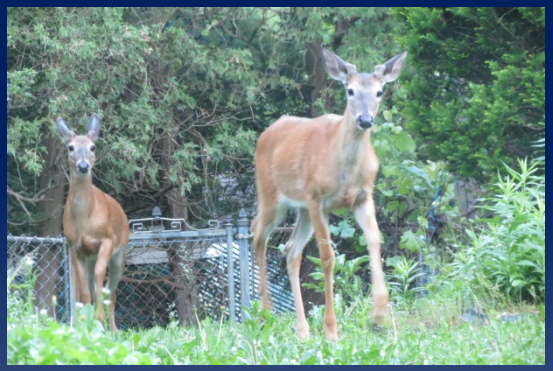
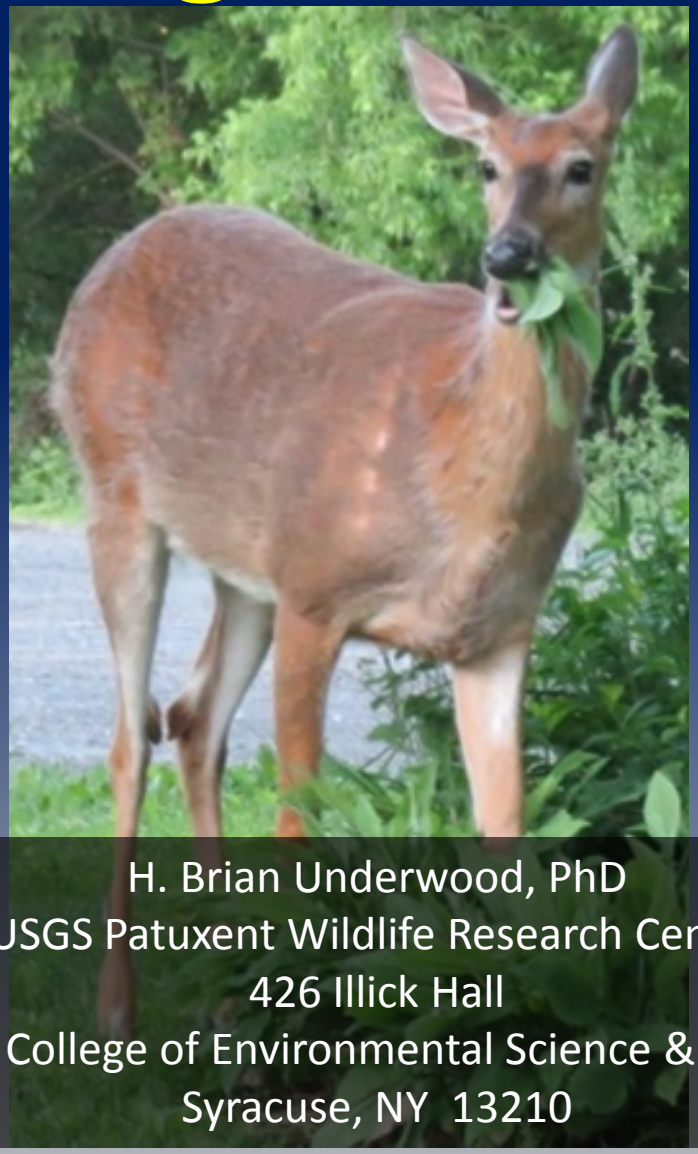
Living with Deer











H. Brian Underwood, PhD
USGS Patuxent Wildlife Research Center
426 Illick Hall
SUNY College of Environmental Science & Forestry
Syracuse, NY 13210

Issues

In high abundance, deer create serious *quality-of-life* issues for people

1. They serve as host to the adult phase of ticks that transmit Lyme disease
2. They cause severe property damage to automobiles, landscapes and gardens
3. They degrade green infra-structure by preventing plant and tree regeneration, which contributes to soil erosion

GOAL

To seek effective, sustainable solution to issues caused by overabundant deer in the eastside communities and surrounding areas that:

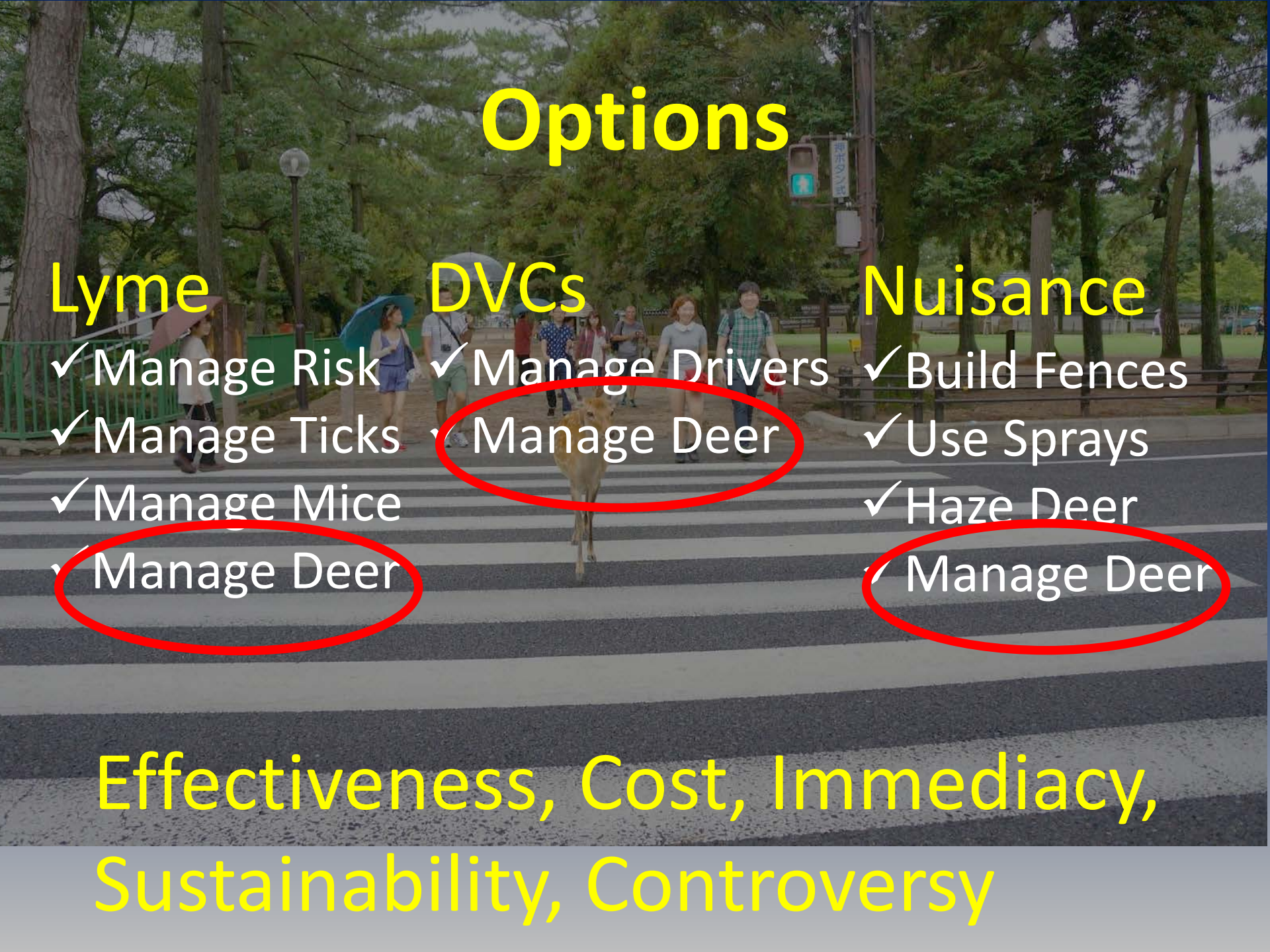
(1) Benefits all residents

(2) Works toward the common good

(3) Builds unity

(4) Won't unnecessarily burden property owners

(5) Exhibits high likelihood of success



Options

Lyme

- ✓Manage Risk
- ✓Manage Ticks
- ✓Manage Mice
- ✓Manage Deer

DVCs

- ✓Manage Drivers
- ✓Manage Deer

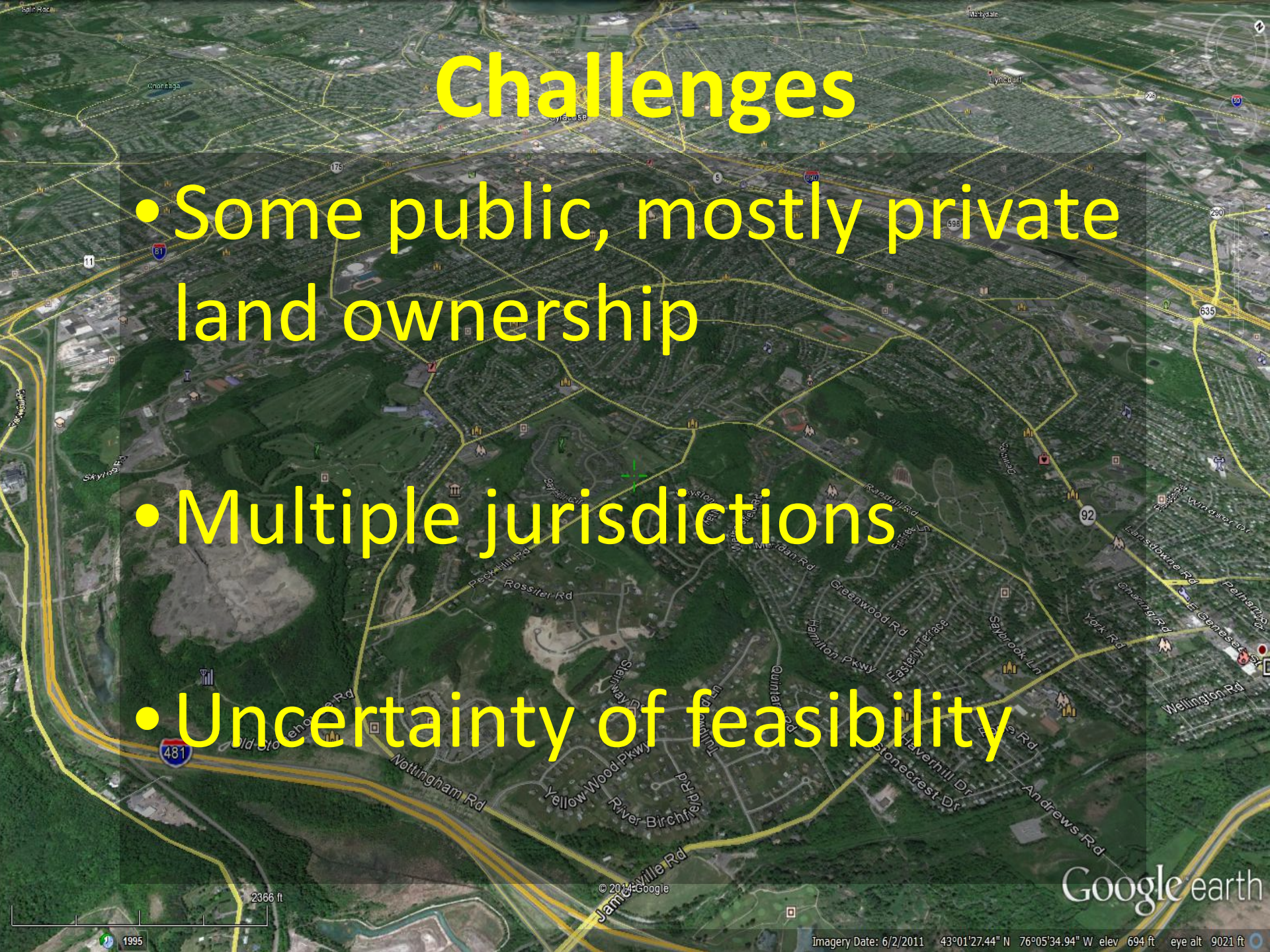
Nuisance

- ✓Build Fences
- ✓Use Sprays
- ✓Haze Deer
- ✓Manage Deer

Effectiveness, Cost, Immediacy, Sustainability, Controversy

Why Controversy?

- Not everyone will agree there is a problem
  - What is the Desired Future Condition?
  - Everybody should agree that the future includes fewer issues with deer!
- Not everyone will agree with the evaluation criteria
  - Effectiveness>Cost>Immediacy>Sustainability>Controversy?
  - Your municipality should rank/modify them.
- Not everyone will agree on the preferred alternative
  - Lethal vs. Non-lethal?
  - See the last slide of this presentation.


Challenges
• Some public, mostly private land ownership
• Multiple jurisdictions
• Uncertainty of feasibility
Rossiter Rd
Meridan Rd
Greenwood Rd
Hamilton Pkwy
Eastelly Terrace
Sayebrook Ln
York Rd
Wellington Rd
Nottingham Rd
Yellow Wood Pkwy
River Birch Rd
Stonecrest Dr
Andrews Rd
Jamesville Rd
© 2011 Google
Google earth
Imagery Date: 6/2/2011 43°01'27.44" N 76°05'34.94" W elev 694 ft eye alt 9021 ft

Non-viable Options

- Trap-and-transfer (not legal anywhere)
- Population-scale fertility control (infeasible)
- Large area exclusion by fencing (too expensive)
- Introduction of predators (they're here already)

Viable Options

- Regulated, legal harvest
  - Cheapest option, but requires a lot of planning
  - Long-term: have trouble sustaining interest
- Culling
  - Expensive, but expedient if done professionally
  - Immediate reduction in deer density
- Localized fertility control
  - Several options, expensive
  - 10 yr management horizon (minimally)

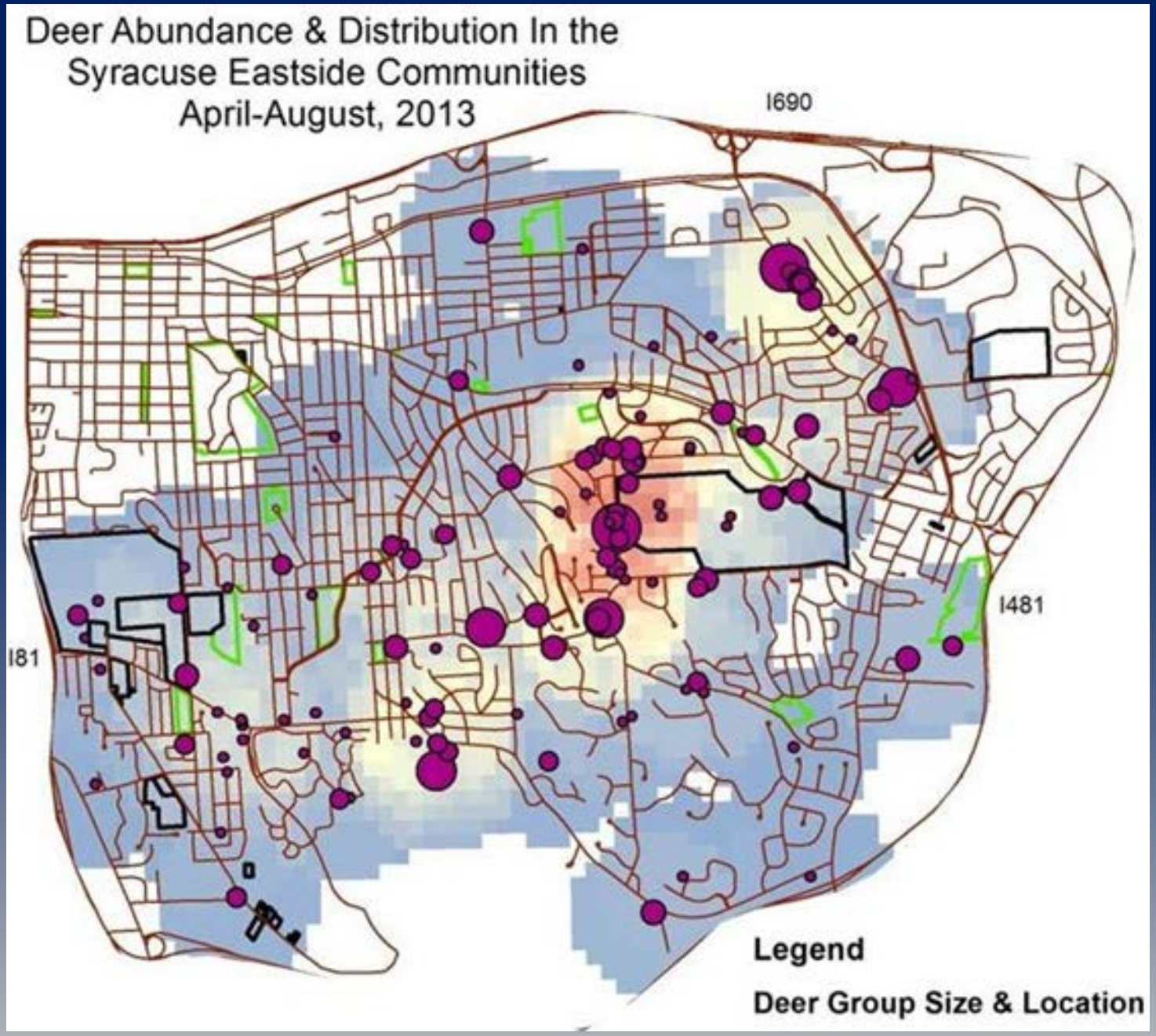
Deer Population Management

Once in – Never out!

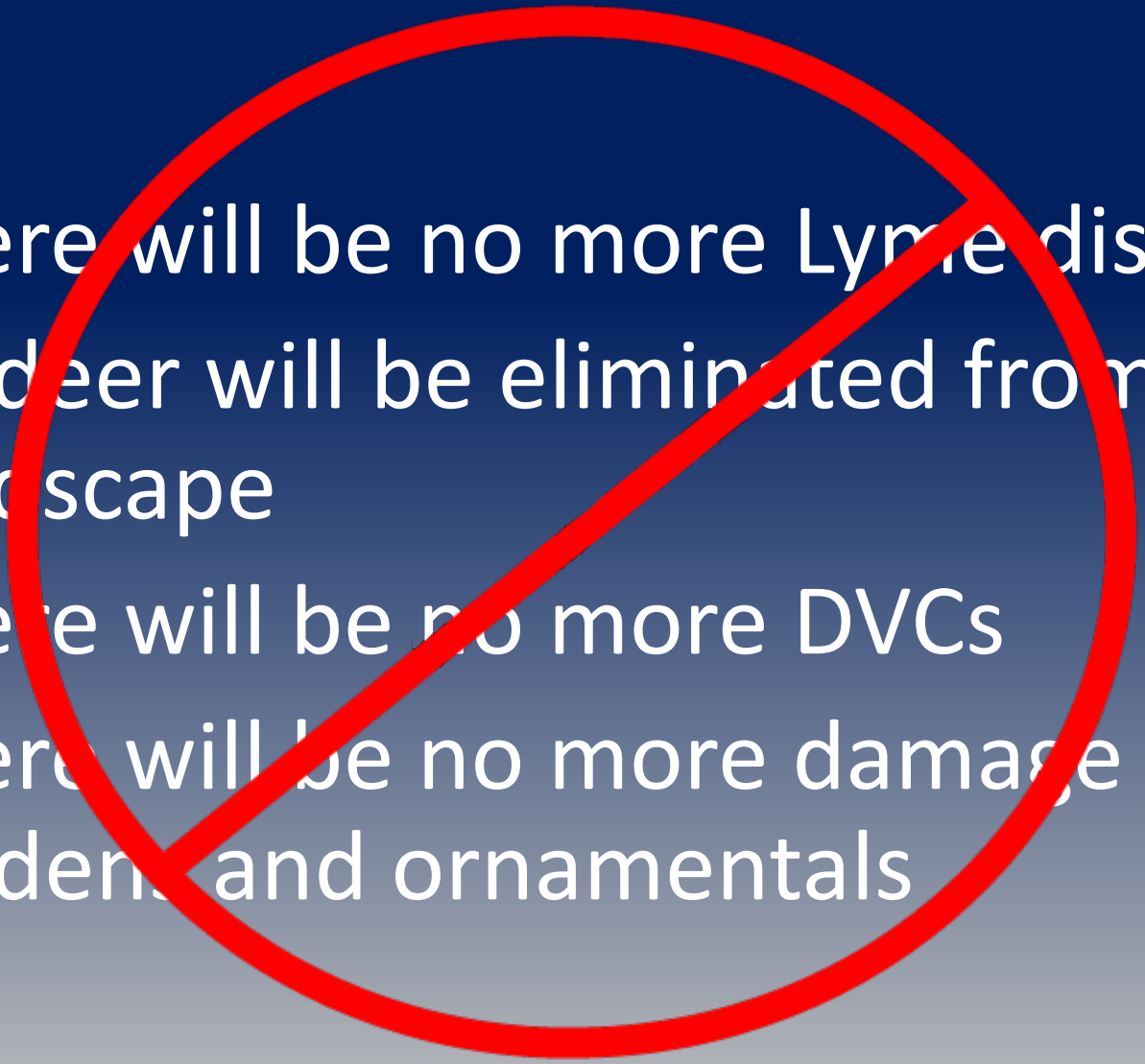
- Requires a long-term commitment of resources (i.e., $ and personnel) and planning to achieve success

Perspective

- The issues with deer we're experiencing today took 30 years to develop.
- Consequently, they will not be resolved overnight.
- We have a lot of information that most communities would not.


Deer Abundance & Distribution In the
Syracuse Eastside Communities
April-August, 2013
I690
I481
I81
Legend
Deer Group Size & Location

Unrealistic Expectation



- There will be no more Lyme disease
- All deer will be eliminated from the landscape
- There will be no more DVCs
- There will be no more damage to gardens and ornamentals

Realistic Expectation

- Dramatically fewer deer conflicts
- Substantial reduction in LD risk
- Lower number of DVCs
- Reduction in damage to gardens, landscapes and green infra-structure



Developing a Plan

- 200K from NYS Legislature to ESF
  - 128th District Assemblymember, Pamela J. Hunter
  - 5th District Syracuse Common Councilor, Nader Maroun
- Update deer abundance and distribution maps
- Develop a comprehensive plan
- Serve as a clearinghouse for scientific information about deer and deer management in urban settings

Timeline

- Update deer abundance & distribution (May 2016 – present)
- Winter track counts (2014-15, 2015-16, planning 2016-17)
- Scenario modeling (ASAP through 2018)
- Writing plan (initiate Spring 2017; draft Spring 2018)

Fertility Control for Deer Population Management









Deer Fertility Control

- Interest?
  - Viewed as an alternative to lethal measures
- How does it differ from culling or harvest?
  - Treated animals remain in the population, take up space and compete for resources

Porter, W.F., Underwood, H.B., Woodard, J.L., 2004. Movement behavior, dispersal, and the potential for localized management of deer in a suburban environment. Journal of Wildlife Management 68, 247–256.

Dimensions of Feasibility

- Economical – is it cost effective?
- Biological – can it exert population control?
- Logistical – what are major obstacles?
- Regulatory – can municipalities participate?

Economics

- Surgical Sterilization $$$$
  - Performed once
  - Initial costs high, amortized over the life of the deer
- Chemical fertility control $$
  - Performed annually
  - Costs deducted over life of the project

Biology

- Every model that has been published indicates that modest efficacy is possible

- All models are wrong, some models are useful (G. Box)

When, Where and for What Wildlife Species Will Contraception Be a Useful Management Approach?

Kathleen A. Fagerstone, **Lowell A. Miller**, **Kimberly S. Bynum**, **John D. Eisemann**, and **Christi Yoder**
USDA APHIS Wildlife Services, National Wildlife Research Center, Fort Collins, Colorado

REVIEW

Ecological feedbacks can reduce population-level efficacy of wildlife fertility control

Jason I. Ransom[1]*, Jenny G. Powers[2], N.Thompson Hobbs[3] and Dan L. Baker[4]

RESEARCH ARTICLE

Forecasting the Effects of Fertility Control on Overabundant Ungulates: White-Tailed Deer in the National Capital Region

Ann M. Raiho[1¤]*, Mevin B. Hooten[2], Scott Bates[3], N. Thompson Hobbs[1]

Efficacy of SpayVac® as a Contraceptive in Feral Horses

JAMES E. ROELLE,[1] *U.S. Geological Survey, Fort Collins Science Center, Fort Collins, CO 80526, USA*
STEPHEN S. GERMAINE, *U.S. Geological Survey, Fort Collins Science Center, Fort Collins, CO 80526, USA*
ALBERT J. KANE, *U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Fort Collins, CO 80526, USA*
BRIAN S. CADE, *U.S. Geological Survey, Fort Collins Science Center, Fort Collins, CO 80526, USA*

Review of Ungulate Fertility Control in the National Park Service

Outcomes and Recommendations from an Internal Workshop - February 2012

Natural Resource Report NPS/NRSS/NRR—2015/1038

Efficacy of Surgical Sterilization for Managing Overabundant Suburban White-Tailed Deer

JASON R. BOULANGER,[1,2] *Department of Natural Resources, Cornell University, 322 Fernow Hall, Ithaca, NY 14850, USA*
PAUL D. CURTIS, *Department of Natural Resources, Cornell University, 222 Fernow Hall, Ithaca, NY 14850, USA*

Biological Feasibility

- Sterilization: fewest number of animals to achieve target population sizes.
  - Increases variation around the target population size and increases local extinction risk
- Yearlong contraceptives: requires treating dramatically more animals to achieve and maintain target population size.
  - Due to lower efficacy due to delivery system and individual variability in immune response
- Culling: intermediate to fertility control options
  - very costly at low target population sizes due to low encounter rates and strong compensatory reproduction.

Bradford, J.B. and N. T. Hobbs. 2008. Analysis of options for elk population management in Rocky Mountain National Park. Journal of Environmental Management 86:520-528.

Logistics

- Surgical Sterilization (permanent)
  - Tubal ligation
    - Slips possible, deer exhibit behavioral estrus
  - Ovarectomy
    - Much more invasive, complications inevitable
- Chemical fertility control (temporary)
  - Lack of multi-year efficacy
  - Behavioral estrus
  - Remote or hand delivery

Regulations

- Availability
  - One contraceptive "approved" for use in deer (GonaCon); PZP (ZonaStat-H) approved for wild horses and burros only
  - Administered through EPA to authorized agents (e.g., APHIS Wildlife Services)
- Restrictions
  - Hand-injected, every deer must be marked appropriately
- Agency approval
  - No fertility control-only options permitted

Where might fertility control be applied?

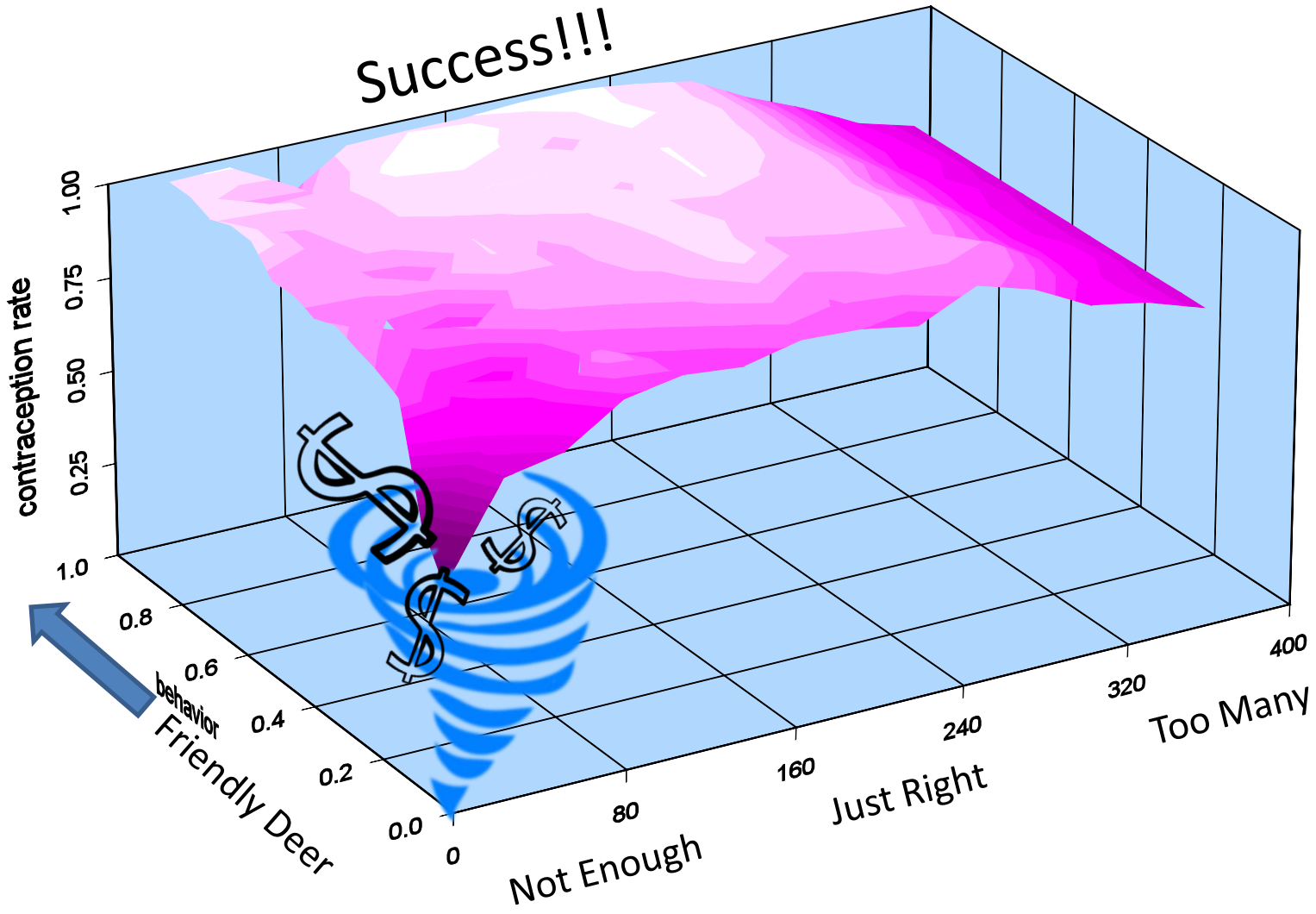


Deer Behavior

- Deer behavior is the #1 factor against achieving success with fertility control
  - Target “friendly deer” for fertility control
  - Do fertility control option *in advance* of culling or harvesting
  - Keep the scope of fertility control option to manageable numbers (~ 80 females)

Encounter rate heterogeneity: see some deer all the time, others just once

FEASIBILITY



Fertility Control vs Lethal Control

Something to consider…

- Use of fertility control for managing deer is a tacit tolerance for allowing animals to die from another cause

- For deer in urban areas, that usually means by automobile collision which, for a vast majority of animals, does not result in immediate death but instead a prolonged period of suffering