Economic Impact of the Deer & Elk Farming Industry in Indiana

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For more information about IDEFA, please visit their website at http://www.indianadeer.net/

Executive Summary

- Deer and elk farming has seen rapid growth nationally and in Indiana
- Indiana has 388 deer and elk farms
- Licensed breeders have increased 19% since 2006
- A survey was given in the fall 2011 to IDEFA members to collect detailed information regarding farm inventory, annual expenditures, herd sizes, annual revenue, and labor supply and cost.
- Total employment and family labor income in Indiana exceeded $16 million annually based on survey results for the industry.
- Deer and elk farmers and hunting preserves had a direct economic impact of $27 million in 2010
- The Indiana deer and elk farming industry had a total economic impact of $49.3 million dollars in 2010.
- The economic footprint of deer and elk farming is very significant for many rural counties in Indiana.
- Indiana hunting preserves are the major demand driver for the local breeding industry with per hunting preserve sales in excess of $460,000 per year
- Over 95% of Hunting preserve clients are from out of state, bringing dollars into Indiana

Indiana Deer & Elk Farming Industry

The breeding and hunting of deer and elk is comparable to other small scale agricultural enterprises. The breeding operations provide breeder stock and animal products for other operations and hunting preserves. Breeding and hunting operations engage in both the breeding of stock for sale and for supplying animals to their own preserves. Hunting preserves typically serve as the end market for many of these animals, especially those that are high valued trophy bucks. Other animal products such as antlers, urine, velvet, hides and venison are additional products that these farms can market to a broader consumer base.

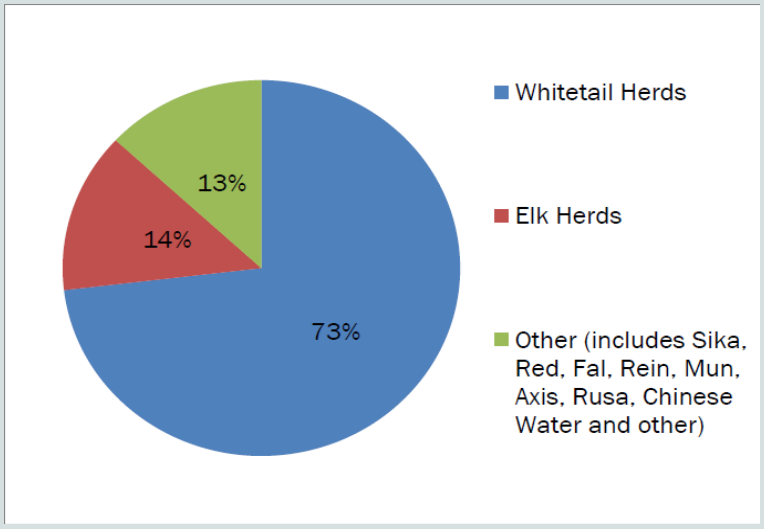


Figure 1: Percentage of Indiana Herds by Species 2011 BOAH Permits

The State of Indiana Board of Animal Health (BOAH) uses Premise ID numbers in order to track agricultural animal production through the state. These Premise IDs identify the species and operation/farm types of livestock by county. Livestock included in the permits include cattle, bison, swine, sheep, goats, horses, poultry, deer, elk, llama and emus. County totals for cervid farms in 2011 with species and operation type were made available to the study.

Using the country totals for the Deer and Elk industry, of the 391 operations in the state of Indiana, 73% of the total cervid herd is comprised of Whitetail deer, 14% is Elk and 13% are other cervid species (Figure 1).

Eighty-one percent of these operations are Deer and Elk breeding Farms. Hunting Preserves have only 1% of the total cervid industry (Figure 2).

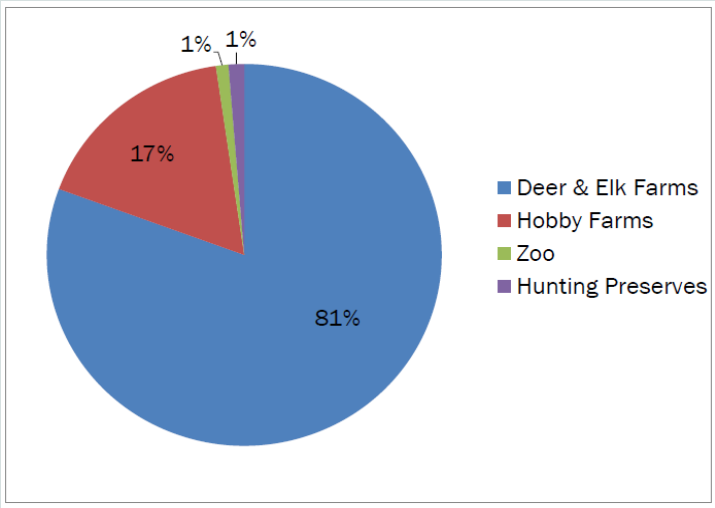


Figure 2 : Indiana Deer and Elk Operation Breakdown by 2011 BOAH Permits

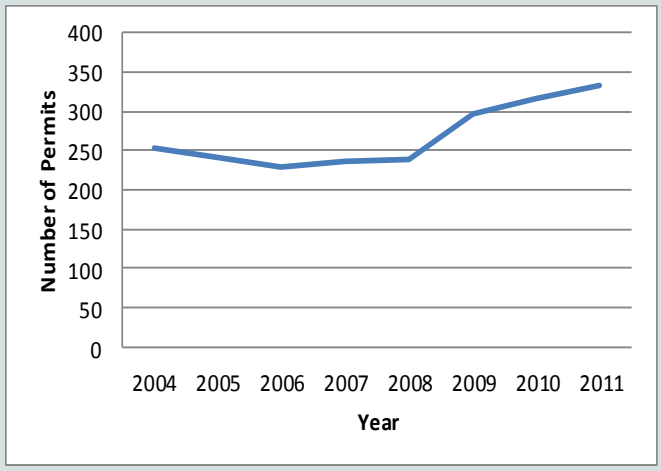


Figure 3 : Total Indiana Licensed Game Breeders with Deer 2004-2011 by DNR permits

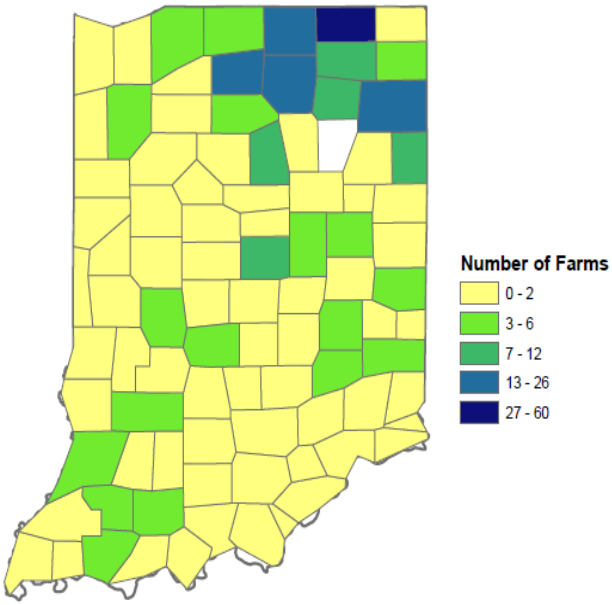


Figure 4 : Number of Deer and Elk Farms by BOAH Permit

The Indiana Department of Natural Resources (DNR), in addition to BOAH, monitors deer breeding facilities in Indiana. Licensed breeders in the state have increased 19 percent since 2006, with a majority of the distribution of farms in the northeastern part of the state.

The top 10 counties for BOAH permits in 2011 were, LaGrange, Marshall, Elkhart, Kosciusko, Allen, Noble, Miami, Whitley, DeKalb, and Adams Counties. These counties are diverse in their economic and population characteristics. According to the US Census Bureau statistics for these 10 counties, the population average is 90,877 people. The number of people living per square mile ranges from 98 persons to 541. Mean household income varies from $39,392 to $48,451, with an average of $44,920. Poverty in these counties also ranges, with 8% to 17% of people living below poverty line.

Table 1: Top Ten Deer and Elk Farming Counties in Indiana

County	BOAH permits	Population	Persons per Sq. Mile	Mean Household Income	Persons below the poverty line
LaGrange	60	37,128	97.8	$45,578	13.2
Marshall	27	47,051	106.1	$46,767	13.6
Allen	26	355,329	540.6	$47,284	14.6
Elkhart	23	197,559	426.5	$43,531	14.4
Kosciusko	20	77,358	145.6	$47,152	10.8
Noble	12	47,536	115.7	$43,350	13.9
Miami	12	36,903	98.7	$39,392	17
DeKalb	10	42,223	116.4	$44,702	9.6
Adams	8	34,387	101.4	$42,994	15.8
Whitley	7	33,292	99.2	$48,451	8
Indiana	388	6,483,802	181	$45,427	14.4

Source: 2010 US Census Bureau and BOAH premise IDs

Using the 2002 and 2007 USDA Agricultural Census, we further identify areas of the state with growth and declines in deer and elk Inventories. Counties that have seen an increase in deer inventories are represented by purple circles and those represented in blue circles have seen a decline between survey years.

The Agricultural Census shows growth and decline in the elk farming industry. Only four counties had enough observations to be reported in the Census. Three of these counties, Knox, Putnam and Sullivan Counties, have increased their elk herds, while Greene County has seen a complete decrease of their 2002 herd. It is important to note that the Agriculture Census does not publically report county data with less than 3 observations. However, the BOAH premise ID data indicates that there are 59 Elk farms in Indiana in 2011.

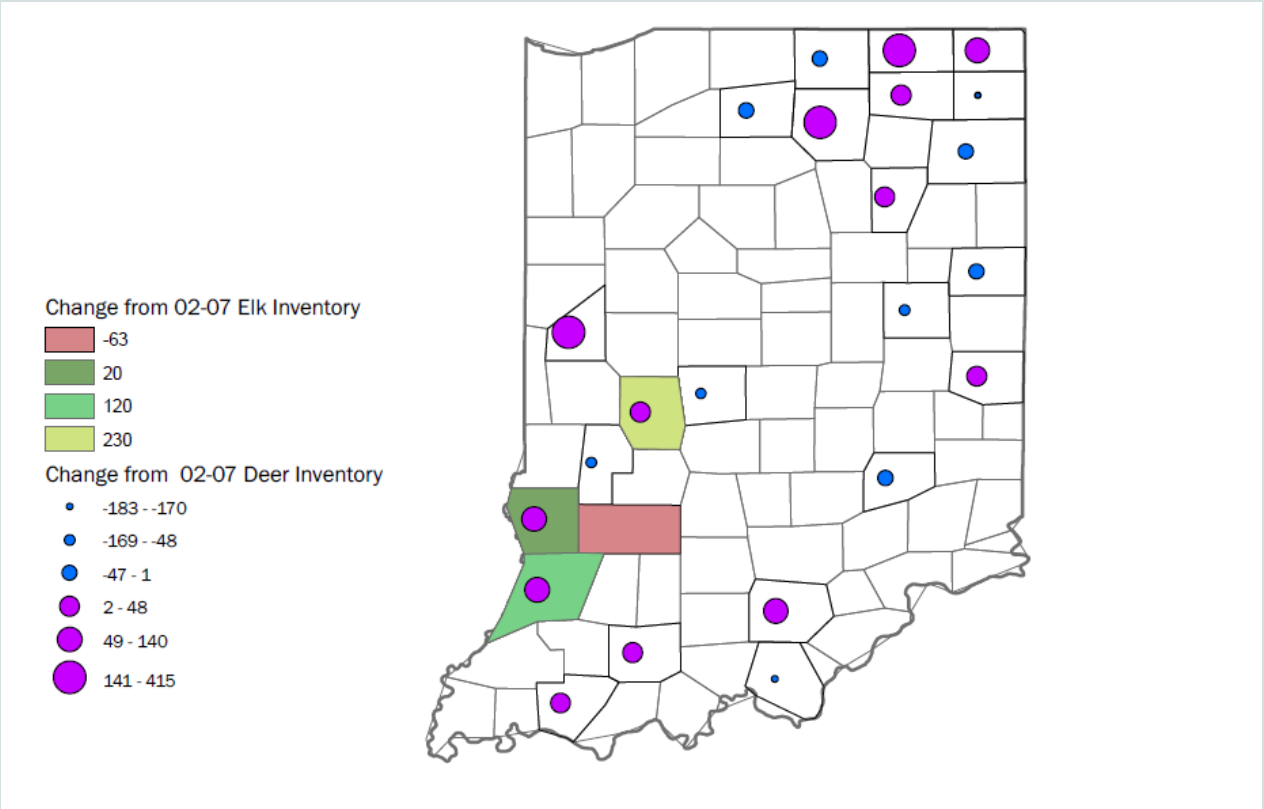


Figure 5 : Change in Deer and Elk Inventories from the 2002 to 2007 Ag Census

Survey Methodology

The primary objective of this study is to estimate the economic impacts of the cervid industry in Indiana. The Indiana Deer and Elk Farmers Association (IDEFA) created and disseminated two survey instruments to current IDEFA members. The survey was segmented into breeding operations and breeding and hunting operations. Hobby farms were also included in the distribution of the survey. IDEFA members were asked to fill out the survey and mail the responses back between September and end of October 2011. Overall, the response rate for the Breeding Farm Survey was 20% and the response rate for the Hunting and Breeding Preserves was 75%. The responses were then statistically analyzed by Lee and English.

The Breeding Farm Survey asked information on animal sales and purchases, herd inventory, operations and facilities, and equipment, veterinary and feeding expenses. The hunting preserve survey included the same information as the breeding survey with additional information on hunters and hunting specific operational expenses. Both surveys can be found in Appendix C and D.

Because the survey was not randomly distributed, survey responses based on the date the operation began were compared to the Indiana Division of Natural Resources (DNR) permits by year for deer breeding operations from 2004-2011. Figure 6 illustrates that survey responses are proportionally consistent with the DNR permit data. County level totals can be found in Appendix A.

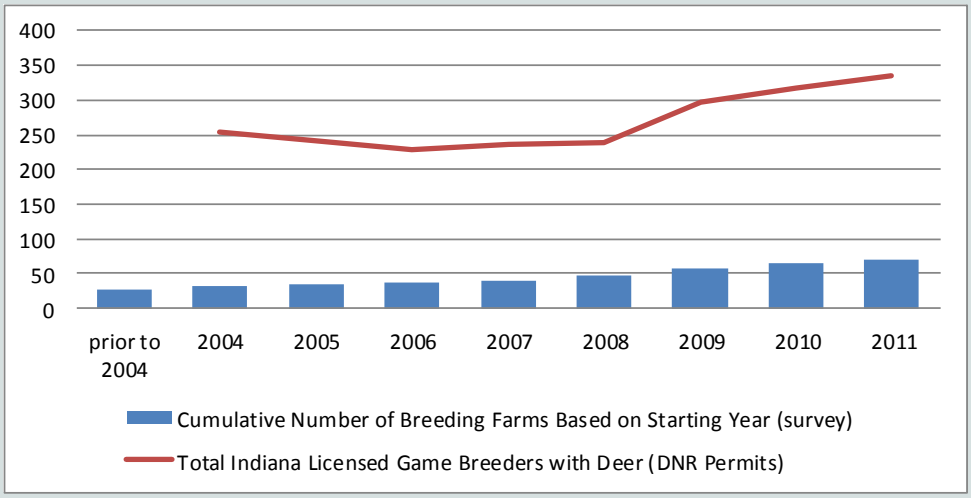
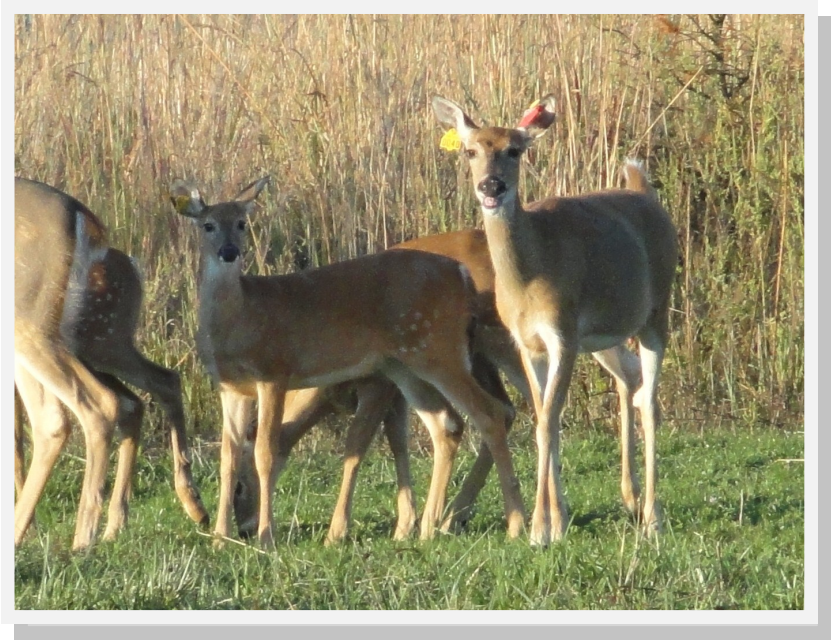


Figure 6: Comparison of Survey Results to DNR Permits 2004-2011

The distribution of surveys returned from the different types of operations were, 75 Breeding Farm surveys, 2 Hunting and Breeding Farm surveys and 1 Hunting Only operation. Within the 75 Breeding Farm surveys, 3 were identified as elk operations and 4 were identified as hobby farms. We included these in our final survey tallies, as the costs of operations, feeding and supplies are still important to account for the costs of managing these animals. Additionally, because there was only one hunting only operation, the results were aggregated into the hunting and breeding operations category.

Survey Results



Survey Highlights

- The response rate for the Breeding Farm Survey was 20% (n=75) and the response rate for the Hunting and Breeding preserves was 75% (n=3). The average breeding farm has been in existence since 2004 and the average breeding and hunting operations have been around since 2000.
- Total purchases for breeding operations were 147 animals purchased in 2010 for a reported total of $475,151
- Total sales for breeding operations were 213 animals for a reported total of $757,228
- Breeding farms average 31 animals per farm
- Expenditure on equipment category for breeding farms last year was over $1.6 million dollars
- Feeding expenses make up 25% of the annual expenses for a breeding farm operation

Animal Purchases and Sales

Reported from the breeders only survey, there were 147 animals purchased in 2010 for a total of $475,151. Breeder Bucks averaged a price of $11,795 and averaged one animal per purchase. Bred does purchased by farm averaged $3,858, and open does averaged a price of $2,110 per animal. As for fawns purchased, buck fawns were averaging $1,932 and doe fawns were averaging $3,056 per animal. While some of these values seem high, especially for fawns, deer and elk are valued on several characteristics, including pedigree, genetics, and antler size, which can radically change the market value of the animal. Therefore, these animals are considered highly differentiated products and prices for each animal can vary widely based on pedigree.

Reported in Table 2 are the average number of animals per sale, the average amount spent annually by farm and the average amount spent per animal. The average amount spent per animal, will be larger (smaller) in comparison to dividing the average amount spent per sale by the average number of animals per sale. This difference accounts for the fact that, some surveys did not report the number of animals only gross purchases and sales. Dollars per animal are only calculated for surveys that had both $/sale and animal number purchased.

Table 2: Average Purchases and Sales of Cervid Industry Survey Respondents

	Breeders Only			Breeding & Hunting		
	Average			Average		
Purchases	Animal/ sale	$/ sale	$/animal	Animal/ sale	$/ sale	$/ animal
Bred Doe	3	$8,670	$3,858.93	11	$11,667	$5,000
Breeder Buck	1	$11,795	$11,141.67	4	$30,000	$7,500
Fawn - Buck	2	$3,182	$1,932.01	10	$6,667	$667
Fawn - Doe	2	$5,460	$3,056.67	10	$6,667	$667
Open Doe	3	$6,936	$2,110.98	20	$13,333	$667
Stocker &Trophy Buck - Hunting	N/A	N/A	N/A	68	$135,000	$2,214
Does - Hunting	N/A	N/A	N/A	25	$7,000	$250
Semen	3	$8,218	$1,857.28	4	$12,000	$3,000
Sales						
Bred Doe	4	$12,319	$3,117.22	-	$2,000	-
Breeder Buck	1	$11,469	$9,546.67	10	$50,000	$5,000
Fawn - Buck	5	$6,938	$1,866.07	10	-	$0
Fawn - Doe	4	$3,789	$1,728.81	20	-	$0
Open Doe	4	$3,700	$1,868.37	80	$75,000	$938
Semen	19	$13,847	$745.00	80	$20,000	$250
Stocker Buck	4	$13,661	$3,132.72	8	-	$0
Harvested Does	N/A	N/A	N/A	18	$11,847	$585
Harvested Bucks	N/A	N/A	N/A	5	$9,235	$1,847
Harvested Trophy Bucks	N/A	N/A	N/A	67	$291,338	$5,087
Other value added	N/A	N/A	N/A		$2,000	

Total sales for breeding operations were 213 animals, for a reported total of $757,288. The animals varied in prices, but were similar to purchase prices in all but the per unit price for semen, where the difference in average price per straw was over the per unit price of $1,145. The average price of does fawns sales were averaging $1,600 less per animal than those being purchased. Buck fawns saw an increase of $3,756 from average purchase price to average sale price.

For hunting and breeding operations, breeder bucks averaged a price of $7,500 and averaged 4 animals per purchase. Bred does averaged a price of $5,000, and open does averaged a price of $667 per animal. As for fawns purchased, the average amount per animal was also approximately $667. Breeding and hunting operations bought larger quantities of animals, but on average spent less per animal. The main driver in purchase decisions for these operations were animals used in the hunting side of their operations. This can be seen especially in the volume and average purchase price of stocker bucks used in the hunting preserves, where on average, an operation purchased 68 bucks for $135,000. This results in an average purchase price of $2,214 per animal.

The high dollar sales for the breeding and hunting operations were in breeder and trophy bucks. These averaged over $5,000 per animal. Total sales of the trophy bucks for 2010 was slightly over $874,000 for 200 animals. In 2010, each hunting preserve averaged 81 hunters and over 93 percent of hunting preserve clients were from out of state and 7 percent were international. These hunters not only pay lodging, food, travel expenses, and guide tips, in addition to processing taxidermy costs, they also buy hunting equipment and supplies from local sporting good retailers. It should be noted that trophy buck pricing is based on the Boone and Crockett point system, which resembles price and grading of diamonds. Length, circumference and antler points result in a overall point score for the buck. Regionally, an Ohio hunting preserve markets trophy bucks for the following prices: $2,750 for 150 points, $4,750 for 170 points, and over $11,000 for a 191-200 point rack.

Herd Inventory

The average herd size for breeding farms was 31 animals, with the smallest herd of 2, and the largest with 178 animals. The typical herd is comprised of 14 does, 11 stocker bucks and 2 breeder bucks, averaging 10 fawns born a year. Herd mortality was reported at 9%, though one survey respondent lost 80% of his herd to an EHD outbreak, excluding this outlier, the mortality rate is approximately 7.7% annually. The mortality rate was reported on the total breeding herd including the loss of fawns after weaning.

For hunting and breeding operations the average herd size for breeding, was 96 animals, comprised of 61 does, 23 stocker bucks and 21 breeder bucks. The rate of conception for these operations were lower and herd mortality was higher than for the breeding only operations. For the hunting side of the operation, the average herd size was 100 animals, with an average of 9 animals released from the breeding operations. On average, 72 deer were harvested through hunting on each preserve.

Reported in Table 3 are the breakdowns of the breeding and breeding and hunting operation's herd sizes and demographics.

Feeding and Hay Expenses

Feeding and hay expenses account for over $8,536 of the average annual expenditures for breeding operations. Typically 56% of the fawns are weaned for an average of 81 days. Bringing the fawns to weaning costs on average $214 per animal. Breeding and hunting operations, covered on average 159 acres total, with 11 acres dedicated to their breeding operations. Breeding only operations averaged 11 acres with 6 acres dedicated to pens. On average, operations had 6 deer per acre. Operations with 6 or more deer to acre, spent on average $8,724 on feed and hay.

Table 3: Average Inventories of Indiana Cervid Industry Survey Respondents

(number of animals)	Breeding Only	Breeding & Hunting
Breeding		
Herd Size	31	96
Breeder Bucks	2	21
Stocker Bucks	11	23
Does	14	61
Average Number of Does Bred	10	15
Average Rate of Conception	9.4	2
Average Number of Fawns	14	30
Herd Mortality	9%	30%
Hunting		
Herd Size	N/A	110
Deer released from Breeding Herd	N/A	9
Stocker Bucks Released for Hunting	N/A	7
Deer Harvested	N/A	72

Fenced Raceway

Operations and Facilities

Deer and elk breeding operations have a variety of costs, some of them are costs that can be annuitized over the life of the farm and then there are costs that occur on a yearly basis. We assume that annuitizing the costs of fencing over 10 years, buildings over a life of 15 years, handling facilities over 10 years, equipment over 5 years and a 10% interest rates.

The yearly annuitized expenses for a breeding operation can be found in Figure 7. Feed and hay costs account for 25% of annual expenditures, followed by maintenance and repair and improvements (which refers to land clearing, roads, forage, and water sourcing costs) and physical capital (working pens, fencing and buildings). The other categories are less than 16% of the total expenditure each. The miscellaneous category is further broken down in Figure 8. Over all of the expenditure categories, breeding farms spend on average $47,709 a year on operations and facilities.

Non-annuitized average costs for all surveys, separated by breeding farm only and breeding and hunting operations are reported in Table 5. In the Facilities section of Table 5, one can see that on average breeding farms have a total cost of over $12,000 in fencing and over $14,500 in buildings. Over 61% of the breeding operations have a handling facility and have spent on average $7,133. On average, a breeding operation has 5 pens, which cover an average of 6 acres.

Equipment

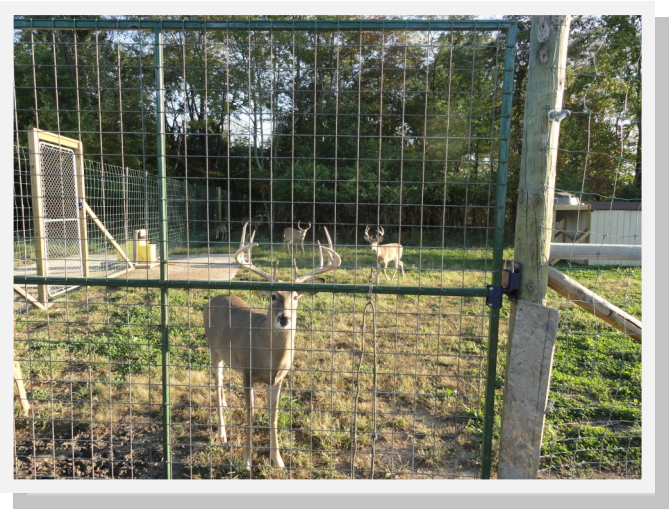
The equipment category includes all large equipment (bulldozers, tractors etc.), ATVs, farm vehicles, including trailers and transport equipment, feeding equipment (bulk bins, other feeding, watering equipment), video equipment, semen storage sedation equipment, other, and rental equipment used in the farming and hunting operations. Equipment costs are a large part of the fixed costs of operating a deer and elk farm. The sum total reported for this expenditure category just in 2010 was over $1.6 million dollars. Though it is important to note that these are costs that are spread over time in the operation. Assuming a 5 year useful life for equipment, the average annualized cost on these resources is $426,496 in total for the survey respondents.

The category with the largest expense is the large equipment category, where operations spent on average $19,373. The large equipment category maxed out at $150,000. Farm vehicles and ATVs were the second and third highest expense with an average of $16,419 and $9,886 respectively. Feeding equipment averaged $1,875 for bulk feeding bins, $1,588 for watering equipment and $1,212 for feed equipment.

Custom Handling Chute, manufactured in Indiana

Veterinary Expenses

Maintaining herd health is an important piece of managing the operation. Veterinary services include sedations, disease testing, necropsies, and artificial insemination. Veterinary services and medical supplies on average cost $3,390.



Although the survey did not ask about any other testing for disease above Chronic Wasting Disease (CWD), herds in Indiana are typically tested for bovine tuberculosis, brucellosis and Epizootic Hemorrhagic Disease (EHD). The State of Indiana restricts imports of live animals, animal products and semen on the basis of CWD testing. The average number of CWD testing from the survey was 12 animals per farm at an average cost per animal of $70. Thirty-seven farms reporting that testing had taken place. Requirements for exporting deer and elk and their animal products out of the state, depends on the rules and regulations of the importing state.

Veterinary services are also used for the breeding of the animals. Twenty-three farms reported having semen storage, 27 farms purchased semen, and 36 farms used artificial insemination. Because deer and elk are valued on numerous characteristics, their pedigrees which can result in higher scoring racks, DNA testing is done on some animals. For our survey, DNA testing was used on 28 farms, at an average cost per farm of $428. Typical per animal DNA test costs between $65-70 per animal.

Specific veterinary expense categories were not reported for the two breeding and hunting operations.

Table 4: Average Veterinary Costs of Cervid Industry Survey Respondents—Breeding Farms Only

Service	Number of Animals	Average cost
Does Sedated	7	
Bucks Sedated	8	
Sedation Costs		$27.58
Does Artificially Inseminated	10	
Necropsies	3	$107.00
CWD testing	12	$70.87
DNA testing	12	$428.91

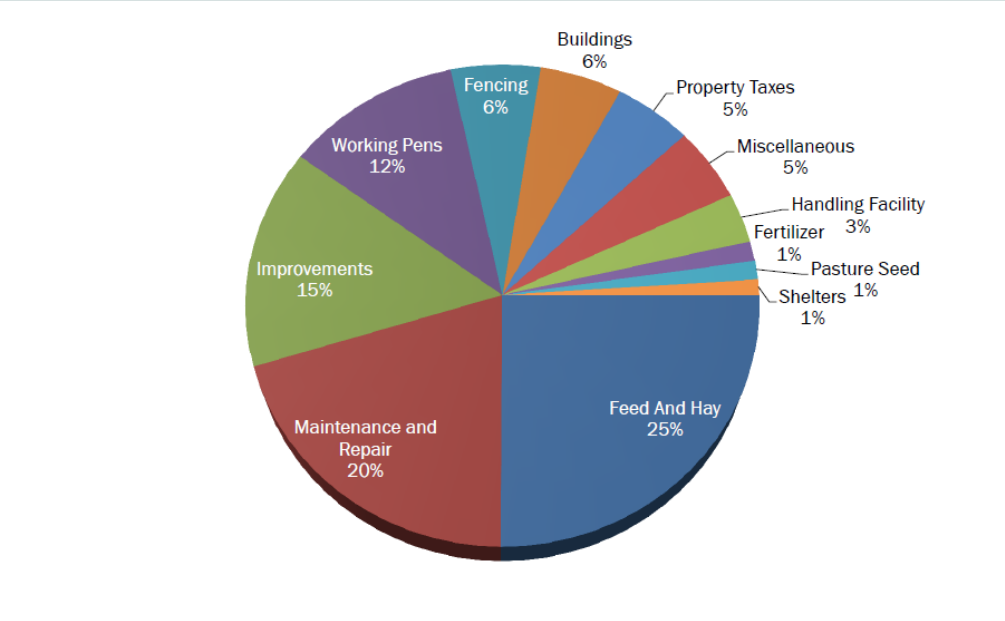


Figure 7: Percent of Average Annual Expenditures for Deer & Elk Farms

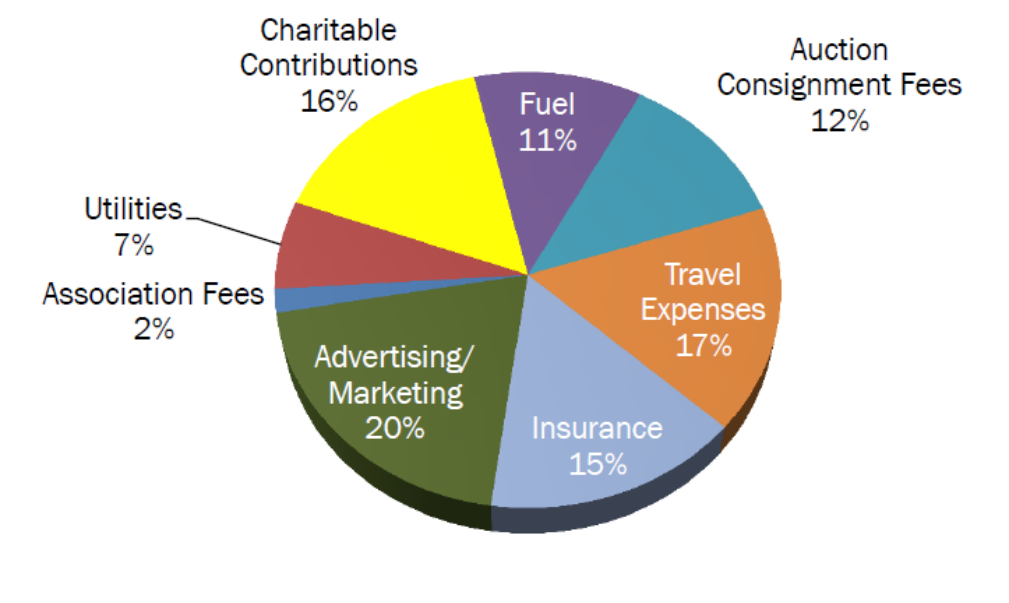


Figure 8: Percent of Average Annual Miscellaneous Expenditure

Table 5: Average Annual Operational Costs of Deer & Elk Survey Respondents

(in dollars)	Breeding Only	Breeding & Hunting
Operation		
Year started	2004	2000
Area of breeding (acres)	11	11
Area of hunting (acres)	N/A	159
Land purchased (acres)	11	62
Average Purchase value ($/ac)	$9,743	$5,767
Facilities		
Capital cost of lodge(s)	N/A	$118,333
Number of pens	5	12*
Area of pens (acres)	6	11*
Fencing	$12,349	$55,053
Shelters/Blinds	$2,646	$9,833
Improvements	$5,034	$7,000
Buildings	$14,552	$19,500
Working pens	$3,934	$4,000
Percent with Handling Facility	61%	67%
Cost of Handling Facility	$7,133	$15,000
Maintenance and Repair	$6,865	$17,800
Miscellaneous Expenses		
Association Fees	$238	**
Advertising/Marketing	$2,738	$6,500
Charitable Contributions	$2,161	**
Travel Expenses	$2,286	$3,761
Auction Consignment Fees	$1,660	**
Property Taxes	$1,775	$1,500
Insurance	$2,123	$2,940
Equipment		
Large equipment	$19,373	$24,000
ATV(s)	$9,886	$12,500
Ranch vehicles	$16,419	$18,713
Implements	$6,896	**
Trailers/crates	$3,586	$12,440
Bulk feed bins	$1,875	$2,667
Feeding equipment	$1,212	**
Watering equipment	$1,589	$500
Video equipment	$1,779	$2,083
Rental equipment	$686	$1,000
Sedation equipment	$730	$1,660
Semen Storage	$794	$2,733
Other	$1,838	$1,849

Table 6: Average Annual Operational Costs of Deer & Elk Survey Respondents, cont.

(in dollars)	Breeding Only	Breeding & Hunting
Utilities		
Utilities	$898	$2,832
Fuel	$1,570	$9,786
Supplies & Veterinary Services		
Operating supplies	$2,828	**
Feed and Hay	$8,480	$19,007
Veterinary/Medical supplies	$3,391	$4,605
Lodge supplies	N/A	$35,789
Lodge food and beverages	N/A	$3,600
Labor		
Employees paid salary	2	1
Employees paid hourly	6	4
Total wages paid	$23,253	$49,500
Outsourced services	$2,561	$6,605

* Only relates to the breeding side of the breeding and hunting operations
** No expenses reported in these categories

Economic and Rural Impacts

The overall economic impact of a sector or industry can be divided into three distinct categories. These categories include the direct, indirect and induced effects from the operation of that industry. These effects can be within the state, regional or global in their impacts.

For the deer and elk farming industry in Indiana, the direct effects relate to sales, income and employment generated predominantly by participants. Sales represent the overall value for deer and elk products and stock sold. This segment includes live animal sales for breeding and hunting, hides, semen, antlers, velvet, processed meat products, etc. Income relates to salaries and wages paid to those directly employed in the sector.

The indirect effects relate to the purchases made by the deer and elk farming enterprise from other sectors in the economy. These purchase reflect both products and services required by the industry to operate. Examples of these inter-sector linkages include the purchases of equipment, feed, fencing, veterinary services, transportation, utilities, insurance, etc. In many cases, these purchases represent sales to other local businesses, which provide these services to the deer and elk farming industry. The expenditures result in economic impact multiplying through the other sectors of the rural economy.

The induced effects from an industry results from other businesses and spending activities that benefit from the initial activity. In this study, the induced effect is through the spending by other businesses and people in the state of Indiana that support the deer and elk farming and cervid hunting preserves. Catered meals to hunting lodges involves local businesses that start with the caterer purchasing food, hiring staff, buying equipment and vehicles from other local businesses. Through these activities, incomes and profits are spread throughout the local and state economy that originated with the deer and elk farming industry.

The total economic impact of the deer and elk farming industry is the sum of the direct, indirect and induced effects. For this analysis, the IMPLAN (Impact Analysis for Planning) model developed by the USDA Forest Service provided the framework with coefficients from Indiana was used to estimate these different impacts from the deer and elk farming industry. Specifically, results from Purdue Extension Report ID– 354 The Economic Impact of the Indiana Livestock Industries provided sector relevant multipliers. These multipliers are reported in Table 7.

Table 7: Indiana Livestock Sector Multipliers

	Direct Effects	Indirect Effects	Induced Effects	Total
Output	1	0.588	0.236	1.824
Labor Income/ $ Output	0.157	0.144	0.077	0.378
Employment/ Million $ Output	5.26	4.62	2.71	12.59

Table 8: Direct, Indirect, and Induced Impacts of Deer & Elk Farming in Indiana

	Output	Labor Income	Employment
Direct	$27,037,505	$4,246,781	378
Indirect	$15,898,052	$3,887,249	124
Induced	$6,391,666	$2,081,126	73
Total	$49,327,223	$10,215,156	575

The total economic impact of the deer and elk farming in Indiana is estimated to be $49,327,223 for 2010. This includes the value of output or sales of $27,037,505. The industry generates over $22,289,718 in indirect and induced effects for the economy of Indiana. Total labor income resulting from deer and elk farming exceeds $10 million dollars annually. Total employment from Indiana's deer and elk farming is estimated at 575 people. It should be noted that this Input/output model result may not accurately reflect the real labor income or employment opportunities for Hoosiers. Many of the deer and elk breeders rely on part time hourly employees or on family members to provide labor. Survey results aggregated to the industry reveal 497 full time employees and over 2,600 part time hourly workers statewide. Producers survey based labor income exceeds $16.2 million dollars annually. In addition, total wages paid by hunting preserve operations for cooks, guides, and labor results in approximately $200,000 in seasonal income. Finally, the deer and elk farming enterprise is predominantly owned and operated by small acreage rural land owners. Many of these deer and elk farmers engage in this activity as a means to improve household income and employment in economically limited rural communities.

Rural Impacts

In order to better gauge the significant local impact of deer and elk breeding in Indiana, a distinction must be made on how rural these areas are within the state. Distinguishing an area based on its relative rurality score may better aid policy makers in selecting policies that are focused on improving the livelihoods of rural Indiana citizens. Using estimates from Waldorf (2007), the top 10 BOAH premise ID counties are given a relative rurality score which is more nuanced than other metrics of the rural-urban nature. The closer to one, the more rural the county is considered. The top ten counties by BOAH permits in 2011, the rurality index ranges from 0.2 to 0.49 for 2000. These counties have become less rural from 1990 to 2000, except for Whitley County. It should be noted that the maximum rurality score of Indiana is 0.57. The majority of deer and elk farms are located in very rural counties based on this scoring system.

Table 9: Relative Rurality of Indiana counties

	BOAH permits	Relative rurailty score	
		1990	2000
LaGrange	60	0.53	0.49
Marshall	27	0.44	0.41
Allen	26	0.22	0.2
Elkhart	23	0.28	0.23
Kosciusko	20	0.44	0.38
Miami	12	0.41	0.38
Noble	12	0.45	0.42
DeKalb	10	0.4	0.36
Adams	8	0.43	0.41
Whitley	7	0.45	0.46

Opportunities and Challenges

The future growth of elk and deer farming will be driven in large part by hunting preserves in Indiana. This is due to the high percentage (>90%) of animals purchased from in-state breeders. The following supply and demand graph illustrates this impact (Figure 9). An increase in animal demand by hunting preserves translates into higher prices and more animals sold by deer and elk farmers.

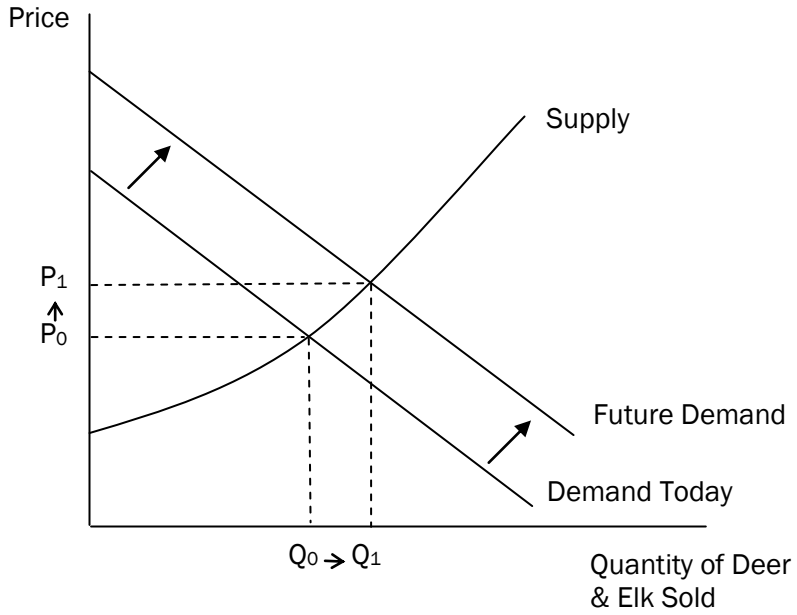


Figure 9: Impact of Expanding Hunting Preserves in Indiana

Using the USDA Agricultural Census to describe the state of regional deer and elk farming operations, there are areas of growth in surrounding states. In regards to deer inventories, the purple circles represent areas where inventories have been increasing. Counties in which elk inventories are increasing are represented by orange circles in Figure 10.

Deer operations in Pennsylvania increased for most counties between 2002 and 2007. The states with the largest increases in operations were in Wisconsin, Michigan, Pennsylvania, Indiana and Ohio. Lancaster, PA had the largest gains with 1531 deer inventory increase from a population of 491 in 2002. Elk inventories in contrast had less increases in inventories. States with the largest increases were in Pennsylvania, Michigan and Indiana. The county with the largest gains was Mercer, PA with a 276 head increase from nothing in 2002.

A 2007 national cervid study done by Texas A&M, there were over 7,828 nationally and the study noted that within this total there are approximately 1,600 Amish operations. For the Amish, deer breeding is considered an opportunity to diversify operations and to turn a profit on a relatively small amount of acreage (Anderson, Frosh and Outlaw 2007). In Indiana, there are approximately 45,825 Amish living in 23 communities, the third largest community in the nation (Young Center for Anabaptist and Pietist Studies. 2011).

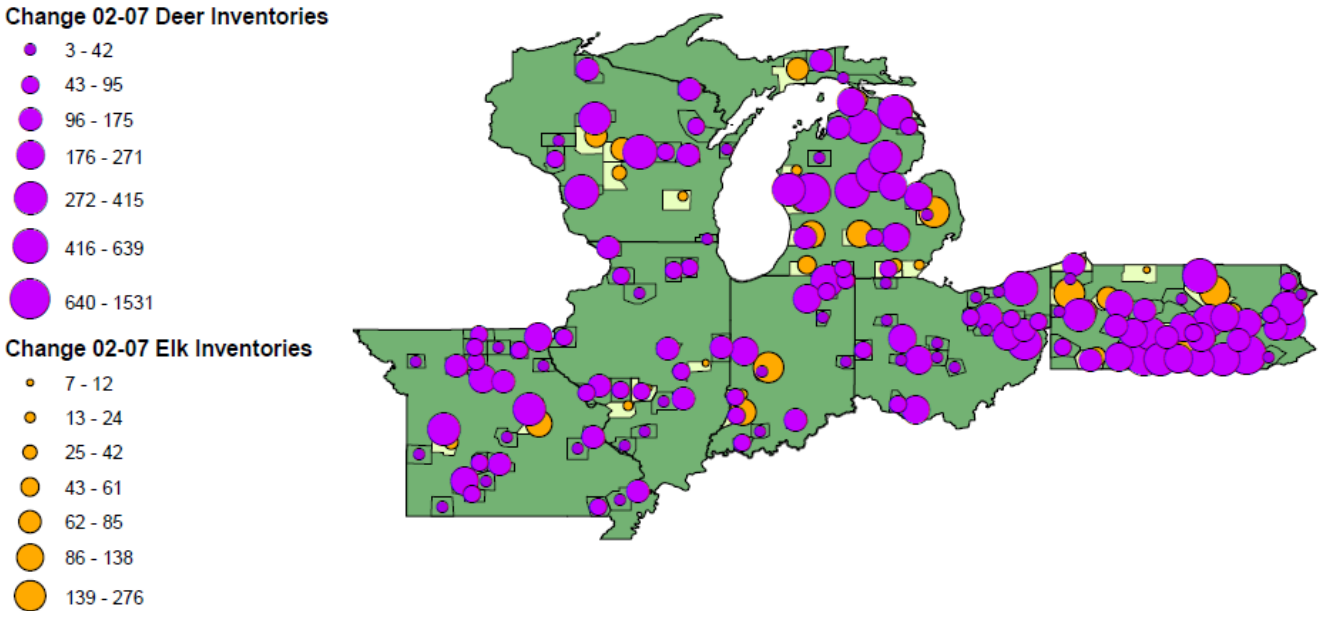


Figure 10: USDA Agriculture Census, Growth in Deer and Elk Inventories from 2002 to 2007

Constraints to growth in the deer and elk farming industry in Indiana may be affected by several current policies. The limitations on current hunting preserves by Indiana House Bill No 1349, prohibits hunting and harvesting of game mammals on existing preserves after July 1, 2013 and does not allow for new hunting operations to be established, with the thought that the four preserves in state will gradually be phased out. By contrast, Figure 9 shows the growth of deer and elk farming in the region. A large percentage of this growth is driven by demand from the hunting preserve sector. For example, Pennsylvania has approximately 1000 deer and elk breeding farms and over 47 cervid hunting preserves. Indiana, in contrast, has 388 farms and only 4 hunting preserves. The deer and elk farm to preserve ratio is 21:1 in Pennsylvania while the ratio is 97:1 in Indiana. The lack of growth and development of hunting preserves in Indiana has resulted in many Hoosier breeders to rely on out-of-state markets.

Another factor that will affect the future growth and development of the Indiana deer and elk farming industry is how other states choose to regulate imports of live animals, semen and other cervid products. A review of different state rules and regulations regarding the cervid farming industry reveals a wide variation in policies. Some states have banned the importation of live animals from other states in an attempt to support their own breeding industry. Other states have restricted importation based on possible health risks and disease spread fears to their herds. Animal breeding operations are always at risk for disease outbreaks from wild herds. DNR and BOAH are monitoring wild Indiana deer herds for the spread of bovine tuberculosis from herds in Michigan and Minnesota. Limiting the geographic market available to Indiana deer and elk farmers will hurt the future growth of this sector.

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Appendices

Appendix A : DNR Permits by County

County	2004	2005	2006	2007	2008	2009	2010	2011
Adams	2	1	1	1	1	4	4	8
Allen	15	19	19	21	21	21	22	22
Bartholomew					1	1	1	1
Benton	1	1	1					
Blackford	1	1	1	1	1	1	1	1
Boone	2	3	2	1	1	1	1	1
Brown	2	2	2	1	1	1	1	1
Carroll	1		1	1	1			
Cass	1		1	1				
Clark	2	1	1	1	1	1	1	1
Clay	2	3	1	1	1	1		
Clinton				1				
Crawford		1	1	1	1	1	1	1
Daviess	7	6	5	7	5	1	1	1
Dearborn	1	1	1	1	1	1		
Decatur	12	5	5	4	6	6	5	4
DeKalb	4	4	5	7	7	8	8	8
Delaware		1	1	1	1	2	2	3
Dubois	4	4	5	6	5	4	4	4
Elkhart	10	9	6	6	10	19	21	23
Fayette								
Floyd								
Fountain	4	3	3	2	2	3	2	1
Franklin	4	4	3	3	3	6	5	5
Fulton	3	3	3	2	3	4	3	3
Gibson								
Grant	7	5	7	5	5	5	5	5
Greene		1	1	1	1	3	3	3
Hamilton	3	3	4	4	5	7	6	7
Hancock								
Harrison	3	3	2	2	1			
Hendricks	2	2	2	1	1	2	2	2
Henry								
Howard	1	1	1	1	1	1	1	1
Huntington	1	1	1	1	2	1	1	1
Jackson	1	1	1	1	2	2	1	1
Jasper	3	4	3	1	1	3	5	5
Jay	2	3	3	2	2	2	2	2
Jefferson	1	1	1	1	1	1	1	1
Jennings	3	1	1	1	2	2	2	1
Johnson					1	1	1	1

County	2004	2005	2006	2007	2008	2009	2010	2011
Knox	3	3	3	3	3	4	3	2
Kosciusko	11	13	11	12	16	19	21	23
LaGrange	27	33	33	38	37	53	57	66
Lake	2	2	2	3	3	2	2	3
Laporte	1		1	1	1	1	1	1
Lawrence						1	1	1
Madison	3	3	2	1	1	2	4	2
Marion		1				1	2	1
Marshall	11	9	8	13	16	24	27	28
Martin								
Miami	6	5	9	11	9	11	12	13
Monroe							1	1
Montgomery				1		1		1
Morgan	8	9	7	7	4	4	4	4
Newton	1	1	1	1	1	1	1	1
Noble	6	6	5	7	8	10	11	16
Ohio								
Orange								
Owen	2	2	2	1	1	1	1	1
Parke	2							
Perry	1	2	2	1	1	1	1	1
Pike	6	5	4	5	2	2	3	3
Porter	2	2	2	1				
Posey				1	1	1		1
Pulaski	2	1	1	1				
Putnam	2	2	2	2	2	2	2	3
Randolph							1	
Ripley	5	1	1					
Rush	2	1	1	1	1	1	1	1
Scott	2	1	1	2	2	2	2	
Shelby								
Spencer								
St. Joseph	8	8	6	4	5	5	6	6
Starke	2	2	2	1	1	1	1	1
Steuben	1	1	1	1	1	1	1	2
Sullivan	4	4	4	2	1	1	1	1
Switzerland								
Tippecanoe	5	4	4	4	4	5	5	4
Tipton								
Union								
Vanderburgh							1	1
Vermillion	1		1	1	1	1	1	1
Vigo	3	3	3	3	1	1	2	1

County	2004	2005	2006	2007	2008	2009	2010	2011
Wabash	4	4	2	4	3	2	2	2
Warren	2	2	1	1	2	2	1	1
Warrick	5	5	4	5	5	7	7	6
Washington	3	2	1					
Wayne							3	3
Wells		1	1	1	1	1	1	2
White	1	1	1	1	1	1	2	2
Whitley	4	5	4	5	6	10	12	10
Grand Total	253	242	228	237	239	298	317	334

Appendix B: IDEFA Survey Letter

August 2011

Dear Deer Farmer,

Deer farming is a unique and little known industry within the state of Indiana. As such, it is important to let our state legislators know and understand the economic impact brought into the state by deer farmers. The impact reaches beyond the property boundaries of the farm itself, but well into the local communities through the spending of farm dollars in your community.

The Indiana Department of Natural Resources (DNR) manages their deer herd, (the wild deer population) through the sale of hunting licenses. Wild deer populations grow to a point of exceeding the area holding capacity. When the wild herd population reaches elevated levels, crop damage increases, nuisance deer complaints in residential areas increase and more critically, deer/vehicle collisions increase with often deadly results to both deer and humans. In severe circumstances populations reach a level where the health of the herd itself is at risk (disease, starvation, etc.).

Wildlife Biologists working for the DNR will establish and recommend a desired wild deer holding capacity for each county within the state. They methodically study area populations and adjust both total numbers and gender specific numbers with the issuance of harvest tags. In extreme cases, "Controlled Hunts" are established such as in parks where the deer have lost their fear of humans and populations have burgeoned. These control functions of the DNR are funded either all or in part by Hunters. Using licensing, the DNR "sells" their surplus herd to their terminal market, the hunting public. This is a very effective, tried and true method used throughout the United States.

All commercial livestock operations utilize terminal markets. Hunting is the terminal market used not only by the DNR with the public herd, but by every commercial Cervidae Farmer for his/her herd as well. Most of the whitetail bucks generated both in the wild, and on commercial Cervidae Farms will travel through this terminal market. In essence, the DNR runs a statewide Hunting Preserve. However, the Cervidae Farmer does not have unencumbered access to the public hunting market. They have two markets in which to sell the product of their investment; 1) Breeder Market, and 2) Hunting *Preserve*. The breeder market trade is only as strong as the value of the Whitetail Bucks it generates through selective breeding. Ultimately, the sale of these magnificent animals is to the hunting public, but this can only happen through the use of "Hunting Preserves." However, due to current administrative order, access to this is highly restricted, and market entry to new preserves is closed. It is for this reason the Cervidae Industry within the State of Indiana must unite and work together with one common message to our Elected Officials. Deer Farming is a livestock business! In nearly all cases, this is one of the last frontiers of "small family farms" in the state. The Hunting Preserve is not only the primary market, but the ONLY market for this production. The State needs to reconsider its position on this job creating, revenue generating industry, and protect this small family farming business by changing its position on whitetail hunting in Hunting Preserves. There are now only four Hunting Preserves in the State of Indiana. There are 400 Cervidae Farms. This forces our small business owners to try and find markets outside of Indiana, in which to market their production.

Please help support the advancement of our industry by filling out the attached survey and returning it in the enclosed envelope, by September 15, 2011. We are working with Purdue University in quantifying the information generated. We want to accurately quantify the economic impact of the Cervidae Industry in the state so that we can share this information with our elected officials to aid them in making the right decision on this Critical Issue!

Thank you in advance for your expedient response and cooperation in this study.

IDEFA Board of Directors

Appendices

Appendix C: IDEFA Breeding Farm Survey

Economic Impact Study

2010 Results

Breeding Farm

Instructions and clarification are provided at the end of this survey. Include annualized ***2010*** figures where appropriate.

I. Operation

1. Year started: _____
2. Area of breeding operation: _____ (per acre)
3. Purchase value: $_____ (per acre)

II. Herd Inventory (Final 2010 Inventory)

1. Total number of deer:_____
2. Number of BREEDER BUCKS:_____
3. Number of STOCKER BUCKS:_____
4. Number of Does: _____
5. Fawns, 2010:
   5a. Fawning rate: #Does Bred____. Conception Rate_____ (# Does Fawning). # Fawns Born _____.
6. Fawns, 2011:
   6a. Fawning rate: #Does Bred____. Conception Rate_____ (# Does Fawning). # Fawns Born _____.
7. Annual herd mortality rate (including fawns after weaning):_____%

8. Annual *SALES* (Final 2010 figures)

Breeder bucks (#):		Total receipts:	$	Breeder bucks (#):		Total cost:	$
Stocker bucks (#):		Total receipts:	$	Open does (#):		Total cost:	$
Open does (#):		Total receipts:	$	Bred does (#):		Total cost:	$
Bred does (#):		Total receipts:	$	Buck fawns (#):		Total cost:	$
Buck fawns (#):		Total receipts:	$	Doe fawns (#):		Total cost:	$
Doe fawns (#):		Total receipts:	$	Semen straws (#):		Total cost:	$
Semen straws (#):		Total receipts:	$				

9. Annual *PURCHASES* (Final 2010 figures)

III. Facilities

1. Number of pens:_____
2. Area of pens: _____(acres)
3. Cost of fencing: $_____
4. Cost of shelters: $_____
5. Cost of improvements: $_____
6. Cost of buildings: $_____
7. Cost of working pens: $_____
8. Do you have a handling facility? Yes NO
   8a. If *yes*, cost of handling facility: $_____
9. Annual cost of Pasture seed: $_____
   9b. Annual cost of fertilizer: $_____
10. Annual cost of maintenance and repair (Should include value of personal time and labor): $_____

IV. Labor

1. Number of employees: _____
   1a. Paid salary:_____
   1b. Paid hourly:_____
2. Total wage paid:_____
   2a. Salaries: $_____
   2b. Hourly: $_____
3. Annual expense, outsourced services: $_____

V. Equipment

Purchase Price Of:

1. all large equipment, combined (i.e. tractor + bobcat): $_____
2. all ATV(s), combined: $_____
3. all Farm vehicle(s), combined: $_____
4. all implements, combined: $_____
5. all trailer(s)/transport crate(s), total: $_____
6. all bulk feed bin(s), combined: $_____
7. all feeding equipment, combined: $_____
8. all watering equipment, combined: $_____
9. all video equipment, combined: $_____
10. semen storage tank(s): $_____
11. dart gun/sedation equipment: $_____
12. Other equipment (describe): $_____
13. Annual cost of rental equipment: $_____

V. Veterinary & Supplies

1. Annual cost of operating supplies: $_____
2. Annual cost of feed and hay: $_____
3. Annual cost of medical supplies: $_____
4. Annual veterinary expense: $_____
5. Annual number of sedations: $_____ (per doe)
6. Annual number of sedations: $_____(per buck)
7. Average cost per sedation: $_____
8. Number of does AI'd: _____
9. Number of necropsies performed:_____
9a. Average cost per necropsy: $_____
10. Number of CWD tests performed:_____
10a. Average cost per CWD test: $_____
11. Number of deer DNA certified:_____
11a. Annual cost for DNA certification: $_____

VII. Utilities

1. Annual cost of utilities: $_____
2. Annual cost of fuel: $_____

VIII. Miscellaneous Expenses

1. Annual insurance expense: $_____
2. Annual advertising/marketing expense (includes taxidermy services): $_____
3. Annual travel expense: $_____
4. Annual property tax: $_____
5. Annual Association fees: $_____
6. Annual Charitable/Fund Raising contributions: $_____
7. Auction consignment fees paid: $_____

IX. Feeding

Fawns

1. Do you bottle feed your fawns?
   Yes (continue with 1a-1e) No (skip to 2)
   1a. If yes, what percent of all fawns?_____%
   1b. Average bottle feeding days until weaning:___
   1c. What product do you use?_____
   1d. Units fed per fawn until weaning? _____(gal/bags/lbs)
   1e. Product price: $_____(per gal/bag/lb)
2. *After weaning:*
   2a. Approximate daily feed rate: _____(lbs per fawn)
   2b. Feed price: $_____(per bag/ton)
   2c. Approximate alfalfa/hay daily feed rate: _____(lbs. per fawn)
   2d. Alfalfa/hay price: $_____(per bale)
   2e. Average bale weight: _____lbs

Does

1. Approximate daily feed rate: _____(lbs/doe)
2. Feed price: $_____(per bag/ton)
3. Approximate hay daily feed rate:_____(lbs/ doe)

Bucks

1. Approximate daily feed rate: _____ (lbs per buck)
2. Feed price: $_____(per bag/ton)
3. Approximate hay daily feed rate:_____(lbs. per buck)

Appendices

Appendix D: IDEFA Hunting Preserves Survey

Economic Impact Study: 2010 Results

Hunting Preserves

Instructions and clarification are provided at the end of this survey. For combination Breeding & Hunting operations, please separate hunting expenses from breeding expenses. Include annualized 2010 figures where appropriate.

What is the purpose of your hunting operation (circle one):

Personal use only Corporate clients, no fee Paying clients

I. Operation

1. Year started: _____
2. Area of hunting operation: _____ (acres)
3. Land purchased: _____ (acres)
   3a. Purchase value: $_____ (per acre)

II. Facilities

1. Cost of lodge(s): $_____
2. Cost of fencing: $_____
3. Cost of Blinds: $_____
4. Cost of improvements: $_____
5. Cost of buildings: $_____
6. Annual cost, maintenance & repair: $_____
7. Approximate area of food plots: ___ (acres)
   7a. Annual cost of seed: $_____
   7b. Annual cost of fertilizer: $_____

III. Equipment

Purchase Price Of:

1. all large equipment, combined (i.e. tractor + bobcat): $_____
2. all ATV(s), combined: $_____
3. all Preserve vehicle(s), combined: $_____
4. all implements, combined: $_____
5. all trailer(s)/transport crate(s), total: $_____
6. all bulk feed bin(s), combined: $_____
7. all feeding equipment, combined: $_____
8. all watering equipment, combined: $_____
9. all video equipment, combined: $_____
10. semen storage tank(s): $_____
11. dart gun/sedation equipment: $_____
12. Annual cost of rental equipment: $_____
13. Cost associated with Butchering, Wrapping and Freezing Venison: $_____
14. Purchase price of other equipment: $_____
15. other equipment (describe): $_____

IV. Supplies

(Annual)

1. Protein feed purchased: _____ (tons)
   1a. Protein feed unit price: $_____(per bag/ton)
2. Amount of corn purchased:____(tons)
   2a. Corn unit price: $_____ (per bag/ton)
3. Cost of operating supplies for lodge: $_____
4. Annual cost, food and beverages for lodge: $_____

V. Labor

1. Number of employees: _____
   1a. Full Time: ____ Part Time: _____
   1b. Paid salary: _____
   1c. Paid hourly: _____
2. Total wages paid: _____
   2a. Salaries: $_____
   2b. Hourly: $_____
3. Annual expense from outsourced services: $_____

VI. Utilities

1. Annual cost of utilities: $_____
2. Annual cost of fuel: $_____

VII. Miscellaneous Expenses

1. Annual insurance expense: $_____
2. Annual advertising/marketing expense (includes taxidermy services): $_____
3. Annual travel expense: $_____
4. Annual property tax: $_____
5. Other annual miscellaneous expenses: _____

VIII. Hunters

1. Annual number of hunters: _____
2. Total number deer harvested: _____
3. Approximate total number of deer in your Hunting Preserve area: _____
   3a. approximate total deer that are from your breeding herd: _____
4. Annual number of stocker bucks released from breeding operation into hunting operation: _____
5. Annual number of does released from breeding operations into hunting operations: _____
6. Annual number of stocker bucks purchased for release into hunting operation: _____
   6a. Total expense: $_____
7. Annual number of does purchased for release: _____
   7a. Total expense: $_____
8. Annual number of does harvested: _____
   8a. Total receipts from doe hunts: $_____
9. Annual number of management bucks harvested: _____
   9a. Total receipts from management buck hunts: $_____
10. Annual number of trophy bucks harvested: _____
    10a. Total receipts from trophy buck hunts: _____
11. Average processing cost: $_____ (per deer)
12. Approximate percentage of harvested bucks seeking taxidermy services: _____%
13. Average taxidermy cost: $_____ (per deer)
14. Other Value added services: $_____
15. Annual Venison donated to Food Bank organizations: _____lbs.