xylazine (4500mg)	Relocated	Moose anesthetized in 7 minutes; given a drug reversal agent; recovery in 1hour, 20 minutes.
1997	Woodbury	Xylazine (3075mg)	Unsuccessfully relocated to NY	Moose anesthetized in 3hours, 20 minutes; given a drug reversal agent; found dead by NYDEC four hours later; overheating was likely cause of death.
2001	Hartford	Xylazine (1035mg) Telazol (280mg)	Relocated to NY	Moose anesthetized within 7 minutes; given a drug reversal agent; good weather conditions; immediate sedation and recovery.

## Facts: Moose in New England

- Moose populations in New England have risen from about 19,000 in 1980 to about 40,000 in 2001.
- In Maine, moose drive both tourism and a lucrative hunting business with \$2 million to \$3 million in revenue expected in 2002.
- In 2001, Maine issued 3,000 permits for hunting moose, New Hampshire issued 585 permits and Vermont issued 230 permits.
- Massachusetts had an estimated moose population of 500 to 700 animals in 2001, but does not currently have a hunting season.
- It is estimated that Massachusetts' moose population will grow by 100 new moose each year.
- The Massachusetts Department of Wildlife and Fisheries responded to one moose-human conflict in 1991, compared to about 20 per year a decade later.
- There are about 1,500 car accidents involving moose per year in New England.



**Hunting is the principle tool for managing expanding moose populations.**

## **Conclusion**

Clearly, a resident moose population became established in Connecticut during the 1990s. Moose will continue dispersing into Connecticut from Massachusetts and our resident moose will continue to produce calves each year. Over the past 10 years, moose sightings in Connecticut have tripled. Not only has the frequency of sightings increased but the distribution of sightings also has increased. The number of towns with moose sightings has tripled. Similar to deer, moose populations that experience little mortality can grow and rapidly expand. Connecticut residents can expect to see moose more often and to encounter moose on roads and highways more frequently.

Moose have several positive values. A glimpse of a moose walking through the woodlands of Connecticut or feeding in a wetland is an inspiring link to the wilderness. Unfortunately, because of the large body size of a moose, the likelihood of a human fatality from a moose-vehicle accident is high compared to a deer-vehicle accident. Procedures to immobilize and relocate moose, because of public safety concerns, have been developed by the DEP. However, the lack of an out-of-state release site limits the applicability of this option. As Connecticut's moose population continues to expand, a management plan for moose will be needed. Currently, in the absence of such a moose population management plan, staff time required to address moose-human interactions will increase significantly. These issues need to be addressed before Connecticut's moose population becomes overabundant.

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Whitaker, John Jr. 1998. National Audubon Society Field Guide to North American Mammals. New York. Pp. 839-842. **[total # of pages; is there an editor??]**

**Appendix I. Moose sightings reported by the public in Connecticut, 1992-2002.**

<b>Town</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002<sup>a</sup></b>	<b>Total</b>
Ashford	1				1					2		<b>4</b>
Barkhamstead								2	2	2	4	<b>10</b>
Bridgewater											1	<b>1</b>
Bristol	1											<b>1</b>
Canaan					1							<b>1</b>
Canton							1	1				<b>2</b>
Colebrook									1		2	<b>3</b>
Columbia									1			<b>1</b>
Cornwall							1	1				<b>2</b>
Coventry										1		<b>1</b>
Eastford		2					1					<b>3</b>
East Lyme							1					<b>1</b>
Essex							1					<b>1</b>
Franklin	2											<b>2</b>
Goshen						1			1	2	2	<b>6</b>
Granby									1		5	<b>6</b>
Guilford								1				<b>1</b>
Haddam											1	<b>1</b>
Hartford										1		<b>1</b>
Hartland								1	2	2	4	<b>9</b>
Harwinton									1	1		<b>2</b>
Kent						1		2				<b>3</b>
Lebanon							1					<b>1</b>
Litchfield		1				1		1	1			<b>4</b>
Mansfield	1								1			<b>2</b>
New Hartford			1								6	<b>7</b>
Newington											1	<b>1</b>
Norfolk										1		<b>1</b>
North Canaan									1			<b>1</b>
Norwich	3											<b>3</b>
Plainfield										1		<b>1</b>
Pomfret				1								<b>1</b>

**Appendix I. Moose sightings reported by the public in Connecticut, 1992-2002.**

<b>Town</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002<sup>a</sup></b>	<b>Total</b>
Preston								1				<b>1</b>
Roxbury						1						<b>1</b>
Salem									1			<b>1</b>
Sharon										1		<b>1</b>
South Windsor										1		<b>1</b>
Stafford								2				<b>2</b>
Suffield					1							<b>1</b>
Thomaston										1		<b>1</b>
Thompson				1	1							<b>2</b>
Tolland								2		1		<b>3</b>
Torrington										5	4	<b>9</b>
Union							2		1			<b>3</b>
Vernon								2		2		<b>4</b>
Willington				1				1		1		<b>3</b>
Winchester											2	<b>2</b>
<b>Total</b>	<b>8</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>8</b>	<b>17</b>	<b>14</b>	<b>25</b>	<b>32<sup>a</sup></b>	<b>119</b>

<sup>a</sup> Only includes January-June

**Appendix II. Summary of moose sightings in Connecticut reported by the public, 1992-2002.**

<b>Year</b>	<b>No. Cows</b>	<b>No. Bulls</b>	<b>No. Calves</b>	<b>No. Unknown</b>	<b>Total Sighted</b>	<b>Total Individuals</b>	<b>Months</b>
1992	7	0		1	8	3	July – September
1993	2	1		0	3	2	August – September
1994	0	0		1	1	1	May
1995	0	3		0	3	2	September – October
1996	0	3		1	4	8	March – October
1997	0	1		3	4	2	May – June
1998	2	2	1	3	8	7	June – December
1999	3	9	0	5	17	10	February – November
2000	5	4	2	3	14	8	March – October
2001	4	6	2	13	25	7	May – November
2002 <sup>a</sup>	9	3	4	16	32	13	January-May
<b>Total</b>	<b>32</b>	<b>32</b>	<b>9</b>	<b>46</b>	<b>113</b>	<b>63</b>	<b>January - December</b>

<sup>a</sup> Only includes January-June

**Appendix III. Moose sightings reported by hunters in Connecticut, 1996-2001.**

<b>Town</b>	<b>1996<sup>a</sup></b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>Total</b>
Ashford	3	2					5
Barkhamsted	1				1	2	4
Canaan	6	1			2	1	10
Colchester			1				1
Colebrook	2		1		2	1	6
Durham			2				2
East Hartford						2	2
Eastford	2		5				7
East Lyme					1		1
Easton	1					1	2
Essex				1			1
Franklin				2	1		3
Goshen		1		1			2
Granby		1	1		1		3
Hampton			1				1
Hartland	1	1	1		3	3	9
Harwinton					4	1	5
Kent				2			2
Killingly		1					1
Litchfield					1		1
Mansfield	1						1
Middletown					1		1
Norfolk	1	1		1		1	4
Pomfret			1	1	2		4
Preston	1						1
Salem					1		1
Salisbury			1	2	2		5
Sharon	1						1
Somers						1	1
Stafford				2	1	2	5
Sterling					1		1
Thompson	1	1	2				4

### Appendix III. Continued

<b>Town</b>	<b>1996<sup>a</sup></b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>Total</b>
Tolland		1					1
Torrington			1		1		2
Trumbull						1	1
Union	6	4	5	3	2	4	24
Vernon					1	2	3
Voluntown	1					1	2
Warren						1	1
West Hartford					1		1
Willington	1				1		2
Winchester	1				1		2
Woodbury						1	1
Woodstock	1	1	1		1		4
<b>Total</b>	<b>31</b>	<b>15</b>	<b>23</b>	<b>15</b>	<b>32</b>	<b>25</b>	<b>141</b>

<sup>a</sup> Moose sighting question was added to the hunter surveys in 1996.

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