



# Urban Deer Management Plan – St. Andrews

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# What Is The Problem?

- Social carrying capacity
- New development (2010)
- Human health risks
- Property damage



# Accelerating Factors?

- No natural predators
- Abundance of palatable food
- Warm climate



# Impacts

- Private gardens
- Public spaces
- Vehicle collisions
- Lyme disease



# Current Approach – Bow Hunt

	# Harvested	Harvest Rate (%)
2016	3	2.8%
2017	27	25%

# Project Goals

- Identify current deer density
- Identify social carrying capacity
- Conduct public opinion survey
- Evaluate options
- Provide recommendation





# Deer Density

- Urban issues
  - Obstructions
  - Privacy issues



# Results – Density Estimate

Sample No.	No. In-town deer	Corrected No.	No. Out-town deer	Total No. Deer	Sample mean	Standard Deviation
1	23	31	45	76		
2	34	46	38	74		
3	26	35	36	71		
4	20	27	42	69		
5	29	39	39	78	73.60	3.26



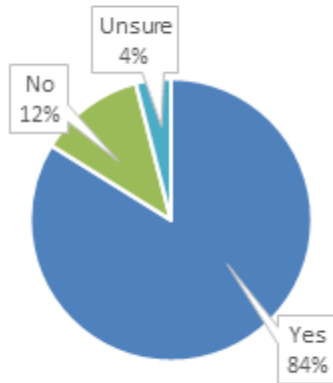
# Results – Density Estimate

	Current	Ideal
Density (deer/Km <sup>2</sup> )	13 deer/Km <sup>2</sup>	3-5 deer/Km <sup>2</sup>
# Deer	107	24-42

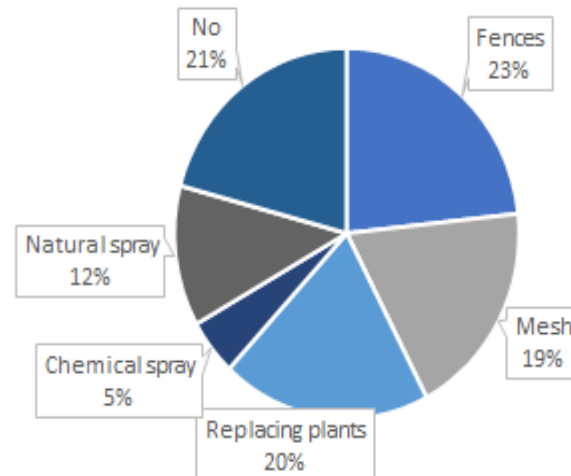
# Public Opinion Survey

## Results – 42% Response Rate

Q2. Do you think that there is a deer problem in St. Andrews?



Q7. Have you tried any of the following methods to reduce deer damage on your property?



# Control Options: Non-Lethal

- Fertility Control
- Repellents/Barriers
- Regulations



# Control Methods: Lethal Females Only

- Polygamous
- Only dominant males breed
- Females have high home fidelity



# Control Options: Lethal

- Cull
- Hunting Quota
- Translocation
- Chemical Euthanasia



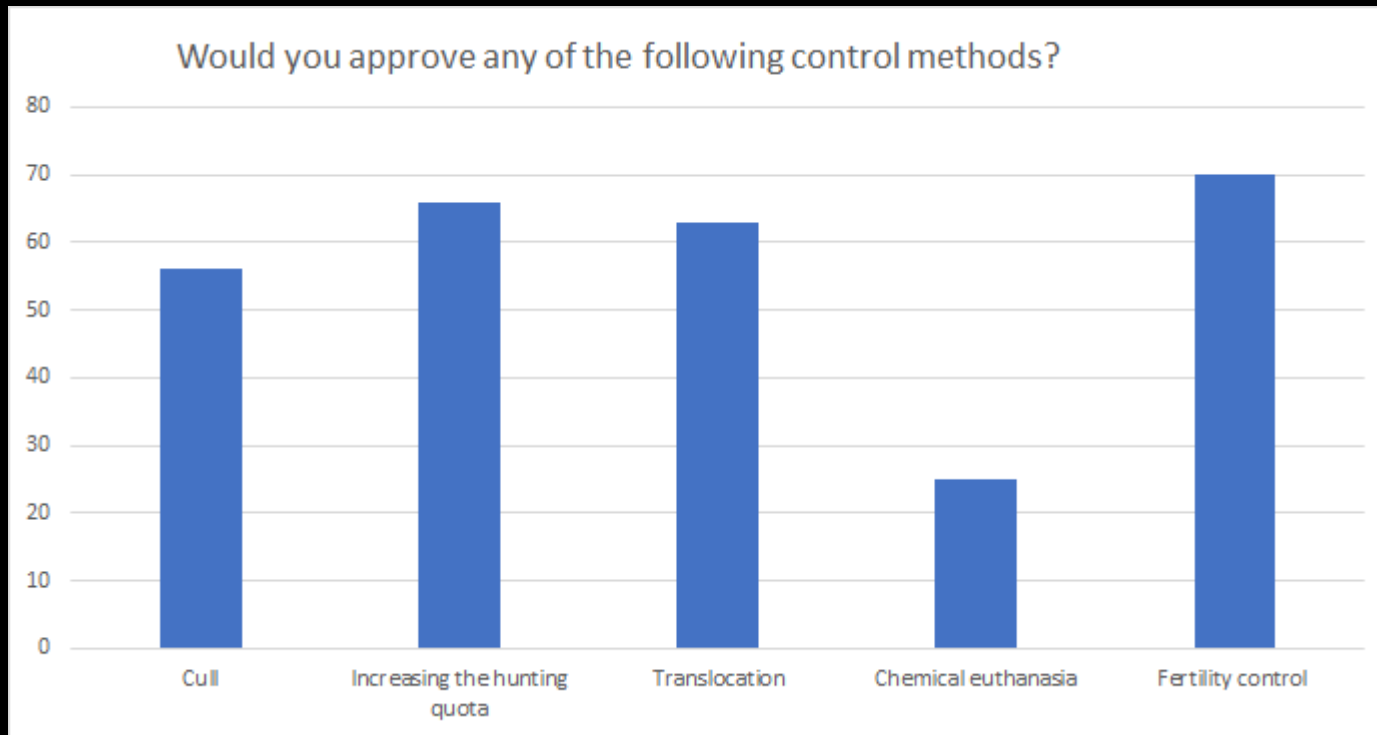
# Control Options: Lethal

Alternative	Pros	Cons	Cost
Cull	<ul style="list-style-type: none"> <li>• Meat can be used</li> <li>• No capture time</li> </ul>	<ul style="list-style-type: none"> <li>• Low public acceptance</li> <li>• Public safety concerns</li> </ul>	<ul style="list-style-type: none"> <li>• \$250-\$500/deer</li> <li>• \$100 processing fee</li> </ul>
Hunting	<ul style="list-style-type: none"> <li>• Meat can be used</li> <li>• No capture time</li> <li>• No processing fee</li> </ul>	<ul style="list-style-type: none"> <li>• Public safety concerns</li> <li>• Targets town outskirts</li> </ul>	<ul style="list-style-type: none"> <li>• Approximately \$125/deer (hired officials)</li> </ul>
Translocation	<ul style="list-style-type: none"> <li>• High public acceptance</li> </ul>	<ul style="list-style-type: none"> <li>• 20% mortality rate</li> <li>• High capture time</li> <li>• High stress</li> </ul>	<ul style="list-style-type: none"> <li>• Approximately \$1000/deer</li> </ul>
Chemical Euthanasia	<ul style="list-style-type: none"> <li>• Immediate population decrease</li> </ul>	<ul style="list-style-type: none"> <li>• Vet must be present</li> <li>• High capture time</li> <li>• Meat is not edible</li> <li>• Carcase disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Minimum \$400/deer</li> </ul>

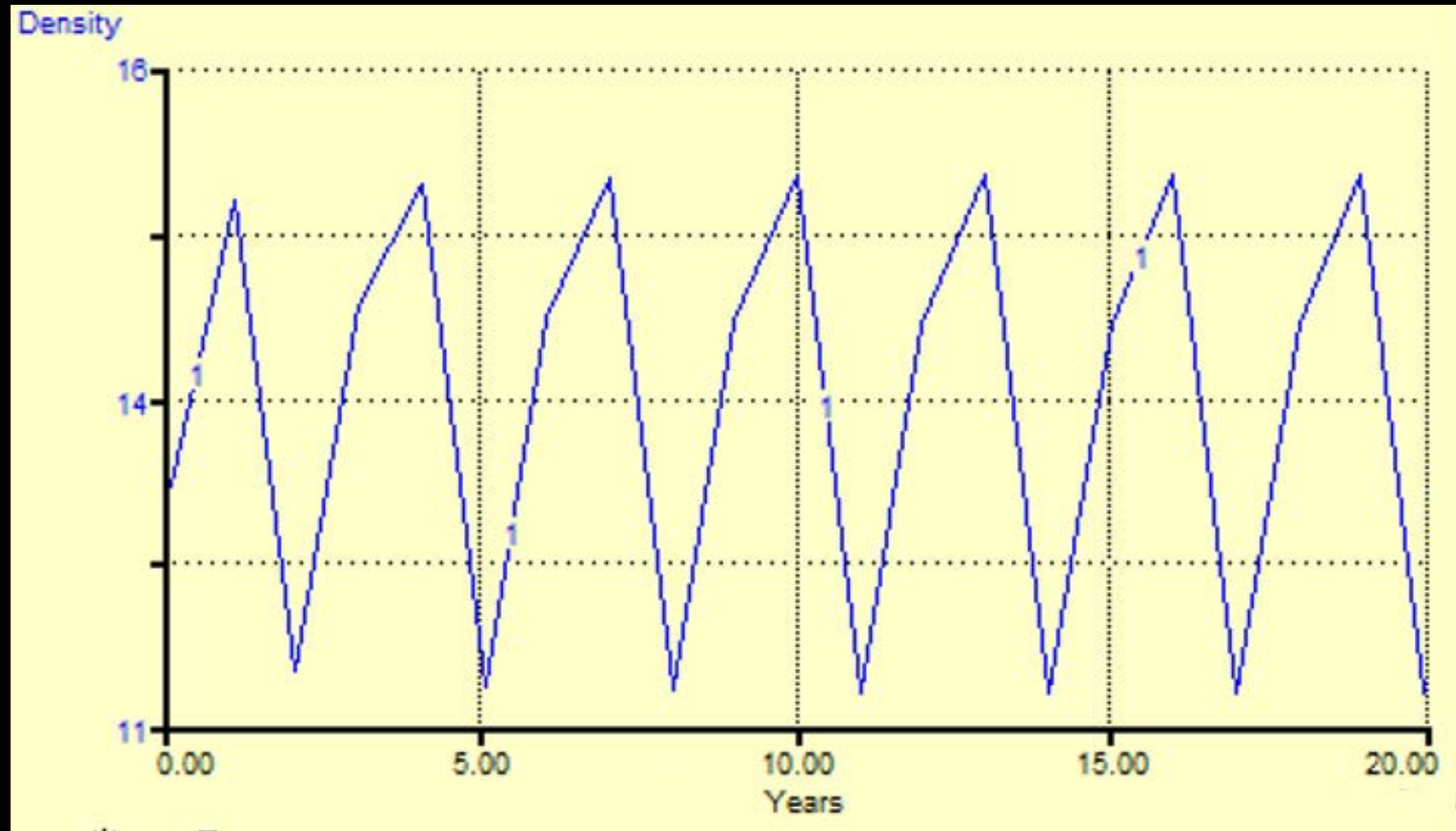


# Public Opinion Survey

Results – 42% Response Rate



# Current Population Forecast - 25% Intensity Hunt



# Alternatives Considered

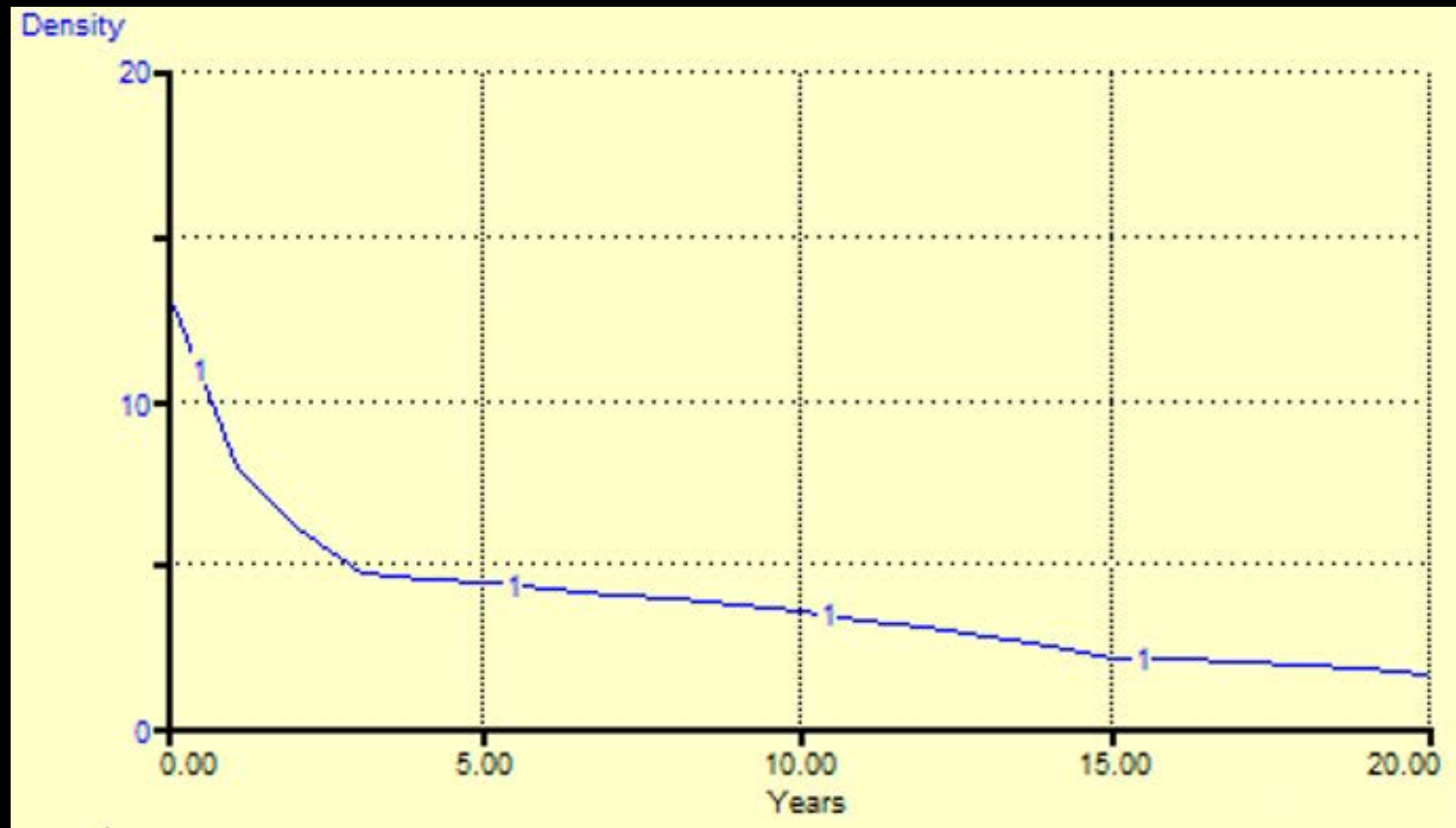
- Hunt only
- Cull only
- Euthanasia only
- Hunt + Cull
- Hunt + Euthanasia
- Periodic hunt following  
hunt + cull



# Population Control Method

Year	Method	Intensity	Number of Individuals
1-3	Cull	40%	32
	Hunt	59%	47
4-15	Hunt	70%	56
16-20	Hunt	50%	40

# Forecasted Population Change – Hunt + Cull Method



# Estimated Cost – Hunt + Cull

Deer harvested	Cost (\$)	1 Year	3 Years
32	350	\$11,200	\$33,600
32	600	\$19,200	\$57,600



# Final Recommendation

- Hunt + Cull combination method
- Reduce town's attractiveness to deer
  - Unpalatable plants
  - Repellants/Barriers
- Regular population monitoring

# Thank You

- Questions?

CAPSTONE PROJECT  
**4020**



# Lyme Disease

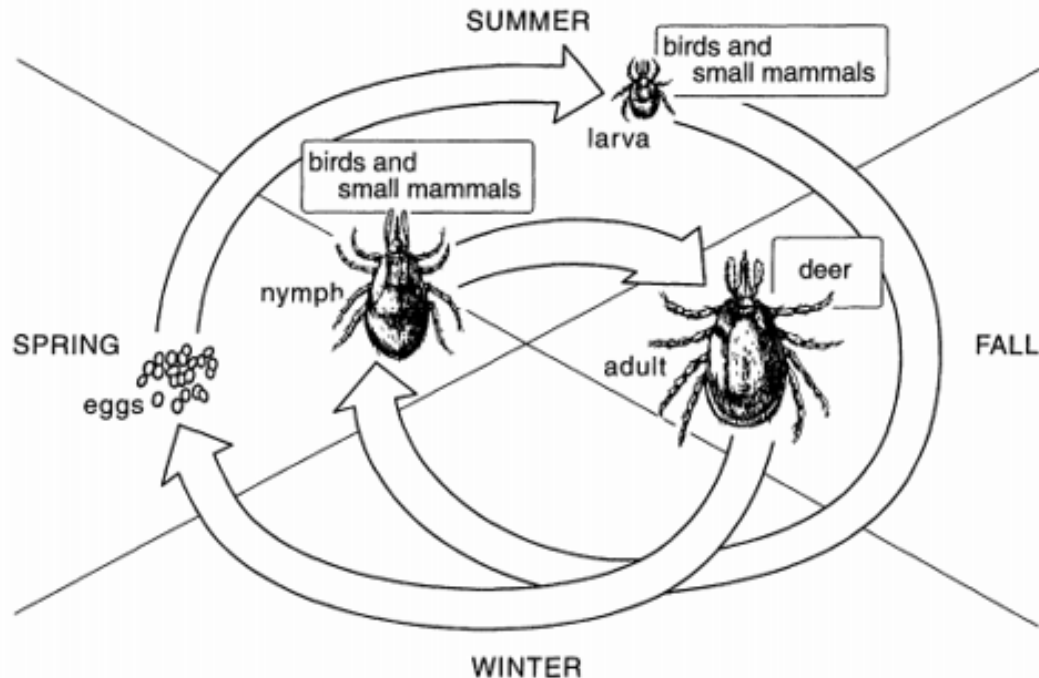


Figure 1. The deer tick life cycle illustrates how the density of adult ticks is limited by the density of small vertebrate hosts available for the tick larva and nymphs, not by the availability of deer.

# What to do with the meat?

- **Donate to food banks**
  - Regulations need to change
  - Subsidize processing fee
- **Donate to zoos**

# Plants

- Lavender
- Hawthorn
- Sage
- Peonies
- Bleeding hearts

