



MASSWILDLIFE

Deer Management in Eastern Massachusetts

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Deer and Moose Biologist



Mission Statement

The Massachusetts Division of Fisheries and Wildlife (MassWildlife) is responsible for the conservation - including restoration, protection, and management - of the fish and wildlife resources and habitat diversity for the benefit and enjoyment of the public now and into the future.

White-tailed Deer Biology

- **Females typically give birth to 2 fawns per year**
 - Late May to early July
 - Research in PA, CT, DE estimate 40-60% survival of fawns
 - Typically 1 fawn will survive
- **Home Range**
 - 1 - 3 mi²
or 600 - 2000 acres



Feeding Habits

- Spring/Summer
 - Buds, leaves, forbs, etc.
- Fall/Winter
 - Hard/soft mast
 - Woody browse (*selective*)



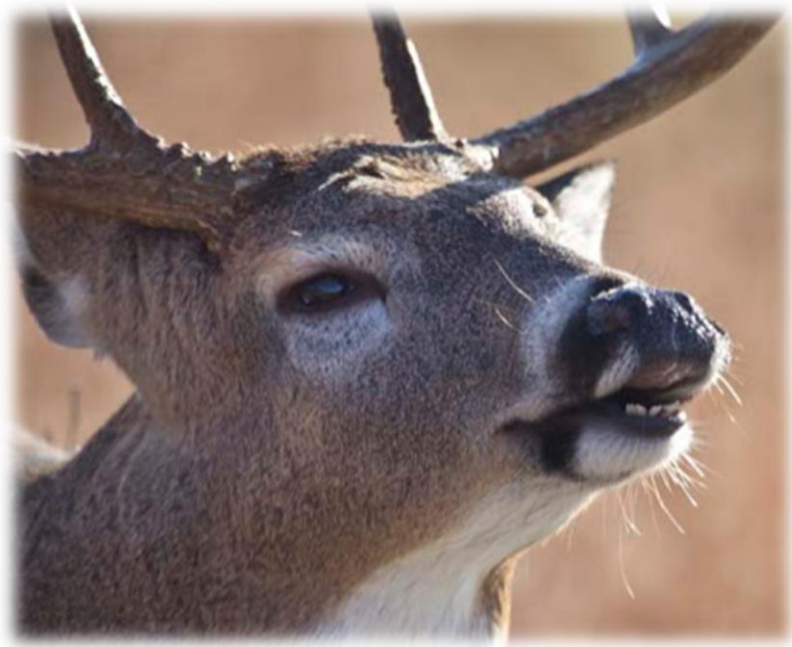
Feeding Habits

- What does deer browse look like?

Rabbit, Porcupine,
Woodchuck, Beaver
45 degree sharp cut



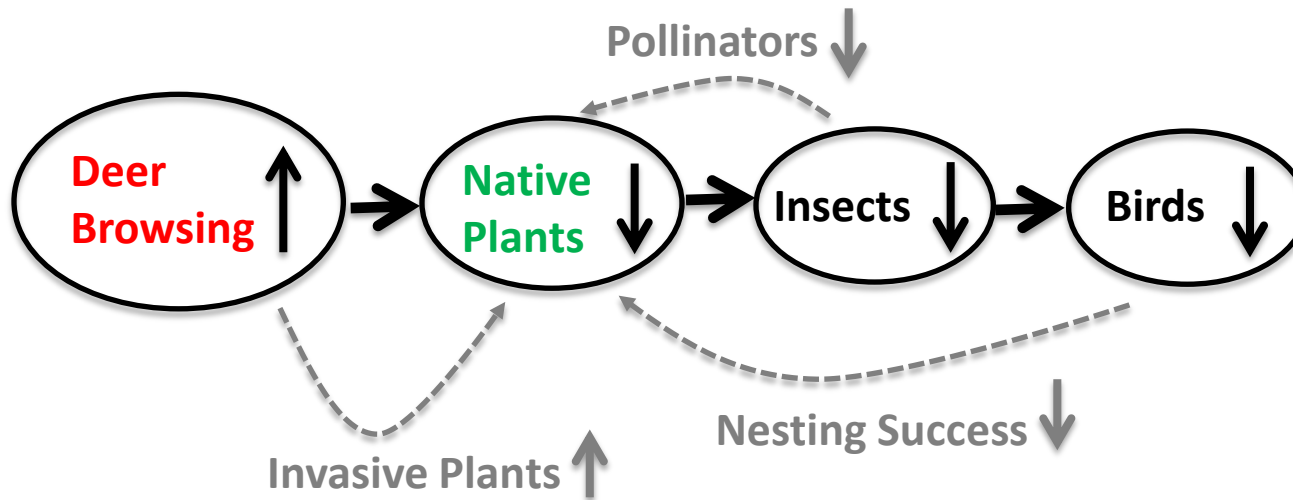
Deer Browse
Ragged edge

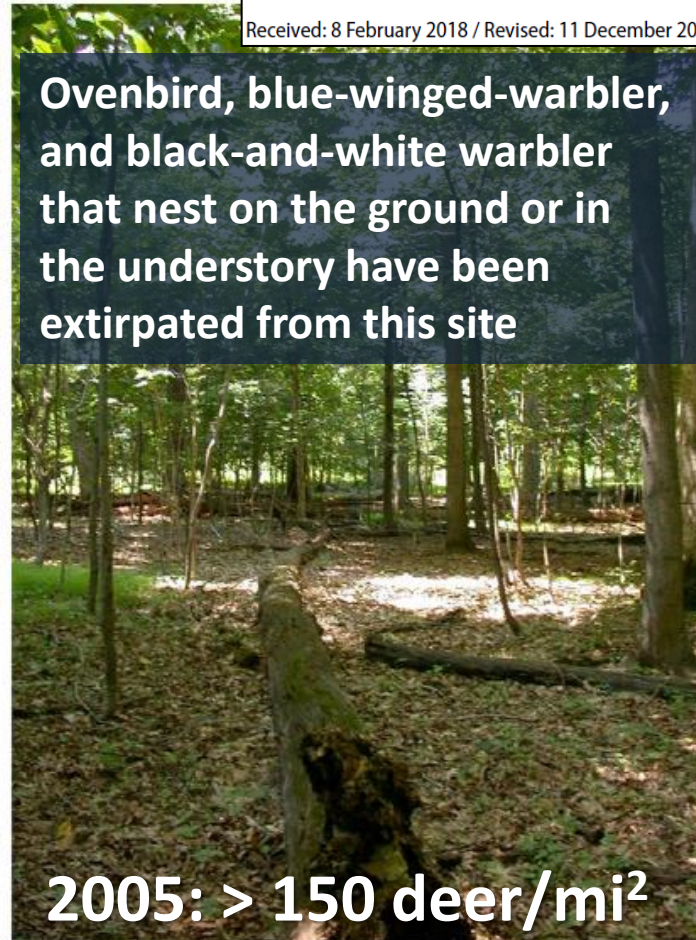
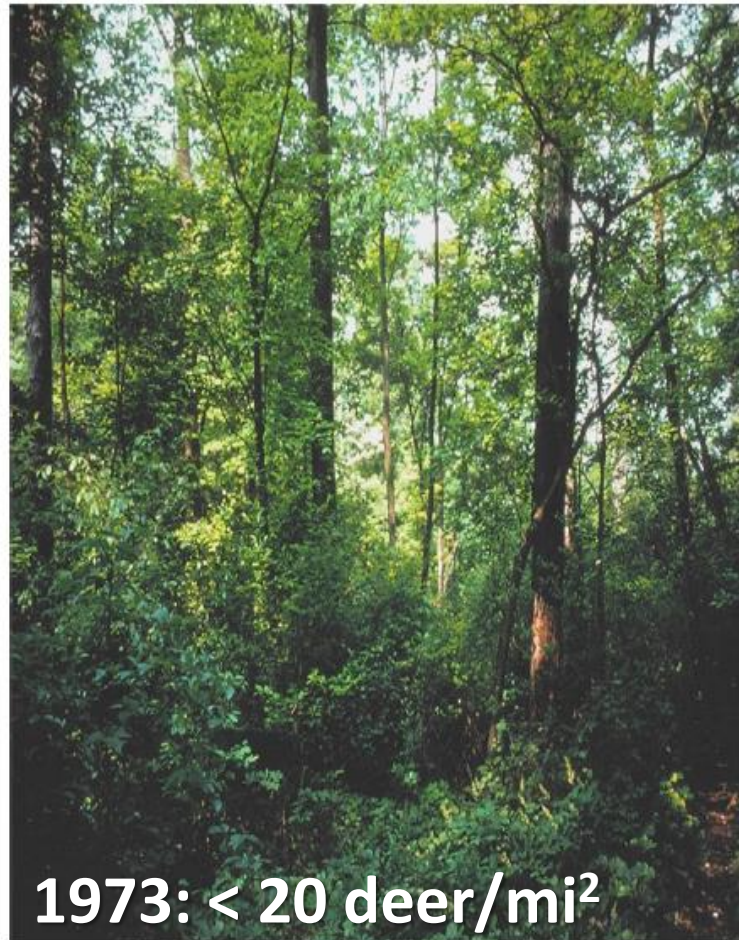


Deer lack upper incisors

Impacts of High Deer Numbers

- **Negatively impact the forest and ecosystem as deer numbers rise above ~ 20 deer per square mile of forest**
 - Future forest, wildlife, plants, and insects depend on a diverse and balanced forest and healthy understory
 - **Cascading effects**





Deer Numbers Increased

Forest fragmentation

Invasive plants

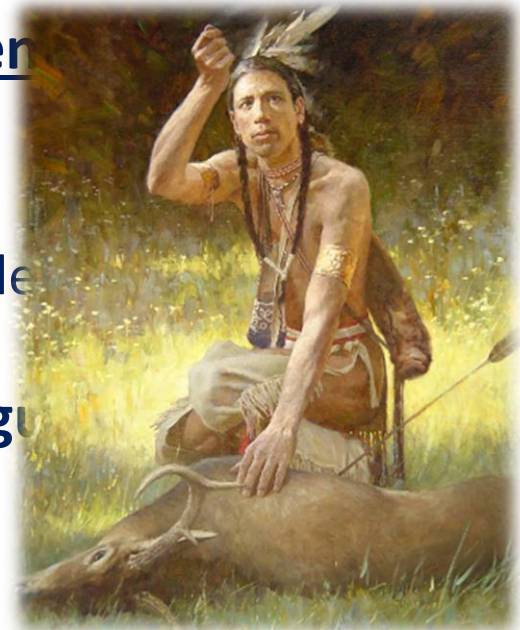
Nest predation and parasitism

Predation from pets

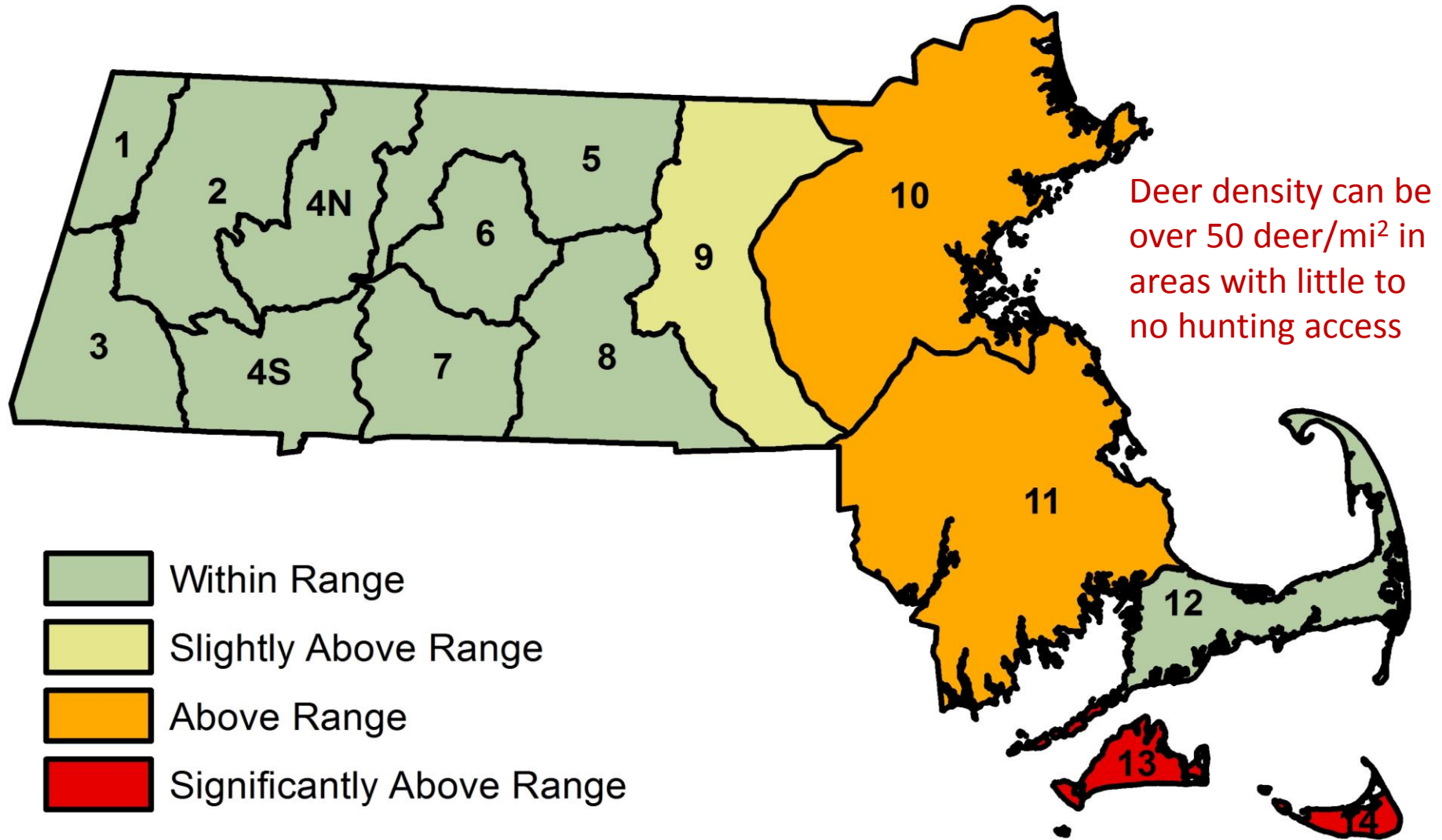
Fig. 4 Photos of Hutcheson Memorial Forest (New Jersey, US) in 1973 (left) and 2005 (right) illustrating the loss of understory vegetation over time due to species invasions and deer over-browsing. Photo credits: Jim Quinn (left) and Myla Aronson (right)

Will Nature Keep Deer in Balance?

- **Pre-Colonial, YES** (Native Americans, mountain lions, wolves)
- **Currently, NO**; even with current predators and vehicle collisions, it is not enough to keep deer numbers from increasing unless additional deer are removed
- **Deer numbers will keep rising until they eventually reach unnaturally high “starvation levels”**
 - Temporary reduction, will bounce back
 - Habitat will be severely damaged before this level is reached
- **Every state in the country relies on legal, regulated hunting to manage deer populations**
 - Only works if land is open to hunting



Current Deer Density in Massachusetts



GOAL: keep deer numbers below the point of major impacts to forest, but in balance with public desire and tolerance for deer
Management range of 12-18 deer/mi² of forest “Benchmark”

How Deer Numbers Are Managed

- **Licensed Hunters**

- Must have taken and passed a **hunter education course**, learn safety, ethics, and laws
- To use **firearm**, must possess a Federal Identification Card (FID) or License to Carry (LTC)

- **Antlerless Deer Permits**

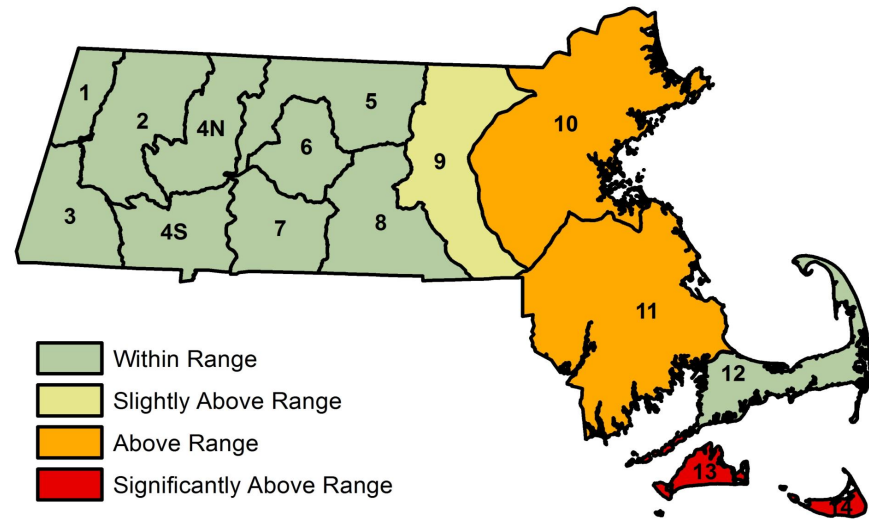
- Regulate **Female** Harvest by Zone

- **Regulated Hunting Seasons**

- Youth.....Sept. 28
- Archery.....Oct 7 - Nov 30 (Zones 10-14)
.....Oct 21 - Nov 30 (Zones 1-9)
- Shotgun.....Dec 2 - Dec 14
- Muzzleloader.....Dec 16 - Dec 31

- **Excellent safety record**

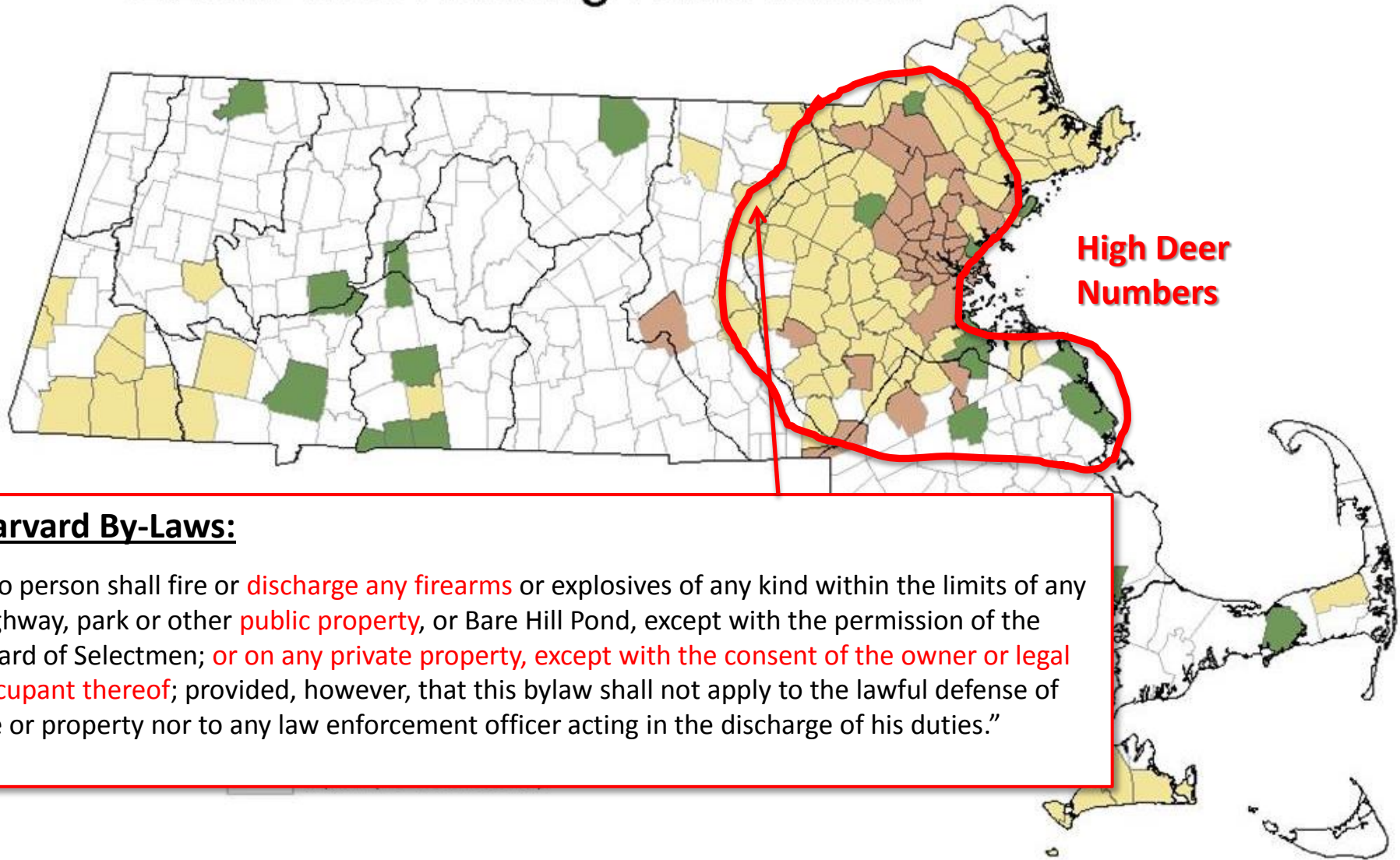
- 0 non-hunters have been killed by hunters
- 0 non-hunters have been injured by archery hunters
- Hunting and other recreational activities (hiking, biking, etc.) take place concurrently on all state lands open to hunting (all WMAs and most DCR lands)



Deer Management Challenges

- Hunting works great to manage deer numbers in areas where there is enough hunting access
- **#1 Roadblock to managing deer population is Access**
 - Large blocks of forest closed to hunting
 - Town Forests, State Parks, Conservation Lands, etc.
 - Discharge Setbacks (MGL Ch. 131 § 58)
 - No discharge of firearm or release of arrow within **150 feet** of roads
 - No hunting within **500 feet** of an occupied dwelling,
 - Unless authorized by owner or occupant
 - Town Ordinances and Bylaws
 - Further discharge restrictions, written permission, etc.

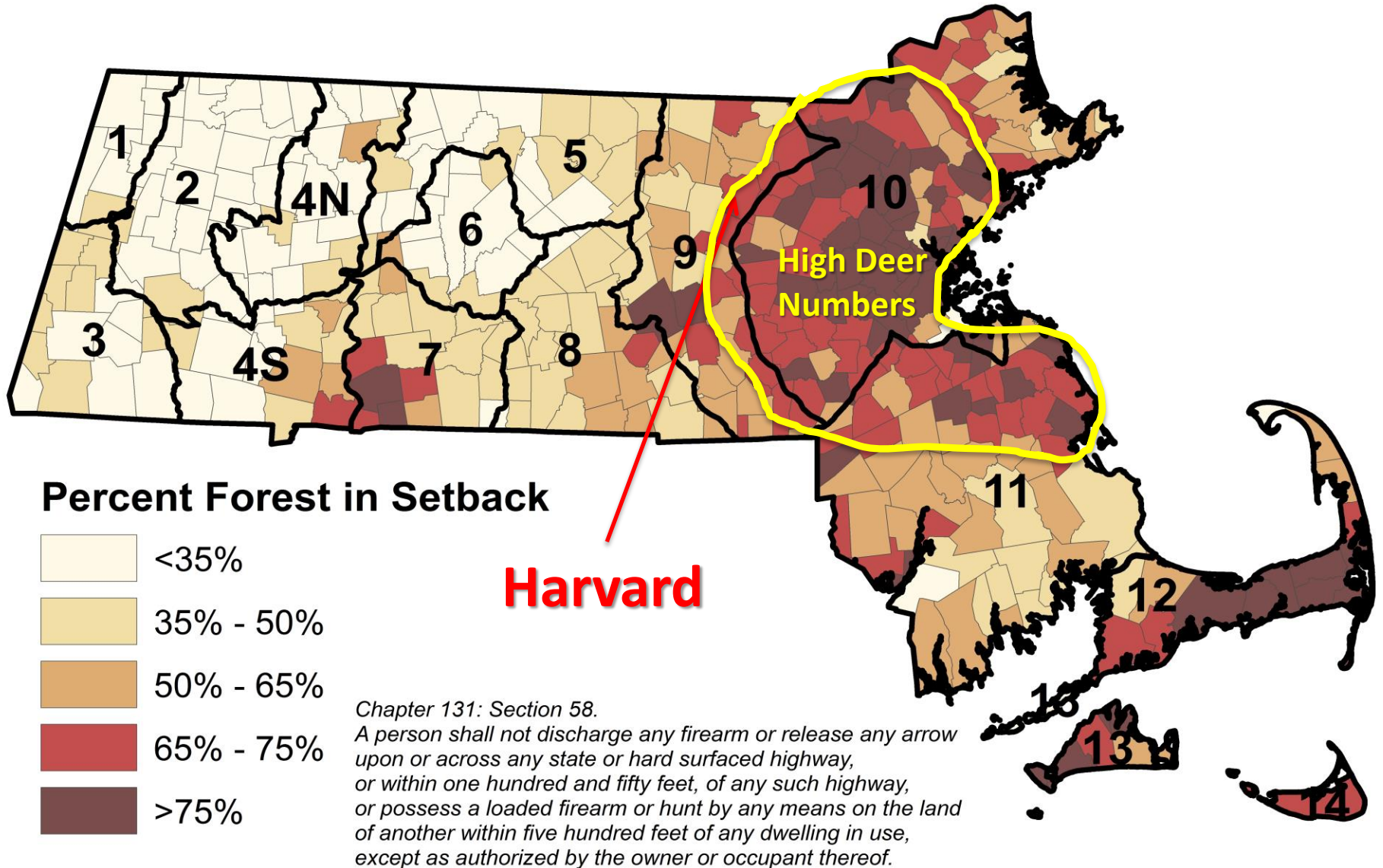
Towns with Hunting Restrictions



Harvard By-Laws:

“No person shall fire or **discharge any firearms** or explosives of any kind within the limits of any highway, park or other **public property**, or Bare Hill Pond, except with the permission of the Board of Selectmen; **or on any private property, except with the consent of the owner or legal occupant thereof**; provided, however, that this bylaw shall not apply to the lawful defense of life or property nor to any law enforcement officer acting in the discharge of his duties.”

Percent of Total Forest within a Discharge Setback for all Towns in Massachusetts








Discharge Setbacks

Tend to see deer problems in towns with more than 50% of the forest closed to hunting.

Harvard likely has >70% of the forest closed to hunting.

Setbacks Harvard

-  500-foot Setback
-  Water
-  Forest
-  Non-forest/development
-  Town/City boundary

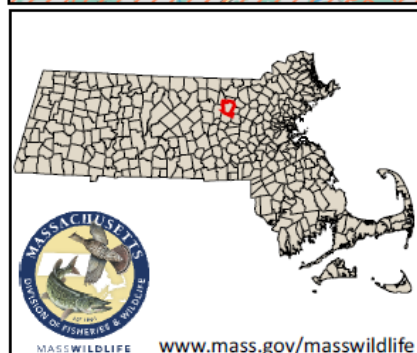
Setbacks: A person shall not discharge any firearm or release any arrow upon or across any state or hard surfaced highway, or within one hundred and fifty feet, of any such highway, or possess a loaded firearm or hunt by any means on the land of another within five hundred feet of any dwelling in use, except as authorized by the owner or occupant thereof. (M. G. L. Ch. 131, Sec. 58).

Source: Map information is from 2005 land use, 2017 structures, and 2013 MassDOT roads.

Note: Subsequent land use development may have changed Setbacks, and actual Setback may depend on town/city bylaws. Visit the areas in which you have an interest to confirm the current Hunting Setback status and where hunting may be allowed or prohibited.

Harvard 500-foot Setback

Total town/city acres -	17,378
Forested acres -	10,565
Forested acres in Setback -	6,972
Forested acres not in Setback -	3,593
Percent forest not in Setback -	34%



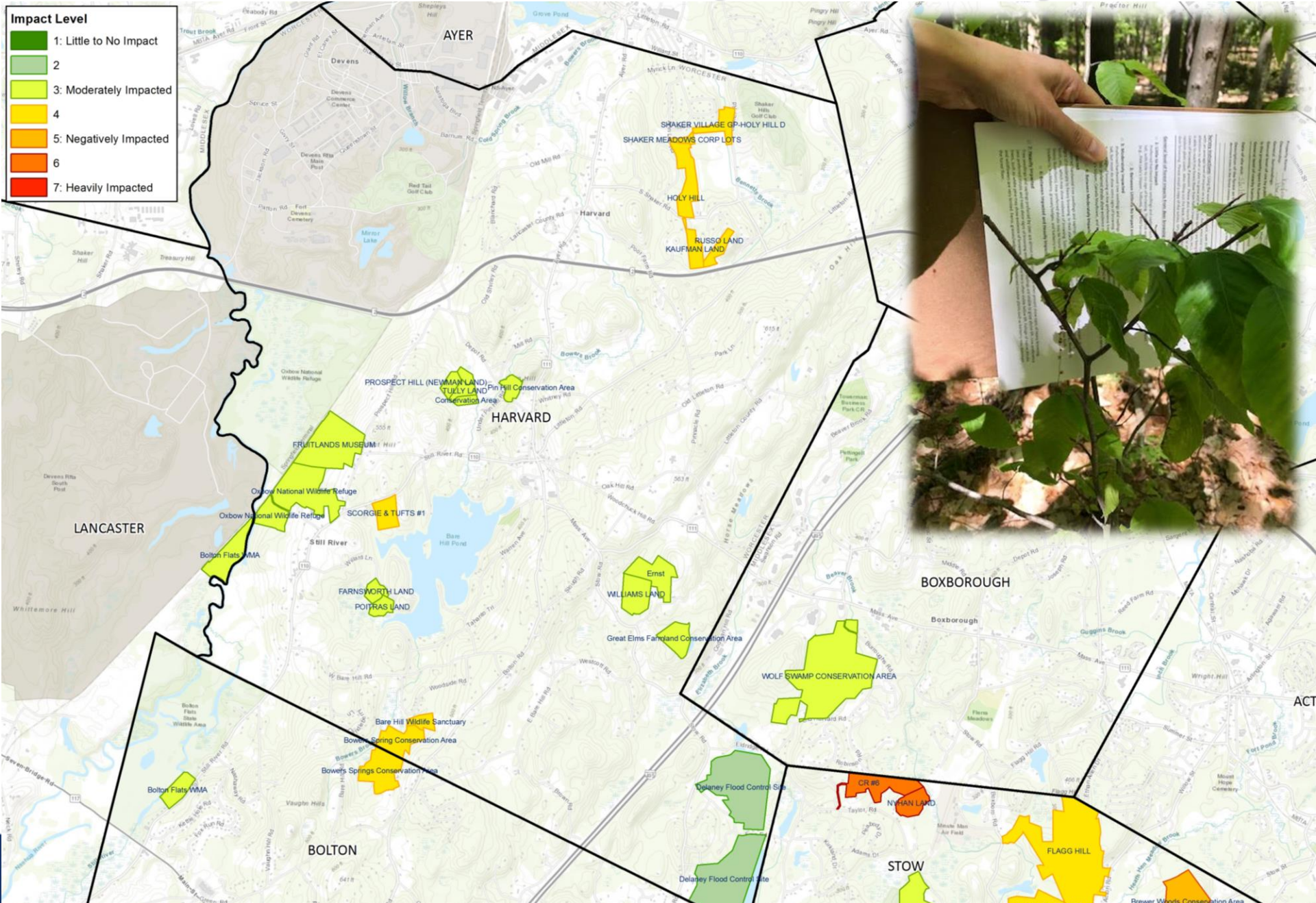
How many deer are in my town?

- It is impossible to count all of the deer
 - We estimate deer density at a zone scale on from huntable lands
 - Does not provide an estimate of density on lands closed to hunting
 - Can conduct pellet count surveys to estimate deer numbers at a smaller scale, but can be time intensive
- **Better question to ask is: Are there too many deer?**
 - We can begin to answer that by looking at forest impacts

Are deer impacting certain plants and trees in the forest?

Will the forest stay diverse and resilient over the next 50 years?

Deer Browse Impact Surveys



Too Many Deer: What now?

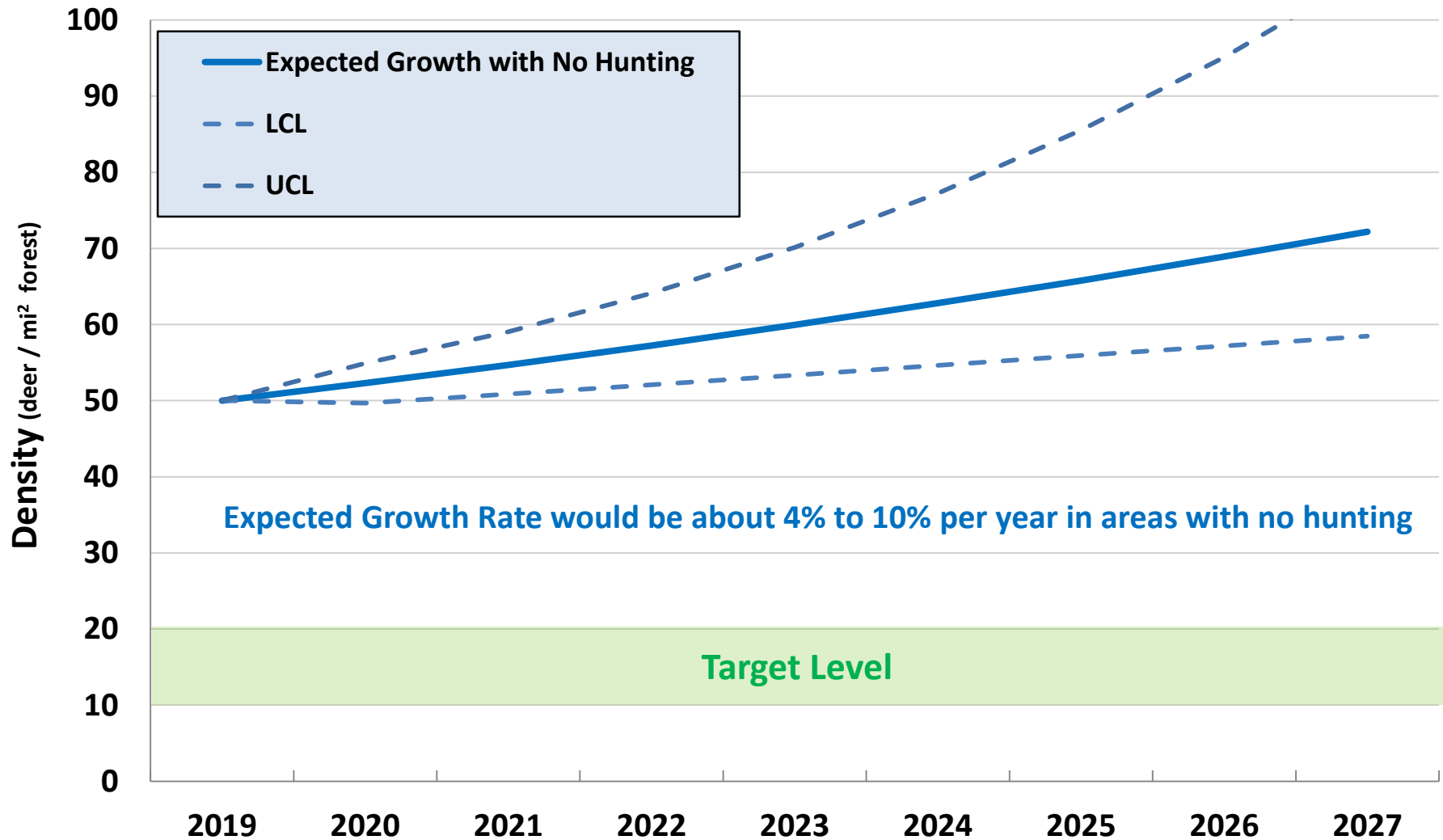
1) Remove the restrictions to hunting

- **Allow hunting on state, town, and private lands**
 - **Landowner liability law:**
 - » **MGL Ch. 21 § 17c: Protects landowners who allow access without charging a fee**
 - Homeowners can allow hunters within 500 feet of their homes
 - State Legislature could reduce the 500 ft. setback for archery

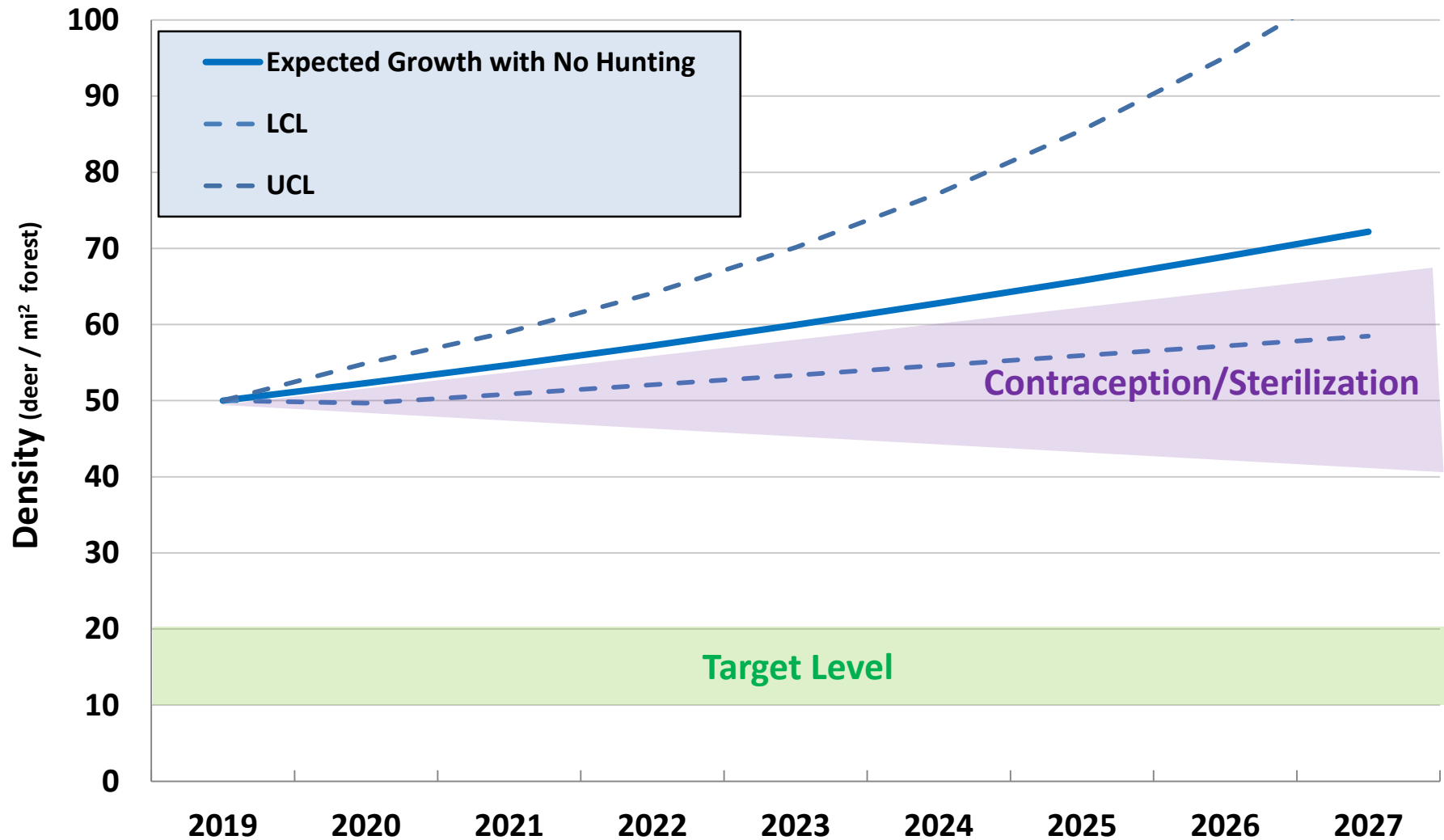
2) Are there options besides hunting? Do they work?

- **Hire a company to cull deer**
 - Not permitted, expensive, same restrictions as hunters (setbacks, by-laws)
- **Move the deer**
 - Not permitted, expensive, difficult to capture, immobilization drugs, disease transmission risk, no places that need more deer
- **Contraception or Sterilization**
 - Not permitted, expensive, difficult to capture all females in the population, no reduction in deer density until deer die (10+ yrs.), new deer will come in

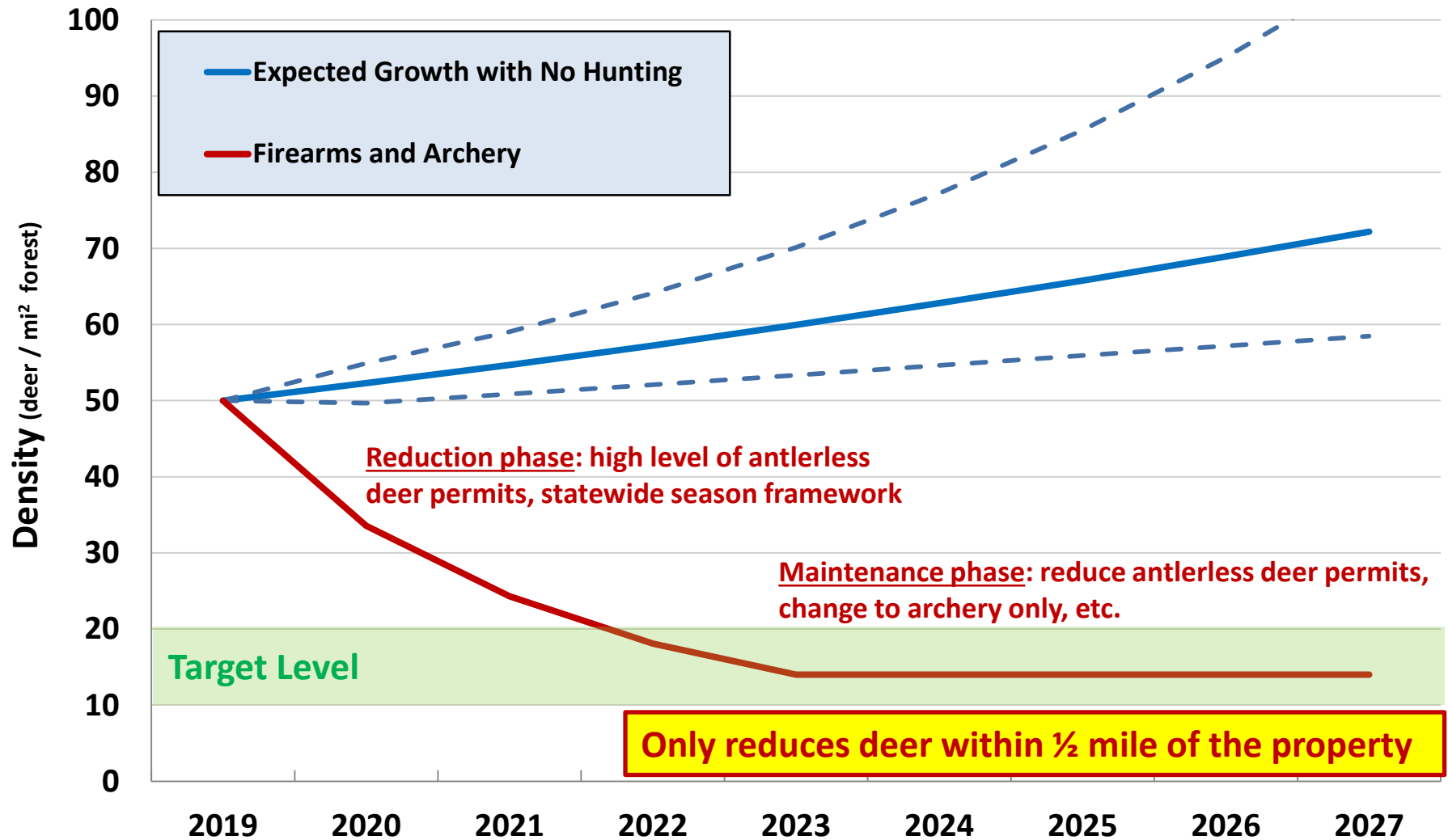
Growth Rate With No Hunting



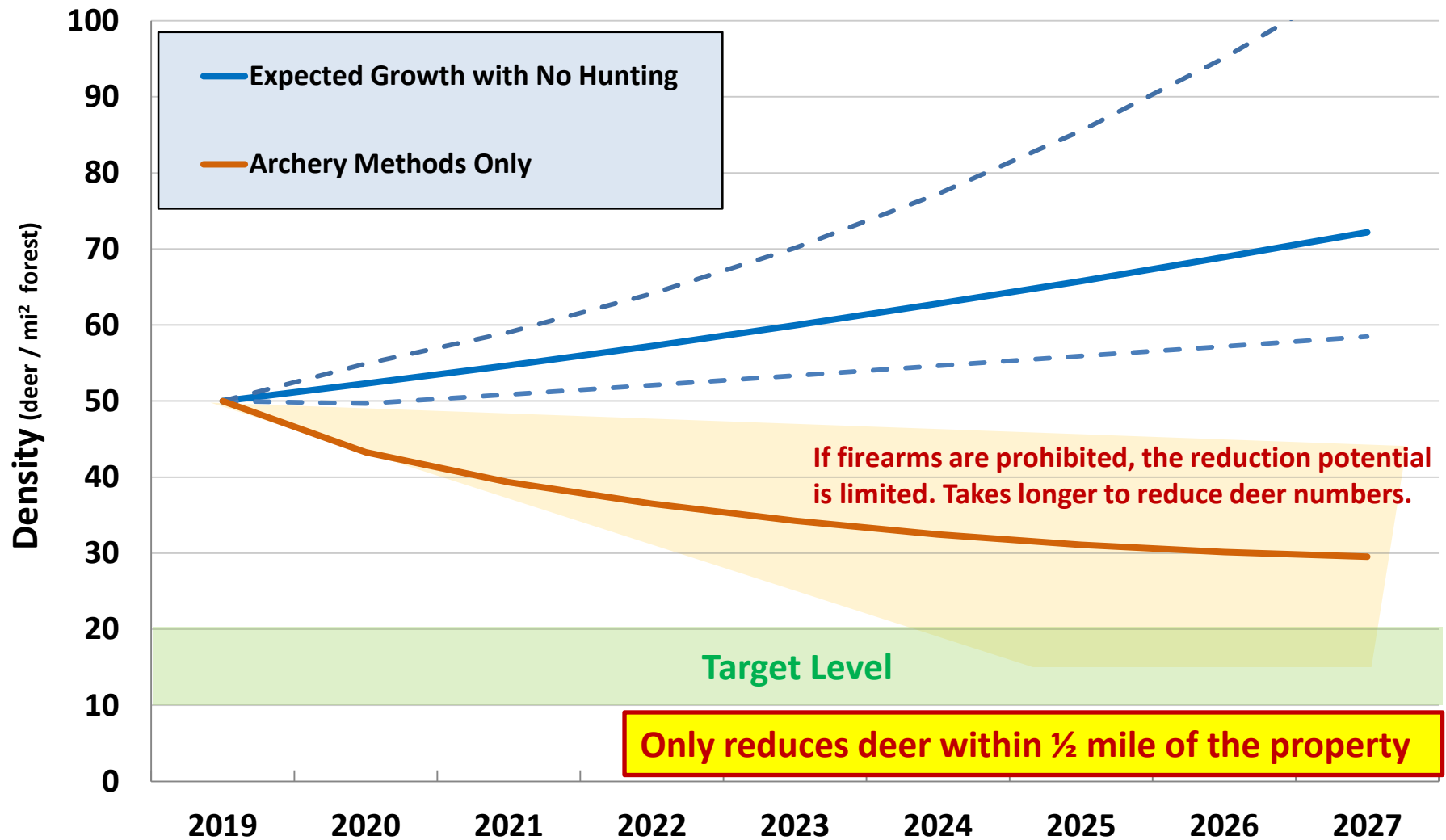
Growth Rate With No Hunting



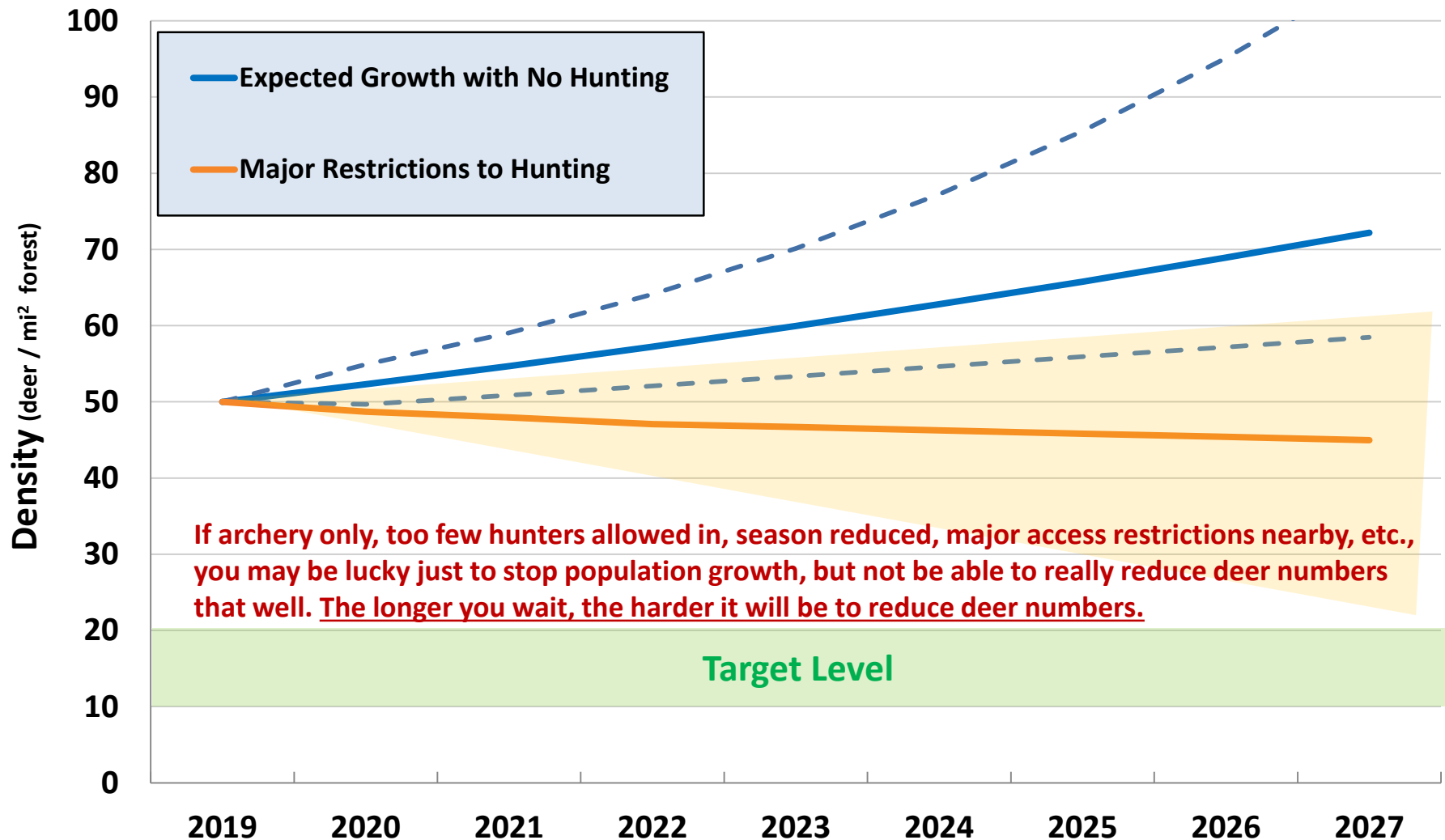
Growth Rate With Hunting



Growth Rate With Archery Hunting



Growth Rate With Limited Hunting



Hunt Models

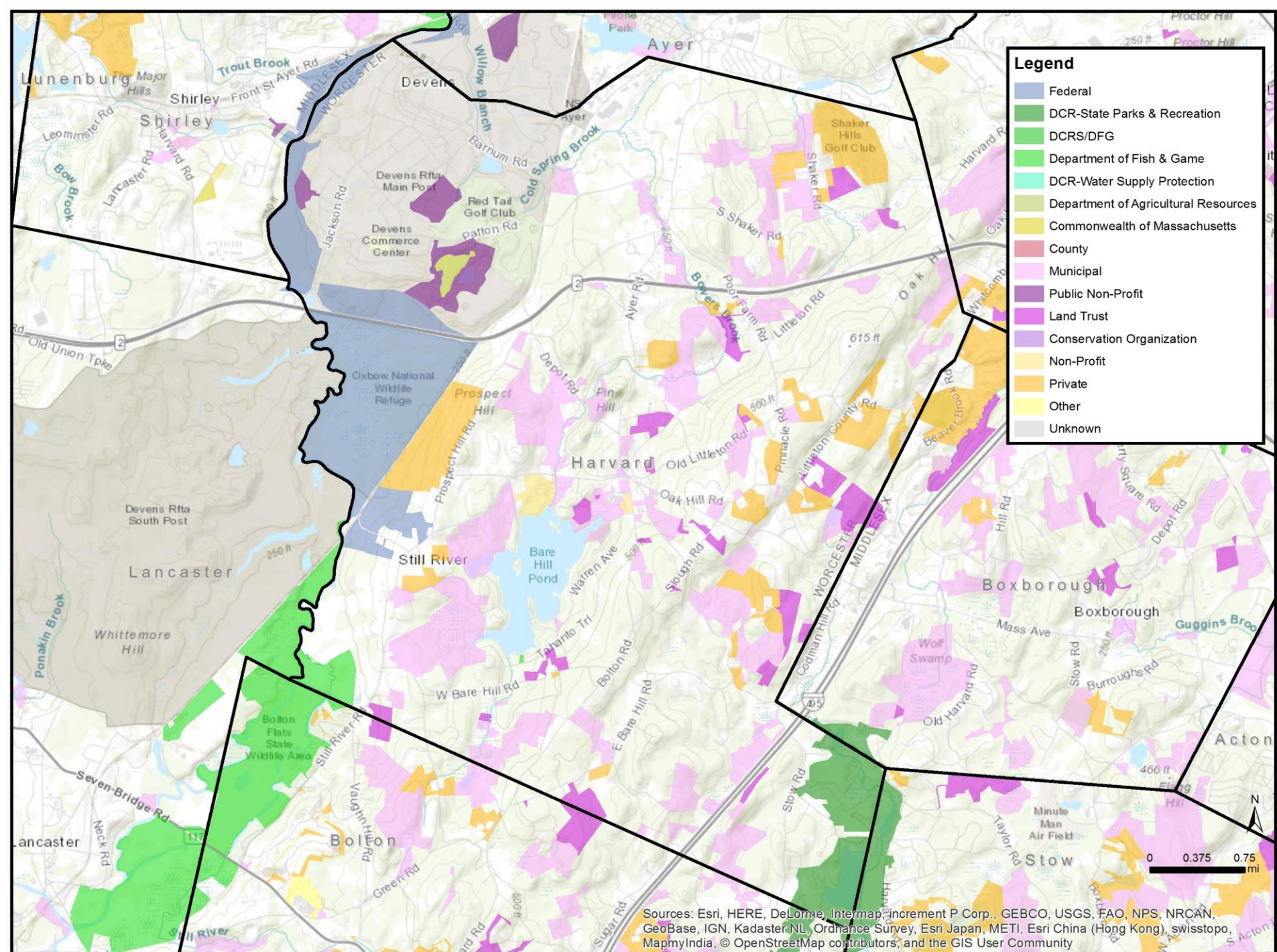
- **Statewide Model**

- **Open access to all licensed hunters during the regulated hunting seasons (simply open the property)**
- **Examples:** State Forests, Wildlife Management Areas, Conservation Restrictions, Private lands, most Town lands in western and central MA, Trustees properties, many land trusts, etc.

- **Controlled Hunt**

- **Restrictions to the statewide model**
 - Limited number of hunters, days, methods (archery only), etc.
- **Examples:** Andover, Carlisle, Dover, Hingham, Marshfield, Medfield, Sudbury, Weston, Quabbin, Wachusett, Blue Hills, etc.
<https://deeradvisor.dnr.cornell.edu/>

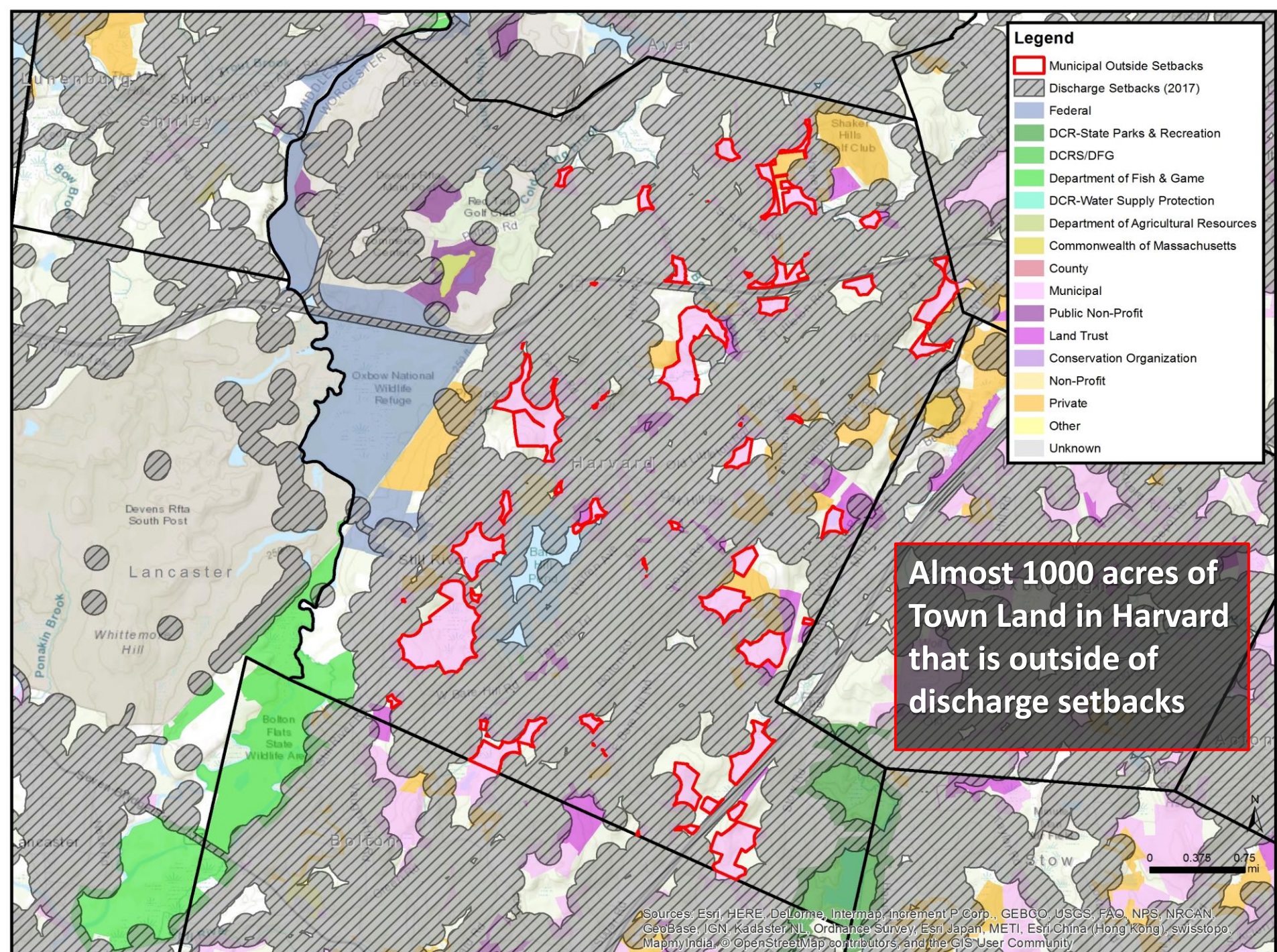
The more restrictions, the less of an impact it will have at reducing deer numbers



Legend

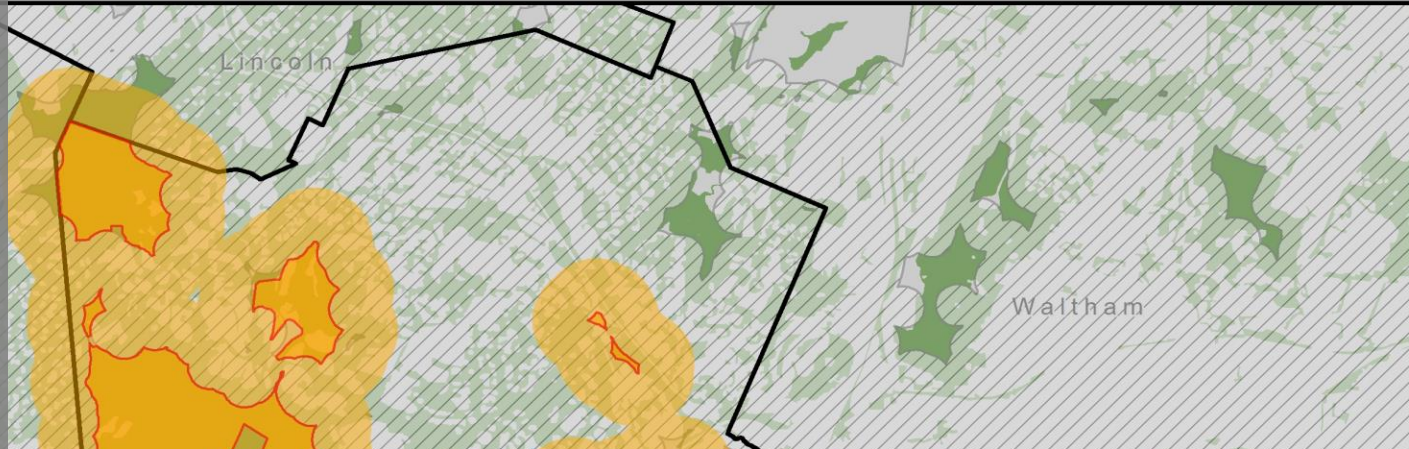
-  Discharge Setbacks (2017)
-  Federal
-  DCR-State Parks & Recreation
-  DCRS/DFG
-  Department of Fish & Game
-  DCR-Water Supply Protection
-  Department of Agricultural Resources
-  Commonwealth of Massachusetts
-  County
-  Municipal
-  Public Non-Profit
-  Land Trust
-  Conservation Organization
-  Non-Profit
-  Private
-  Other
-  Unknown

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



Weston:

Saw increasing deer numbers, negative impacts to forest, increasing vehicle collisions, etc.

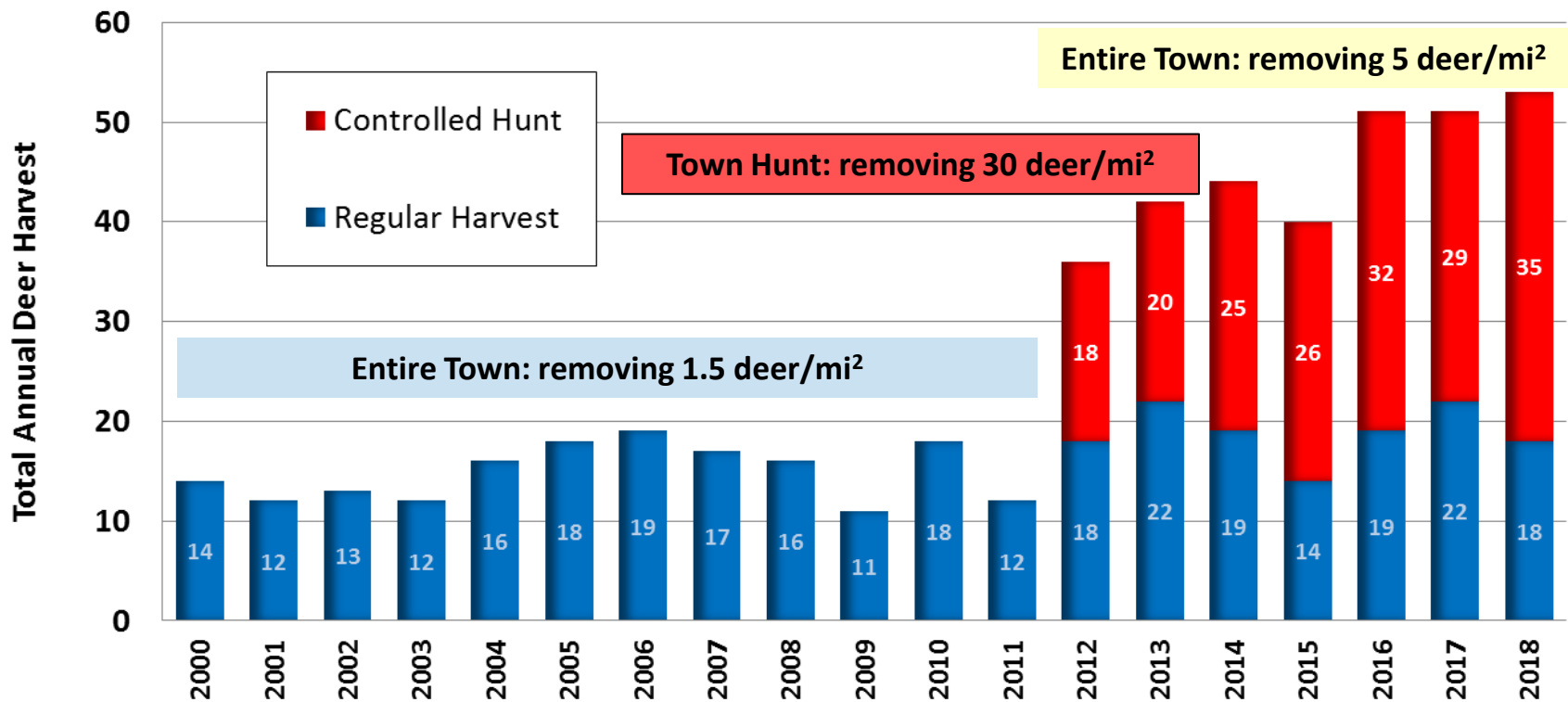


Opened to archery

Nearby land given permission to be with

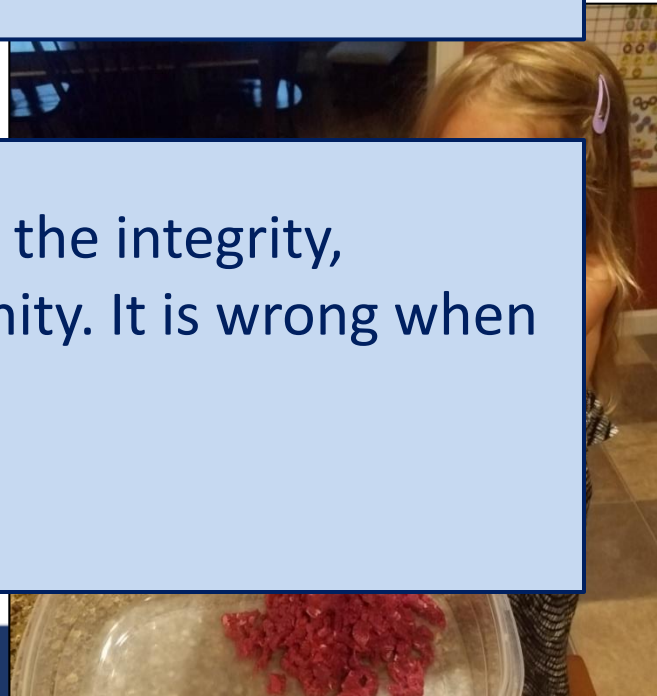
Seeing increase in forest harvest, property collisions, public safety

Total Annual Deer Harvest: Weston



Hunting Benefits Conservation

- **Hunting, Fishing, and Sporting dollars have funded decades of conservation efforts**
- Wildlife conservation is an activity in which people make conscious efforts to protect the earth's biological diversity and ecological balance.
- **Legal, regulated hunting is FREE**
- “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.”
- ~Aldo Leopold



Questions

Are tick numbers influenced by deer numbers?

- Blacklegged tick larvae and nymphs can use any host, but adult ticks seek large mammal hosts (90% deer), also 2-yr life cycle
- **If deer numbers are low enough that most adult female ticks are not getting a blood meal, then they will not lay eggs, and deer can be a limiting factor for tick abundance**
 - Research studies suggest deer densities need to be below 13 deer/mi² to limit ticks *(there is a lot of variability from other factors)*

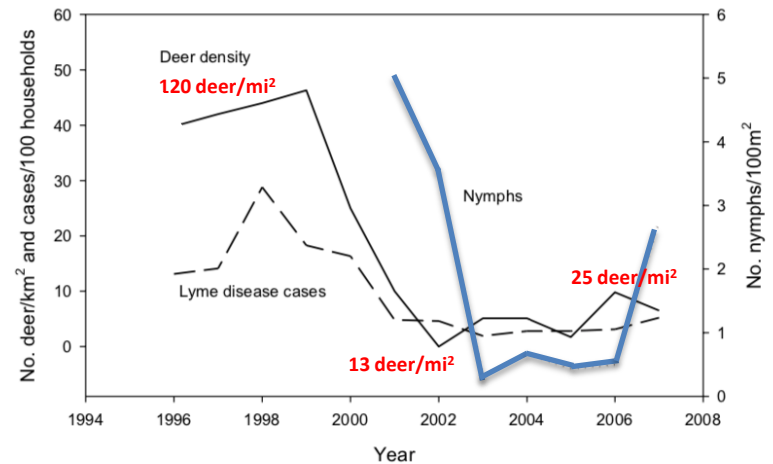
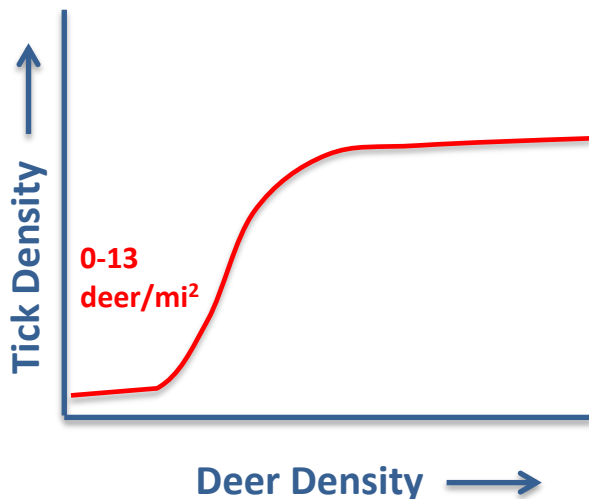


Figure 4. Reduction in deer density, number of Lyme disease cases and number of nymphal blacklegged ticks in Mumford Cove, Connecticut, 1995-2007.



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Thank You
Questions?

Questions

- **Is it dangerous for me to be in the woods when archery hunters are out there?**
 - We have never had a non-hunter injured by an archery hunter in MA
 - Archery hunting is an accepted, safe, and effective method of deer harvest widely used across the country and in MA, especially in suburban settings
 - We would recommend wearing bright colors while recreating whether you are on a sidewalk or in the woods regardless of hunting seasons

Questions

- **I heard that hunting deer just leads to more deer**
 - **more food available means more babies?**
 - This can be true for some animals like rabbits, squirrels, mice, coyotes, foxes, etc. that have litters and can balance their fecundity rate with resource availability
 - Deer tend to have a similar fawn rate regardless of resources(with the exception of extreme habitat depletion and starvation).
 - In MA, we estimate that 2.5+ females will have 1.6-1.8 fawns per female.

Questions

- **I heard that 50% of the deer shot by archers will die and never be found and suffer for days**
 - Pederson et al. 2008, (study cited by PETA) found wounding rates (deer shot and never found) with compound bows and crossbows to be less than 18% in a controlled hunt in Maryland
 - We get a lot of calls reporting deer injured by vehicles, with broken legs, internal injuries, etc.
 - We are not getting calls about wounded deer with hunting arrows sticking out of them

Are there any non-lethal options?

- **Contraception**

- Surgical Sterilization
 - Near 100% effective at preventing pregnancy
- Chemical contraception
 - Near 80% effective at preventing pregnancy with boosters



- **Research conclusions**

- Can be effective at preventing pregnancy
 - May not be feasible (difficult and expensive to treat all females)
- Does not reduce deer numbers because deer have to die
 - Adult females can live over 10-20 yrs
 - Research in MA found adult female survival rates above 90%
 - Not shown to significantly reduce high deer numbers
 - Can potentially stabilize deer numbers if you can keep out new deer