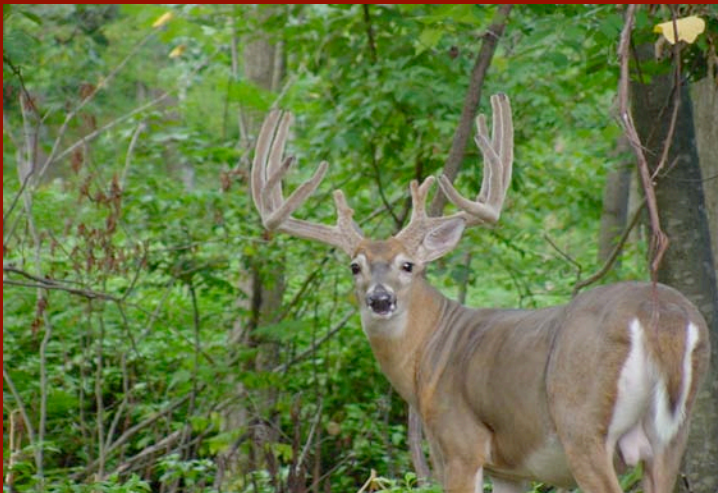


# **The Economic Impact of Pennsylvania's Deer Farms**



Prepared for:

**Pennsylvania  
Deer Farmers  
Association**

**February 2007**

Prepared by:

**Shepstone Management Company**

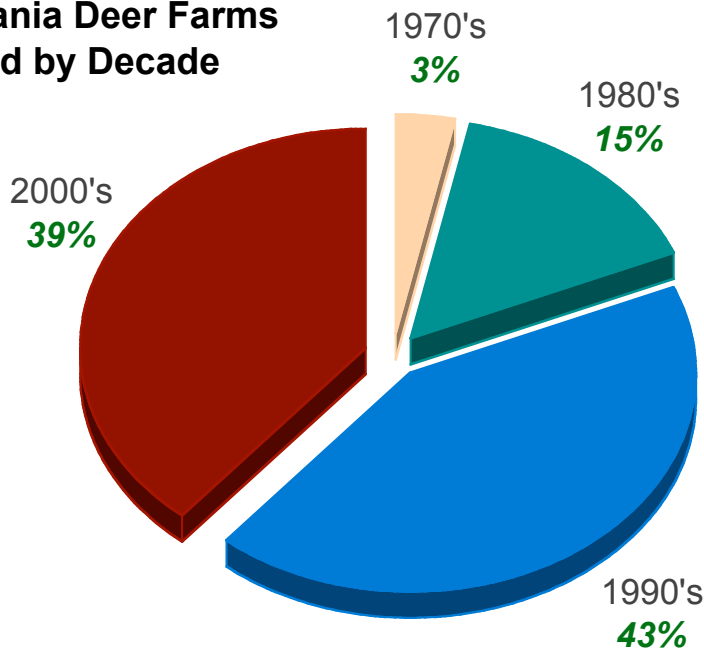
# ECONOMIC IMPACT OF PENNSYLVANIA'S DEER FARMS

## A Fast Growing Agriculture Niche Industry

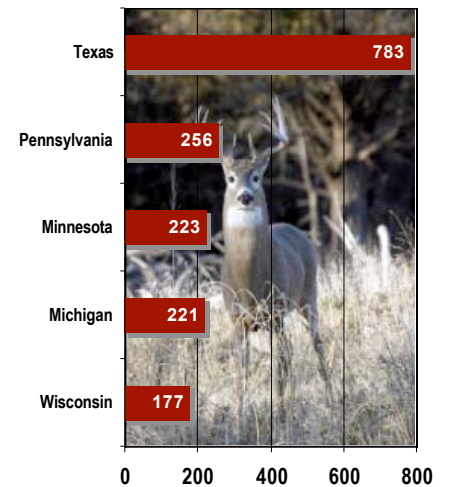
### PENNSYLVANIA IS A LEADER

- No. 2 in commercial deer and elk farms
- No. 3 in deer and elk sold
- No. 4 in total deer and elk farms
- No. 5 in total deer and elk kept

### Pennsylvania Deer Farms Created by Decade



### Commercial Deer Farms by State Census of Agriculture, 2002



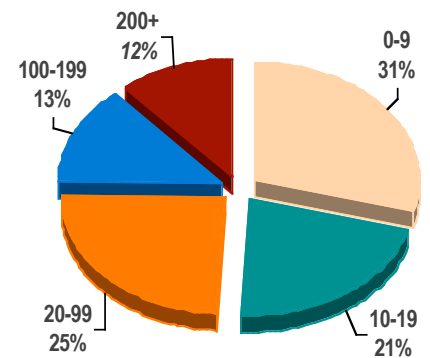
Pennsylvania's deer and elk farms are leading the way in fulfilling the Commonwealth's goal of creating a dynamic self-sustaining agricultural sector. They represent a rapidly growing niche industry that accounted for 616 farms in the 2002 Census of Agriculture and more than 750 farms in 2006, based upon Pennsylvania Department of Agriculture permits issued for Cervidae Livestock Operations. Surveys conducted for this study, moreover, indicate **fully 82% of deer and elk farms have been created since 1990**, illustrating the strength of the industry as a new and different type of agriculture.

The Cervidae species include Elk, Fallow Deer, Mule Deer, Red Deer, Reindeer, Sika Deer and Whitetail Deer, among other sub-classifications. Pennsylvania deer farmers raise these and other cervids for use in breeding, venison production, deer watching, private hunting and other commercial activities. Specialty products such as antlers, deer urine and craft and deerskin leather are also being sold commercially. Some deer farms also offer lodging and other tourism services.

The deer farm industry has been strong in Europe and places such as New Zealand and Canada for many years. It is now growing throughout the U.S., Pennsylvania being a leader among the states in this regard. Indeed, Census of Agriculture data indicates the Commonwealth ranked No. 2 in total commercial deer and elk farms (256) and No. 5 in total deer and elk kept on farms (21,617). Moreover, there were deer farms in 60 of 67 counties throughout Pennsylvania, including numerous facilities in locations such as Chester, Lancaster, Westmoreland and York Counties where farmland preservation is a priority due to urban growth. The average deer farm occupies and, therefore protects, 68.5 acres of land.

- 21,617 deer and elk kept in 2002
- 616 deer and elk farms in 2002
- 256 commercial farms in 2002
- 3,223 deer and elk sold in 2002
- PA has 9% of U.S. commercial farms
- Deer farms found in 60 of 67 counties
- Elk farms found in 30 counties

### Deer Farms by Acres of Land



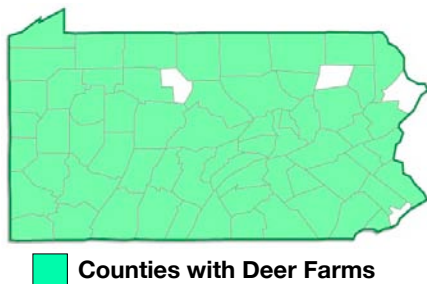
- Deer farms average 68.5 acres in size
- 30% of farms under 10 acres
- 11% of farms over 200 acres

# ECONOMIC IMPACT OF PENNSYLVANIA'S DEER FARMS

## DEER FARMS ABOUND WITHIN PA

Deer and elk farms are found throughout the State. The 2002 Census of Agriculture found deer or elk farms in 61 Pennsylvania counties. More recent data gathered by the Commonwealth indicates such farms are now located in all but four counties. Combining information from these sources indicates the top producing counties were as follows:

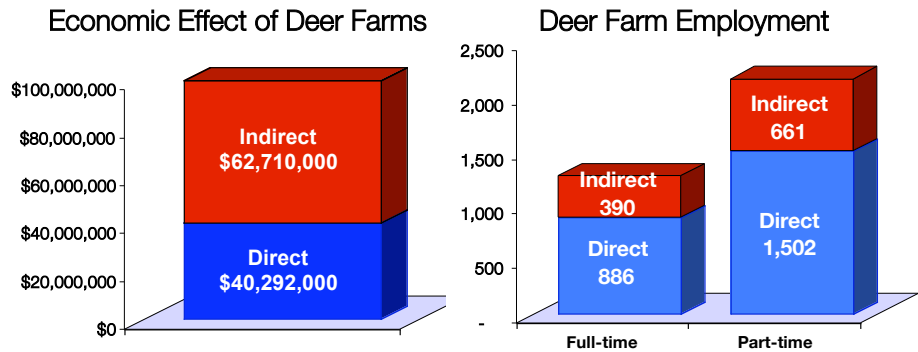
Deer and Elk Farm Animal Inventory Top 10 Counties	
Rank	County
1	Blair
2	Centre
3	Venango
4	Bedford
5	Lancaster
6	Franklin
7	York
8	Lawrence
9	Fulton
10	Bradford



Pennsylvania's Cervidae Farm Operator Permit program is expected to include as many as 1,200 farms when all operators are enrolled by the Department of Agriculture.

## Growing Pennsylvania's Agricultural Economy

Pennsylvania's deer and elk farms constitute a young industry, but one already contributing in a major way to the Commonwealth's agricultural economy. Surveys of farmers conducted for this study indicate they represent a \$103 million industry at a minimum. There are an estimated \$40.3 million in direct sales (the Association's most recent auction, alone produced \$800,000 in sales) and another \$62.7 million of added output from multiplier effects of these sales rippling through the economy. The 2.55 multiplier is based on a Center for Rural Pennsylvania study (*Economic Values and Impacts of Sport Fishing, Hunting and Trapping Activities in Pennsylvania*) and is consistent with other agricultural economic impact studies.

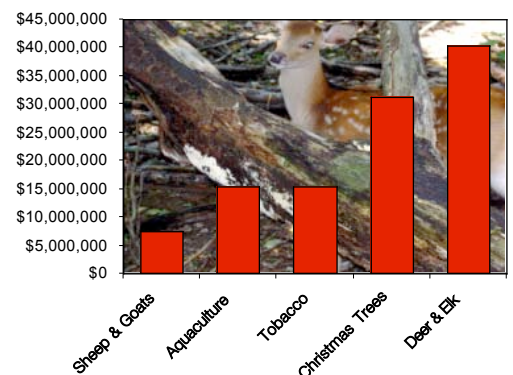


## \$103 million of output and 3,500 jobs

Another study, done by Cornell University in 2001 and titled *Agricultural-Based Economic Development: Trends and Prospects for New York*, provides insights on the indirect effects of agricultural industries on employment. It indicates agriculture, forestry and fisheries industries generate an employment multiplier of 1.44 or roughly one new job in the overall economy for every two created in the industry. Applying this to employment data provided by Pennsylvania producers (an average of 1.18 full-time and 2.00 part-time jobs per farm) indicates Commonwealth deer and elk farms generate nearly 3,500 jobs in total for residents, almost 1,300 of these being full-time plus another 2,200 part-time workers.

Deer and elk farming is already a major element of the agricultural economy of the Commonwealth. Its \$40.3 million of direct farm receipts compare very well with other farm sectors for which Pennsylvania is well known, as the chart illustrates. It has, more importantly, the potential to grow by a large amount, still being a relatively new player on the agricultural scene. It is a niche farm sector with a bright future.

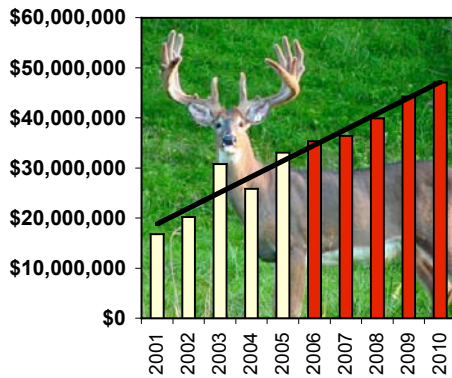
## Deer Farming Compared to Other Agricultural Specialities



# ECONOMIC IMPACT OF PENNSYLVANIA'S DEER FARMS

## An Industry with Potential to Grow Further

Estimated & Projected  
PA Deer Farms Sales



Surveys of producers conducted for this study indicate Pennsylvania's deer and elk farms expect to reach \$47.1 million in sales by 2010. This is up from \$16.8 million in 2001, a gain of fully 150% or 12.2% per year on a compound basis. This steady growth is without considering the additional growth likely to come from new farmers steadily entering the industry.

This growth is a factor of several industry trends, beginning with the diversity of enterprises and products involved. Deer and elk farms turn out a broad array of products

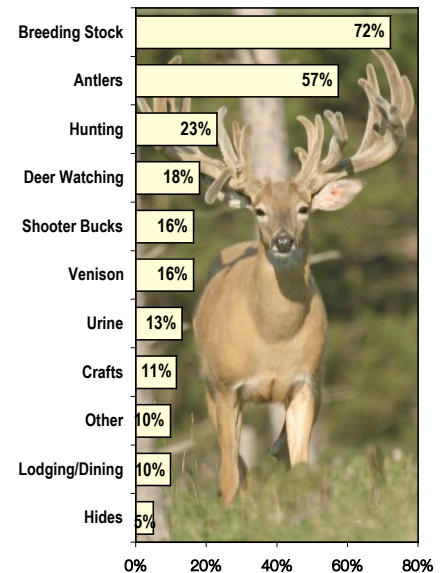
and services, ranging from venison meat to deer watching. Hunting, breeding stock and other specialties and tourism services are among the items offered. Most farms provide multiple products and services, although there is also a great deal of industry specialization, with some farms concentrating on genetics, others on tourism-related activities and still others on the livestock products.

This diversity is illustrated by the charts to the right. The Pennsylvania Department of Agriculture establishes 16 different classifications for deer and elk farms. These include two broad categories encompassing both breeder and hobby farms plus several sub-classifications by species. Some 76% of deer and elk farms sell breeding stock, which generates an estimated \$21.0 million in direct sales for these farms and represents the single largest income category for the industry. Ranch hunting activities account for another \$15.2 million in sales, the second largest source of income. Such private hunting is offered by 23% of deer and elk farmers.

Deer urine is also a major product. Marketed as a deer attractant to hunters and others, it represents an estimated \$3.2 million in sales and is offered by 13% of deer and elk farmers. Still other products include antlers, for example. Velvet antler is used heavily in traditional Chinese medicine. Antlers also have craft and trophy uses. Some 57% of Pennsylvania deer and elk farms sell antlers. They account for an estimated \$242,000 of income. Other significant products and services include deer watching and associated lodging and dining, deer hides and venison. These and other miscellaneous activities are responsible for an estimated \$652,000 in sales.

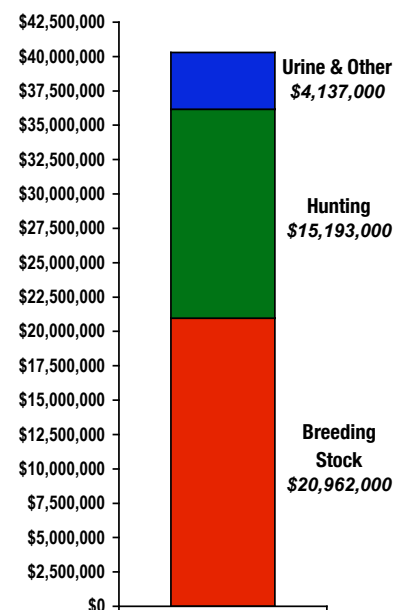
The typical Pennsylvania deer and elk farm is a small agricultural business generating an average of \$53,650 in annual sales. Nevertheless, the industry includes several farms with more than \$200,000 per years in sales and up to \$1.0 million per year. It provides opportunities for many landowners to gross good returns from relatively small acreage.

Pennsylvania Deer  
Farm Products



**Pennsylvania issues permits for 16 classifications of Cervidae operators**

Deer Farm Sales  
by Product



# ECONOMIC IMPACT OF PENNSYLVANIA'S DEER FARMS

## DEER FARMING OPPORTUNITIES

Some of the best opportunities in deer farming are in further developing existing markets, such as the one for venison. Venison is a very healthy meat product as the following data supplied by the USDA National Nutrient Database indicates for various high-quality meat cuts.

Nutritive Value of Meats (100 Grams)				
Meat	Fat (g)	Cholesterol (mg)	Calories (kcal)	Protein (g)
Venison	2.38	79	150	30.2
Turkey	2.63	98	150	29.6
Chicken	7.78	84	197	29.8
Salmon	8.13	71	182	25.4
Pork	9.44	85	211	29.5
Lamb	9.73	95	216	30.0
Beef	11.43	90	248	33.8

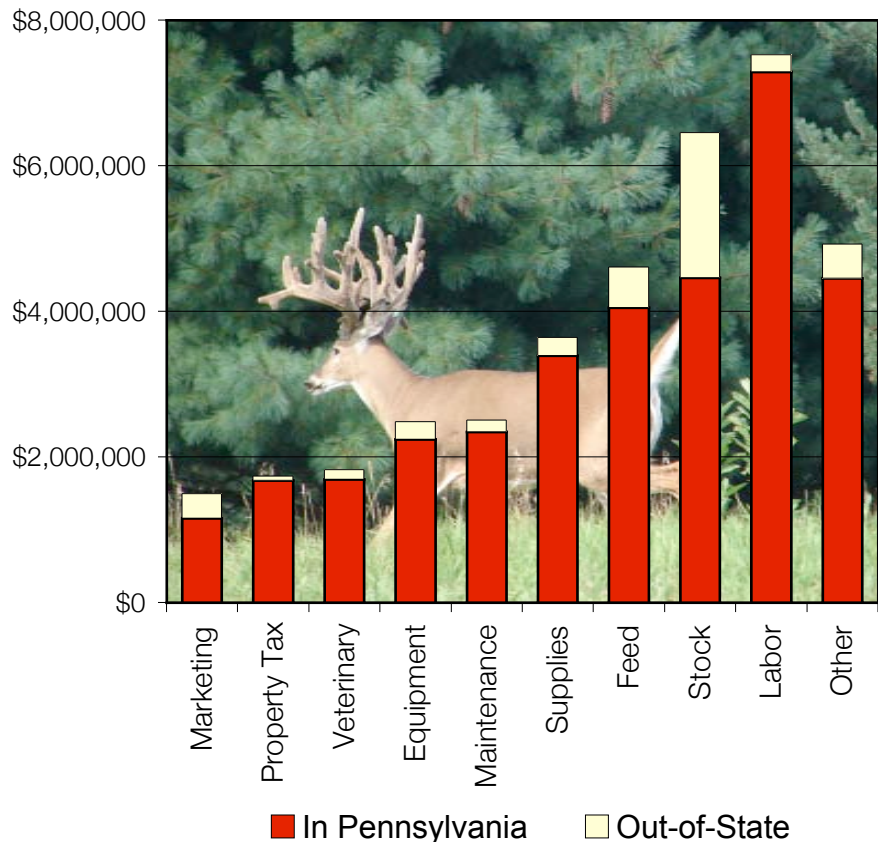
Venison offers very low fat, cholesterol and calories, while also providing good protein. Very few meats furnish the combined nutritive value venison affords.

Venison is also an important part of American and fusion cuisines. No less than half of the 12 highest *Zagat Survey* rated restaurants in the Philadelphia metro area have included venison on their dinner menus. Dishes such as *Venison Carpaccio*, *Grilled Venison with Mole*, *Poached Venison Filets*, *Medallions of Venison*, *Venison with Foie Gras Parfait* and *Venison Pate* have all appeared on these menus. Significantly, "Pennsylvania Venison" is now offered by top restaurants in Philadelphia and Washington, D.C., indicating the opportunities that exist to build new business through Pennsylvania branding.

## Deer Farms Spend Heavily in Pennsylvania

Pennsylvania's deer and elk farms put their money back into the Commonwealth, providing a source of economic development opportunity for rural areas as well as many small farming opportunities for more urban areas where open space preservation is important.

### PA Deer Farms Spending, 2006



Deer and elk farms spend an estimated \$7.5 million dollars per year on labor, 97% of that money being spent in Pennsylvania. Another \$6.9 million is spent on stock, with 69% of that staying in the Commonwealth. Feeding of captive deer and elk requires still another \$4.6 million of annual expenditures of which 88% is spent within the State. These funds are spent on veterinary bills, maintenance and marketing, among other expenses. Significantly, \$1.7 million is spent on property taxes. Altogether, Pennsylvania's deer and elk farms spend \$37.2 million annually on operations, 88% of it within the Commonwealth. This does not include capital spending on land, buildings, fencing or equipment.

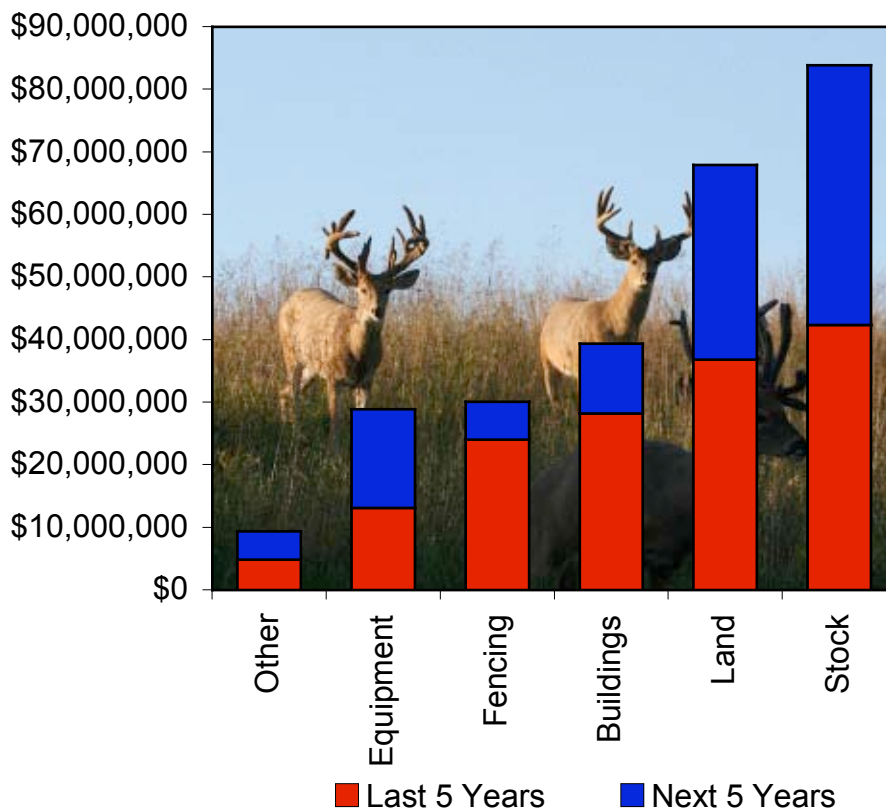
The high rate of intrastate spending is a reason deer farming enjoys a high economic multiplier. Deer farms are small business enterprises that foster economic expansion for all Pennsylvanians. They also indirectly support the hunting industry, which has a \$4.8 billion economic impact on the State, according to the Center for Rural Pennsylvania.

# ECONOMIC IMPACT OF PENNSYLVANIA'S DEER FARMS

## Deer Farms Invest in Pennsylvania's Future

Pennsylvania's deer and elk farms not only spend heavily on operational expenses, but also are investing in the future of the Commonwealth. Altogether, these farms spent an estimated \$149 million on capital items over the last five years, expect to spend another \$27 million this year and still another \$110 million over the next five years - a total of well over a quarter of a billion dollars. Total planned and already made investments in Pennsylvania for the period 2001 through 2011 include over \$92 million on animal stock, nearly \$71 million on land, \$46 million on buildings, \$36 million on fencing and \$31 million on equipment. The State's deer and elk farms invest an average of \$34,600 per year of new capital on their enterprises - no small amount for a niche agricultural business.

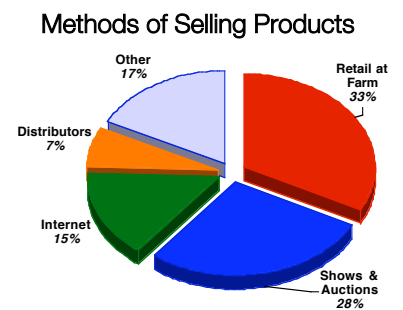
## Capital Investments and Future Plans



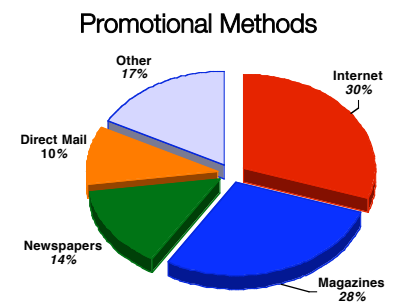
This steady investment over a period of several years is what has led to deer and elk farming becoming a recognized agricultural sector - one large enough to now enjoy its own category in the Census of Agriculture. The spread of the industry across the entire Commonwealth indicates it is particularly well-suited to the Pennsylvania environment and has the potential to grow much larger. Moreover, the capital investments made in farm infrastructure have now positioned the industry to expand its offerings of products and services.

## MARKETING TO THE WORLD

Pennsylvania deer and elk farmers are, literally, marketing their products and services to the world, using a variety of modern sales techniques that offer a model for all of agriculture. Deer and elk farms are leaders in direct sales, retailing of products and services at the farm being the most common method of sales and fully one-third of farmers using this approach. Another 28% rely upon shows and auctions to sell products and services, while 15% use the Internet to sell worldwide.



Deer and elk farmers promote their products using the Internet (30%), magazines (28%), newspapers (14%), direct mail (10%) and various other methods to reach a base of customers that extends throughout the United States and to other countries. Antlers, in fact, are primarily sold to Asian markets.



# ECONOMIC IMPACT OF PENNSYLVANIA'S DEER FARMS

## VELVET ANTLER - A SPECIALTY

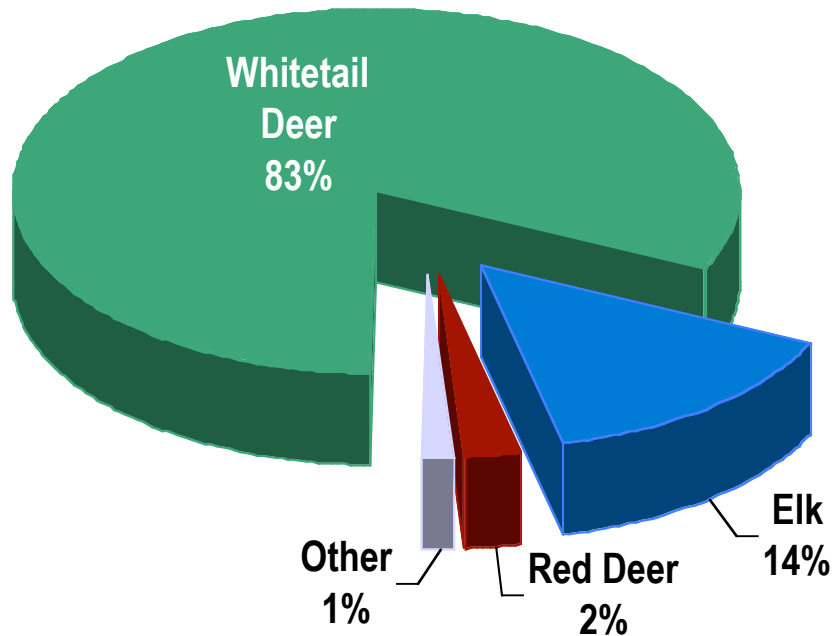
Velvet antler, as noted earlier, is used extensively in traditional Chinese medicine. Prior to calcification, antlers in velvet are cartilage-like in consistency. They are removed and dried at this point to a powder form that is often employed as an anti-inflammatory agent and immune stimulant, among other uses. Active ingredients found in velvet antler include minerals, trace elements, protein, lipids, glycosaminoglycans and growth hormones.



A mature bull elk can produce 25 pounds of velvet antlers per year. A 2001 Federal Reserve Bank of Minneapolis reported an average price of \$30 per pound, although the market has occasionally produced values as high as \$120 per pound.

Deer antlers are the fastest growing form of true bone. They are covered with a soft, hair-covered membrane known as "velvet" that includes numerous blood vessels to transport and deposit minerals from which the antlers are built. This rapidly growing tissue contains the nutrients that provide some of the medicinal values involved with velvet antler. The elk grown in Pennsylvania produce excellent velvet antler.

## Pennsylvania Deer Farms by Species



Pennsylvania's deer and elk farms keep multiple species of cervids, ranging from the dominant Whitetail (*Odocoileus virginianus*) to the Muntjac (*Muntiacine* sub-family). Most of the species, however, fall into two sub-families; the *Cervinae* and the *Odocoileus*. The *Cervinae* sub-family includes Red Deer or Elk (*Cervus elaphus*), Sika Deer (*Cervus nippon*) and Fallow Deer (*Dama dama*). The *Odocoileus* sub-family includes not only the Whitetail, but also the Mule Deer (*Odocoileus hemionus*) and Caribou or Reindeer (*Rangifer tarandus*). All of these species are found on Pennsylvania deer and elk farms.



Taxonomically, American elk (the Eastern version of which is depicted in the Audubon painting to the left) are Red Deer. They are sometimes referred to elsewhere in North America as Wapiti ("White Rump" in the Shawnee language). The Red Deer listed on the above chart represent hybrid and Eurasian deer types. These many species constitute an important factor in establishing the breeding, tourism and other niche values of the deer farm industry in Pennsylvania. The Whitetail Deer is also the mainstay of the State's \$4.8 billion hunting industry. Deer farms help to sustain interest in hunting by offering additional opportunities to so on private lands throughout the year. They also support wildlife watching away from home - now a \$320 million industry according to the Center for Rural Pennsylvania. Finally, they help preserve the rural environments so essential to accommodating hunting pursuits.

## The Key Facts:

*Now over 750 deer and elk farms - up 82% since 1990*

*Pennsylvania No. 2 in commercial deer and elk farms*

*Pennsylvania No. 3 among the states for deer and elk sold*

*Deer or elk farms found in 63 of 67 Pennsylvania Counties*

*Average deer or elk farm protects 68.5 acres of open space*

*Deer farming is \$103 million industry in Pennsylvania*

*Deer farming generates 3,500 jobs for Pennsylvanians*

*Typical deer or elk farm generates \$53,650 sales per year*

*Deer and elk farm sales are growing by 12% per year*

*Pennsylvania deer and elk farms invested \$149 million of new capital in the Commonwealth over the last 5 years*

*Deer and elk industry is now a major agricultural niche larger than sheep and goats, tobacco or Christmas trees*

For more information:

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