Oh Deer!

Study Units

Wildlife Management

Supplemental Information

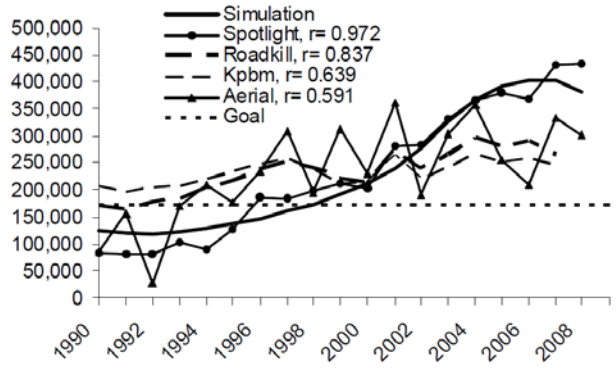
In Iowa, white-tailed deer populations have fluctuated greatly from pre-settlement to present times. There were an estimated 40 million deer east of the Great Plains prior to settlement. Settlers hunted deer because they provided an easy source of meat. This, coupled with several severe winters, virtually eliminated white-tailed deer in Iowa. By the l900s white-tailed deer were no longer found in the state.

Deer populations have rebounded since that time. Escapees from captive populations readily adapted to Iowa's farmland and small woodlots. With adequate food, water, shelter, space, and protection from poaching, population numbers swelled. By 1953, white-tailed deer numbers were estimated at 13,000 and the Iowa legislature voted to allow regulated hunting in some parts of the state. Today, white-tailed deer number over 200,000 and regulated hunting seasons continue throughout Iowa.

Iowa Department of Natural Resources (DNR) wildlife biologists monitor trends in white-tailed deer populations using several techniques. One technique, used throughout the state, is aerial surveys. Observers count white-tailed deer as a small plane flies along transect lines (pre-determined lines of a given length). Aerial surveys are done in January or February. There should be good snow cover and cold temperatures the week prior to the flights so deer band together. This results in a more reliable count. Biologists also conduct spotlight surveys of deer in April and keep records of deer killed along roadways. Information from these three sources is used to identify long-term population trends in Iowa. See *Wildlife Management* to learn about other wildlife surveys.

Wildlife biologists use computer modeling to predict effects of various management strategies on wildlife populations. They monitor populations and compare trends with past management practices so they can fine-tune these models. Hunting is the major source of mortality for white-tailed deer in Iowa. Being able to predict the effect of issuing specific types of deer hunting licenses (e.g., doe only or antlered deer only) on deer populations helps insure healthy white-tailed deer populations in Iowa for the future. The graph here is an example of computer modeling. Refer to the Iowa DNR deer hunting page for the latest review of Iowa's deer management program.

Figure 5. A comparison of the simulated population and the deer trend indices and the management goal after the 2007 season.



Teaching Suggestions

Before doing the activity, review the basic things wildlife needs to survive (food, water, shelter, and space). The *Project WILD* activity, 'Beautiful Basics,' provides a good overview. *Older students:* investigate specific habitat requirements for white-tailed deer: winter cover of timber, cattails, and brushy edge areas; summer food sources of herbaceous plants (clover and alfalfa are favorites); plus major year round food sources (growing crops and waste grain left in the fields after harvest).

Follow the procedure outlined in the activity. Record the data on the ***Oh Deer! Classroom Data Sheet***. After the game, have students (individually or in small groups) complete the ***Oh Deer! Yearly Population Changes Worksheet***.

Once students have graphed their class data, have them graph actual deer survey data found on the ***Oh Deer! Iowa Data Sheet***. These data are aerial, spotlight, and traffic kill survey results for our entire state. Discuss techniques wildlife biologists use to monitor deer populations. Discuss variables that could affect results of these measurements (e.g., not enough snowfall, more alert drivers hit fewer deer, weather conditions affecting the number of deer out on a certain night, etc.).

Factors limiting the classroom deer population probably are habitat components. "They eat themselves out of house and home." The population increases as habitat recovers. Factors limiting Iowa's deer population may not be so easy to see. Without large native predators, predation is not a significant limiting factor. In fact, numbers of deer have increased steadily with a leveling off during the late 1980s and another climb in numbers ten years later and another leveling off.

What factors affect deer numbers in Iowa? Iowa deer use waste grain as a major food source, thus food may not be a limiting factor in normal weather years. The deer herd may continue to increase unless held in check by hunting.

It may be interesting for students to graph the number of deer hunting licenses issued for the same time periods. This graph will give them a good visual clue to the most significant limiting factor for deer in Iowa. Numbers of licenses issued increased steadily until the early 1990s when they declined or leveled off. Deer populations increased by the late 1990s, but as more licenses were issued, growth of the deer population slowed.

In close proximity to humans, as deer numbers build, they become pests and possible sources of danger as they eat landscaping plants and cross busy roadways in search of food. In urban areas and state parks where hunting is not normally allowed, controlled hunts are conducted to reduce deer numbers. Several areas of the state are designated as special deer management zones. Have students discuss what would happen to the deer population if it were not managed with special hunts. Have students research impacts of disease, parasites, starvation, etc. on populations of deer (or other large mammals) when populations exceed carrying capacity for their habitat. Deer Management Zone hunts are another population control technique used by the Iowa DNR since 1990. The Iowa DNR has wildlife biologists in your area. They may have historical data on deer numbers in special management zones, criteria used to designate the zones, and information about the impact management techniques have had on the deer population. It may be interesting to look at numbers for a nearby area that students

are familiar with. You might be able to visit the state park or urban area being monitored and / or research types and amount of habitat present.

Evaluation

See the activity.

Student Materials

- Oh Deer! Classroom Data Sheet
- Oh Deer! Yearly Population Changes Worksheet (classroom data)
- Oh Deer! Iowa Data Sheet
- Oh Deer! Yearly Population Changes Worksheet (Iowa data)

Teacher Aids

- Historical Data on Deer Licenses Issued
- Iowa DNR deer hunting page, look for the latest report on deer management

Additional Materials

- Dinsmore, J.J. 1994. *A Country So Full of Game*. Iowa City: University of Iowa Press.
- Iowa's annual trends in wildlife populations and harvest – Iowa DNR

Oh Deer! Classroom Data Sheet

For each round, record the number of deer lost due to lack of food, water, or shelter.

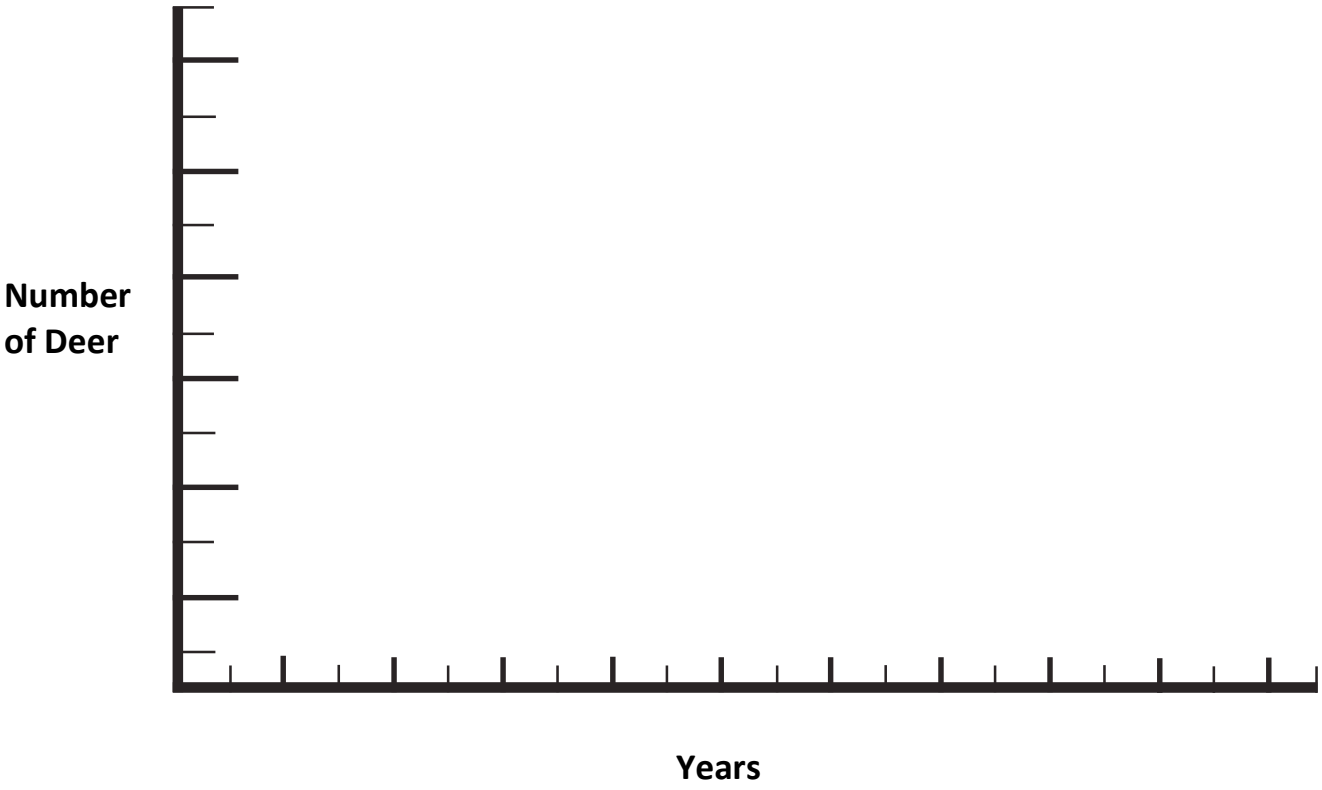
Number of Deer Lost

Years	Water	Food	Shelter	Total Lost	Remaining Herd Size
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

DNR ICEC IOWA CONSERVATION EDUCATION COALITION Project WILD REAP

Oh Deer! Yearly Population Changes Worksheet

Classroom Data



Using your class data, graph your deer population for each year.

1. What are the basic needs for survival?

2. Describe how your deer herd population changed over time.

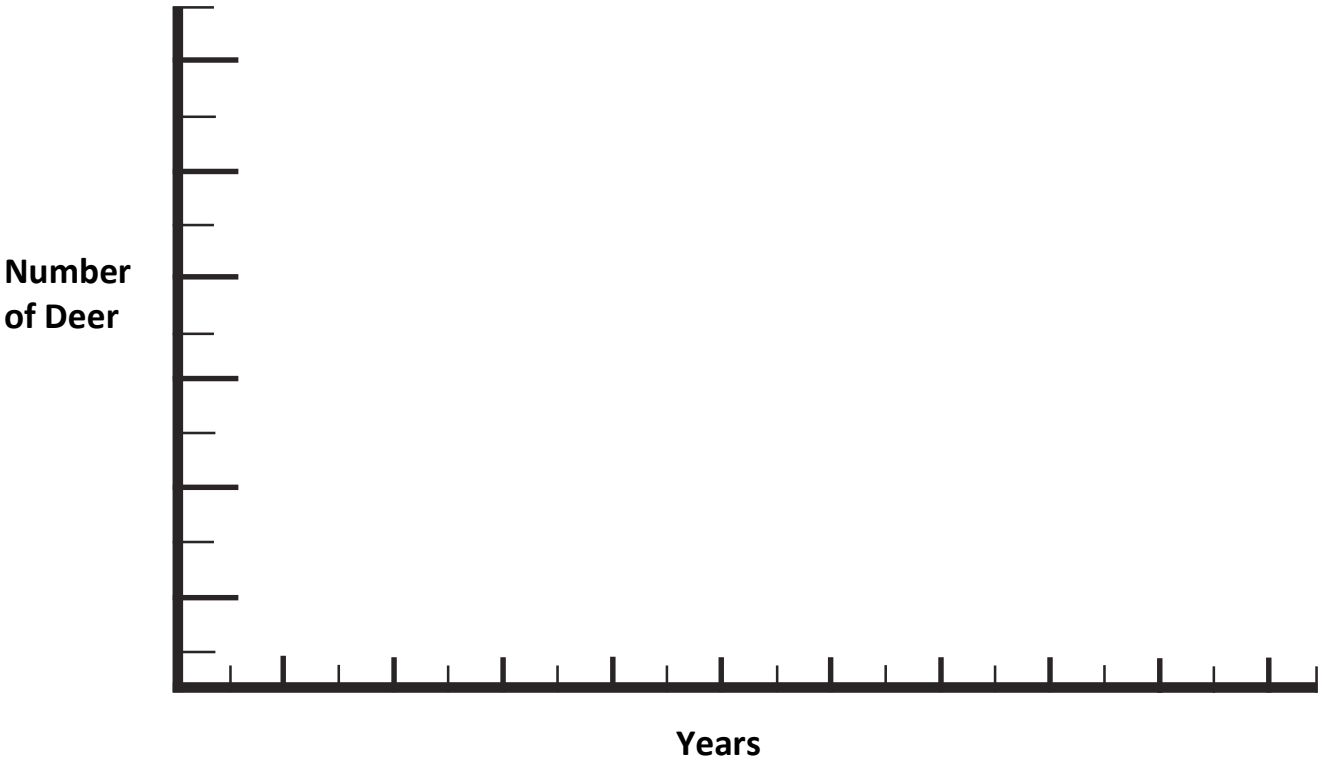
3. Give examples of limiting factors and describe how these would affect your deer herd.

4. Are wildlife population static (e.g. do they remain the same)?

   How can you tell this?

Oh Deer! Yearly Population Changes Workshop

Iowa Data



Using the Iowa DNR data, graph your deer population for each year.

1. Compare this graph to your classroom data graph and describe any similarities.

2. Describe what limiting factors you think would be affecting actual deer populations.

3. What happened to deer numbers from the beginning of the survey data to the late 1980s? Hypothesize causes for this.

4. What happened to deer numbers in the late 1990s? Hypothesize causes for this.

5. Graph the grand total number of licenses issued for the same time period as the population data. Do these numbers explain the changes in the deer population?

Historical Data on Deer Licenses Issued

	Regular Gun			Muzzleloader				
Year	Paid	Landowner	Total	Early	Late	Total	Archery	Grand Total
1995	101,053	18,157	119,210	7,193	8,059	15,463	34,434	177,441
1996	106,746	28,080	134,826	8,806	11,820	20,626	36,351	202,834
1997	109,169	24,423	133,592	8,979	15,049	24,028	37,106	211,118
1998	114,358	25,960	140,318	9,504	12,721	22,225	39,506	223,419
1999	113,695	31,196	144,891	10,246	13,260	23,506	43,687	233,690
2000	113,728	32,116	145,844	10,279	15,242	25,521	44,658	229,800
2001	82,721	14,801	97,522	4,593	7,320	11,913	18,798	136,655
2002	77,940	18,932	96,872	5,091	7,772	12,863	20,703	140,490
2003	96,757	25,353	122,110	6,155	12,049	18,204	26,486	182,856
2004	97,830	26,333	124,163	6,818	13,550	20,368	30,025	194,512
2005	96,110	27,988	124,098	7,209	13,930	21,139	32,986	211,451
2006	76,218	14,956	91,174	5,431	8,698	14,129	22,008	150,552
2007	67,175	13,862	81,037	4,462	10,530	14,992	22,240	146,214
2008	63,330	12,762	76,092	4,342	10,254	14,596	21,793	142,194
2009	58,801	12,630	71,431	4,495	9,482	13,977	23,172	136,504
2010	56,511	11,455	67,966	4,026	8,838	12,864	21,154	127,094
2011	52,130	11,009	63,139	4,427	8,165	12,592	21,983	121,407
2012	49,110	10,931	60,041	3,896	10,823	14,719	21,981	115,608
2013	42,442	9,271	51,713	4,027	6,828	10,855	20,319	99,414
2014	44,910	10,701	55,611	3,700	8,793	12,493	21,128	101,595
2015	45,214	11,041	56,253	4,042	9,604	13,646	22,489	105,401

For the latest license information download the Harvest and Trends Logbook from the Iowa DNR.

Oh Deer! Iowa Data Sheet

Results of Deer Population Surveys

	Spotlight Survey		Aerial Survey			Traffic Kill Per Billion Vehicle Mi.		Bowhunter Obs. (Deer per 1000 hrs.)	
Year	Mean Count	Percent Change	Weighted Count [a]	Percent Change	Traffic Kill	Number	Percent Change	Number	Percent Change
1995	35.3	37%	10,877	4%	11,167	699	5%		
1996	51.1	45%	12,051	11%	12,276	748	7%		
1997	51.1	0%	13,902	15%	13,148	778	4%		
1998	55.9	9%	12,651	-9%	12,427	714	-8%		
1999	59.9	7%	14,928	18%	11,366	634	-11%		
2000	57.2	-5%	15,375	3%	10,389	582	-8%		
2001	79.4	39%	15,793	3%	14,243	799	24%		
2002	80	-2%	13,107	-17%	12,377	662	-1%		
2003	92.5	16%	15,676	20%	13720	726	1%		
2004	101.1	9%	18,028	15%	15,361	803	11%	1,624	
2005	104.9	4%	15,324	-15%	14,364	760	-5%	1,698	5%
2006	55		12,565	-18%	14,940	783	3%	1,736	-2%
2007	59	8%	13,445	7%	13,730	720	-8%	1,667	-4%
2008	71	20%	13,427	0%	10,961	602	-16%	1,500	-10%
2009	68	-4%	13,528	1%	13,518	726	21%	1,482	-1%
2010	58	-15%	13,591	0%	10,153	547	-21%	1,533	3%
2011	58	1%	13,707	1%	10,626	570	4%	1,475	-4%
2012	51	-13%	Discontinued		10,358	554	-3%	1,649	12%
2013	71	40%			9,174	481	-13%	1,352	-18%
2014	61	-14%			9,085	471	-2%	1,340	-1%
2015	66	8%			9,418	478	1%	1,320	-1%
2016	66	0%							

a- adjusted for missing counts