Ecological Impacts of White-tailed Deer

Zach Goodrich
Head of Land Stewardship at Tifft Nature Preserve
Buffalo Society of Natural Sciences

White-tailed deer (*Odocoileus virginianus*)

Credit: U.S. Fish and Wildlife Service

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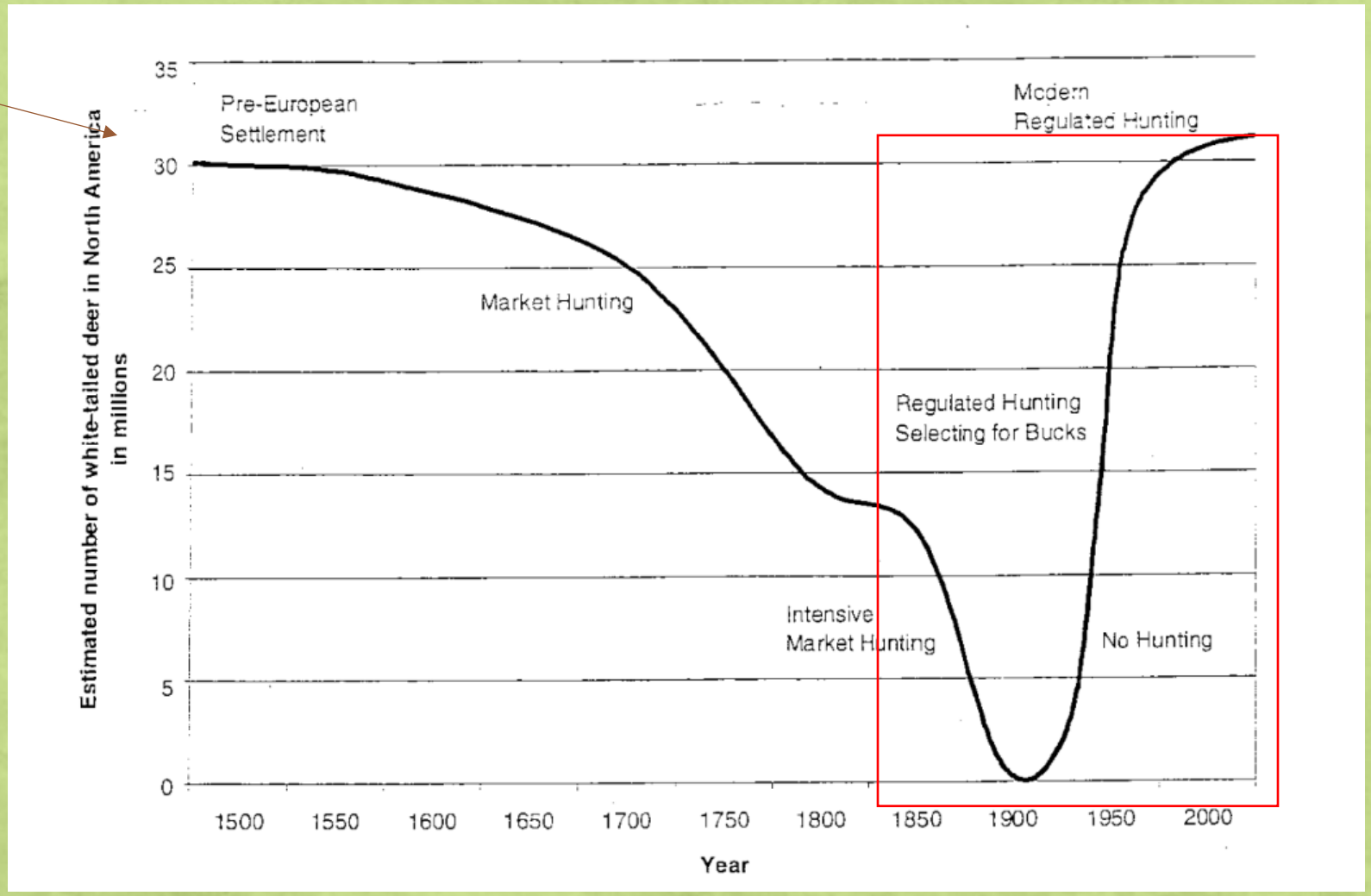
- One of six species in the deer family in North America, with by far the largest range
- 38 recognized subspecies
- Adaptable to a variety of habitats and food sources
- Present as a species for ~4 million years
- Ruminant with diet changing by season
- Evolved to cope with high rates of predation

Estimated Deer Populations in North America

???

24-62 million (McCabe & McCabe 1984)



VerCauteren, Kurt C. 2003.

Historical Landscape Context

Pre-colonization

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Present

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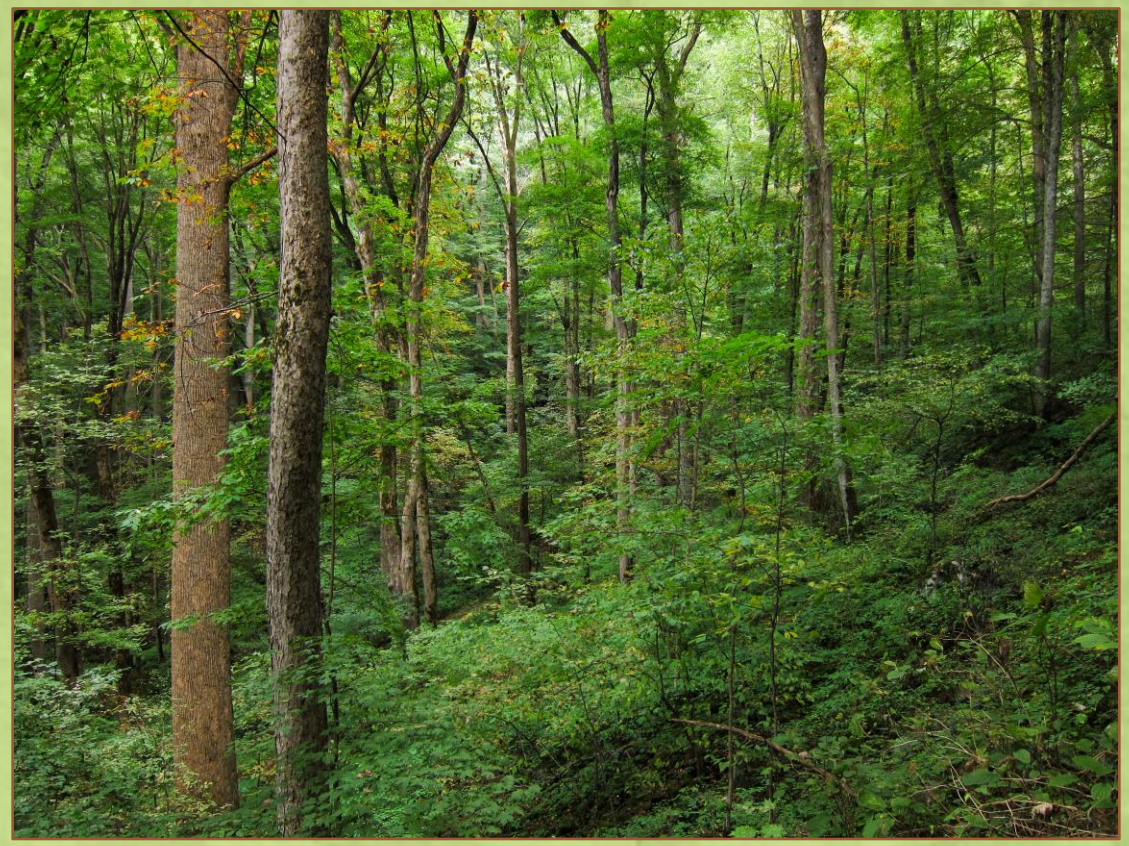
Why are deer densities so high?

1. Habitat modification – more edge habitat
   - Patchwork of residential, agricultural, woodland, and forest
2. Lack of predators (wolves, cougars, hunters)
3. Deer are opportunistic generalists
   - Deer are very adaptable to different food sources, even when their preferences are depleted

Plant Community Impacts

- Plant community homogenization (T. P. Rooney et al. 2004; T. P. Rooney 2001; Karl A. K. Stromayer and Warren 1997)
  - Within communities
  - Between communities
- Facilitate invasion and entrenchment of exotic invasive plants (Aday and Wyckoff 2010; Morrison, Roche, and Veatch-Blohm 2022)
- Decline in:
  - structural diversity
  - Some herbaceous plant species
  - All native tree species
  - Frequency of flowering and fruiting

  (Frerker, Sabo, and Waller 2014; T.P. Rooney 2001)
- Chronic browsing can lead to loss of seed bank and vegetation to replenish when deer densities are later reduced
- Loss of rare species (Miller 1992)
- Loss of all palatable plant species (Royo and Carson 2006; Waller and Alverson 1997)



Indirect Impacts

Monophageous Insects

Species that are specialists on certain plant species or types of plants are impacted most (monophagous insects)
(Miller 1992; T.P. Rooney 2001)

USFWS Midwest Region, Flickr

Songbirds

Reduced deer density, increased habitat heterogeneity and structural complexity, changed forest songbird compositions and increased abundance in a Virginia forest
(McShea and Rappole 2000, 1997)

Reduced nesting habitats for shrub-nesting birds and feeding habitats for insectivorous birds that feed in forest understoreys when vertical forest structure is simplified
(T.P. Rooney 2001; Martin et al. 2010)

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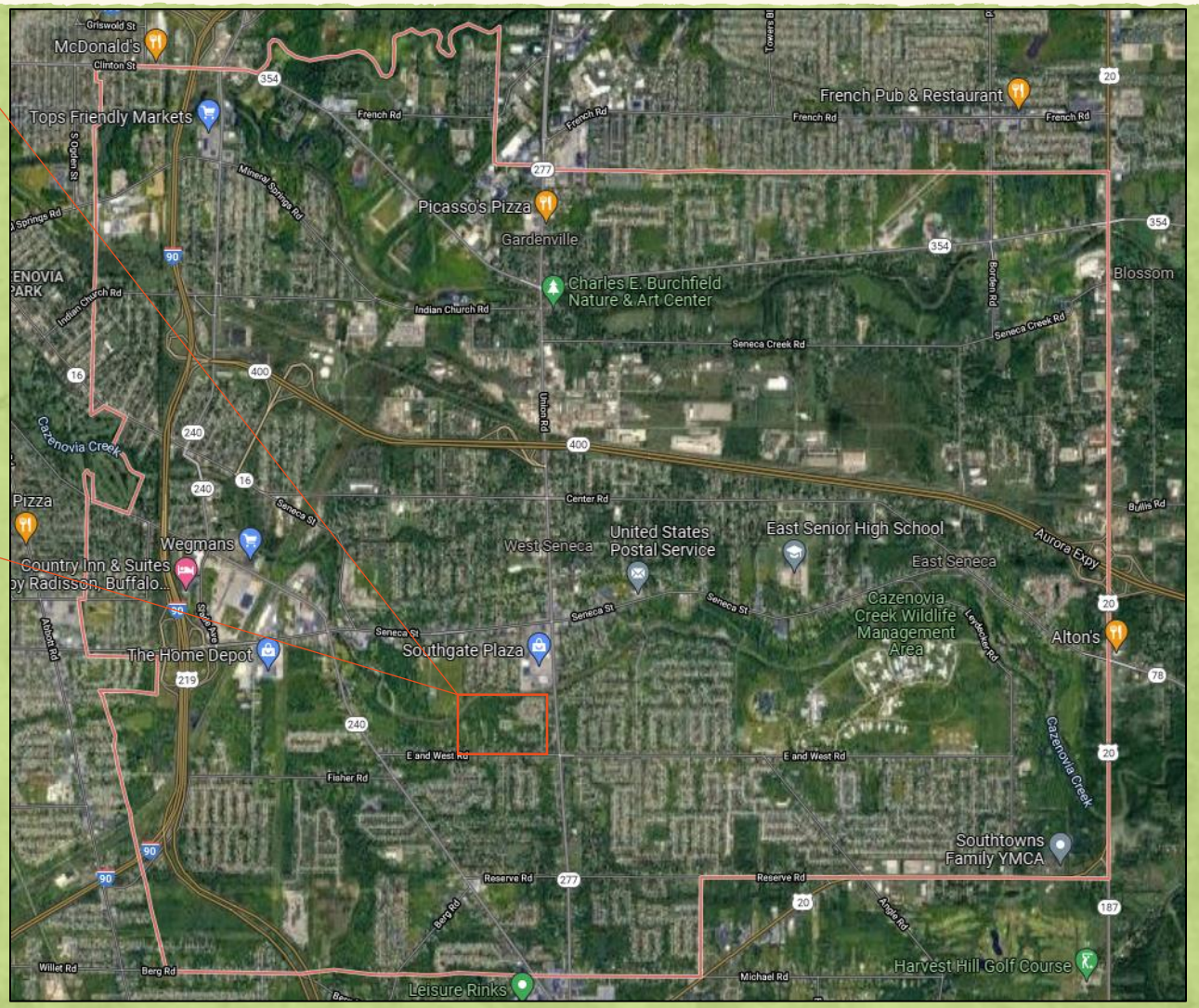
Ecological Impacts for Urban and Suburban Communities



Low/no tree regeneration → Loss of woodland and forest habitat

Why do most people not recognize the forest health issues associated with too many deer?

1. Shifting baseline syndrome: Most be people are used to seeing…

This…

Not this…

2. "Green" isn't necessarily always good. Plant identification is necessary in many areas to understand the impact.

Resources

Deer Management in Suburban and Urban New York
A recent and comprehensive document about the issue and management options.
This document was a main source for development of this presentation.

Deer Advisor
A tremendous resource for learning about Community Based Deer Management,
Created by The Nature Conservancy and Cornell Cooperative Extension.

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