

Fish and Wildlife Board Meeting Minutes

Wednesday, April 26, 2023

The Vermont Fish and Wildlife Board held an in-person meeting at 5:00 pm on Wednesday, April 26, 2023, at the National Life Dewey Conference Room, 1 National Life Drive, Montpelier, VT 05620. A recording of the meeting is available on the department's YouTube channel.

Agenda

1. Approval of Previous Meeting Minutes (April 5, 2023)
2. Public Comments (Limited to 2-minutes per speaker)
3. Petition from Andrew Phelan Re Prohibiting Taking of Sow with Cubs – Potential Vote
4. 2023 Antlerless Deer Permits and Youth/Novice Season – Preliminary Approval – Vote
5. Commissioner's Update

Board Members Present: Michael Bancroft, Brian Bailey, Nicholas Burnham, Brad Ferland (Chair), Neal Hogan, Michael Kolsun, Bryan McCarthy, Robert Patterson, Jay Sweeny, Martin Van Buren

Virtual: David Deen, Allison Frazier, Paul Noel

Absent: Jamie Dragon

Department Staff Present: Commissioner Christopher Herrick, Wildlife Director Mark Scott, Deer & Moose Project Leader Nick Fortin, Wildlife Management Program Manager David Sausville, Game Warden Lt. Trevor Szymanowski, Outreach Director Alison Thomas, Principal Assistant Abigail Connolly

Virtual: Information Specialist John Hall

Members of the Public Present: Mark Moran, Bob Galvin, Butch Spear, Sarah Gorsline, Nancy Fitzpatrick

Virtual: Brian O'Gorman, Bubba, Anne McKinsey, David Robillard

The meeting was called to order at 5:00 pm

APPROVAL OF PREVIOUS MEETING MINUTES

Board Member Patterson moved to approve the minutes from April 5, 2023. Board Member Bailey seconded the motion. The Board voted to approve the minutes (12-0), with Chair Ferland abstaining and Board Member Dragon absent.

PUBLIC COMMENT PERIOD

Bob Galvin, Richmond
Sarah Gorsline, Grand Isle
David Robillard, Orleans County
Brian O’Gorman, Readsboro Falls

[The recording of the public comments can be viewed here.](#)

Petition from Andrew Phelan Re Prohibiting Taking of Sow with Cubs – Potential Vote

Andrew Phelan explained that in October 2022 in the Mad River Valley, a game camera captured a black bear mother with two cubs as they crossed a field. They moved off screen to the left, a hunter entered from the right, who shot the bear and dragged her body away behind his truck. A couple weeks later, a neighbor found a dead cub near a stream. Andrew Phelan explained the reasons behind the petition to prohibit the killing of sows with cubs. The petition is included below.

The Board asked Andrew Phelan questions about how he defines deliberate versus accidental taking of a sow with cubs, whether the event was investigated, whether he is looking to stop hunters from killing sows in general versus sows with cubs, what the female to male ratio of bears in other states are that prohibit the hunting of sows with cubs, the results of the study in Michigan referenced in the petition regarding mortality of orphaned cubs versus the control group, and assumptions made about cub deaths in Forrest Hammond’s published study referenced in the petition. Mark Scott explained that the bear population in Vermont have been stable for the past ten years but trending higher than current 10-year objective of 3,500 to 5,500. He noted that department education efforts and the annual hunting and trapping law digest includes information on not shooting a sow with cubs. Mark proposed that the Board have the department present on bear management later this year, most likely in September 2023. After the Board learns more about bear management, he recommended that they could discuss management changes that may need regulation changes. The department recommendation was to deny the petition. Board Member Sweeny moved to table the petition until the department has time to formulate a response and present on bear management, tentatively scheduled for September 2023. Board Member Bailey seconded the motion. The Board voted to approve the motion (13-0), with Board Member Dragon absent.

2023 Antlerless Deer Permits and Youth/Novice Season – Preliminary Approval – Vote

Mark Scott explained that the department has held three public hearings in March 2023 to get input on the deer herd. There will be two more public hearings on deer, specifically on the proposal for antlerless hunting and the novice/youth deer hunting weekend. These will be in May before the final vote of the Board on May 24, 2023.

Nick Fortin presented population models that are used to estimate deer numbers in Vermont, including the age reconstruction model, the sex-age-kill (SAK) model, and the accounting model DOEPOP. Nick Fortin explained the importance of balancing the deer population with the health of the habitat over time, the deer health indicators that are used to determine whether deer density objectives are being achieved, and the reproduction of white-tailed deer. The presentation is included below. The Board asked questions about the impacts of killing a doe on the deer population and if winter severity effects fawn and adult mortalities differently.

Nick Fortin presented the 2023 antlerless harvest and youth/novice season recommendation and specifically discussed Wildlife Management Units (WMUs) A, B, C, D1, F1, and K. The 2023 recommendation is to reduce deer populations in eight WMUs by increasing the number of muzzleloader deer permits, for a total of 22,000 antlerless permits for the entire state. The recommendation is included below. Michael Bancroft followed up on former Board member, David Robillard's public comment about the threshold of yearling buck harvest for WMUs C and D1. These WMUs currently have no antler point restriction. Other members asked about the timing of data, cracked deer teeth submitted from hunters, and the number of archery licenses including crossbow. Nick Fortin discussed the next steps for the decision by the Board, including two public hearings in May and a final vote on May 24, 2023. The Board voted unanimously by straw pole to approve the department's recommendations.

COMMISSIONER'S UPDATE

Commissioner Herrick explained that staff met with state trash haulers regarding testing solutions for bear resistant trash containers. There were over 1,500 bear conflicts last year and the wardens and the department's bear biologist continue to work on mitigating these conflicts. Commissioner Herrick discussed the department's budget being reviewed by the Legislature and the public comment period is now open (for one month) by the U.S. Fish & Wildlife Service regarding their hunting and fishing plan for the Silvio O. Conte refuge. Commissioner Herrick is traveling to the Northeast Association of Fish & Wildlife Agencies (NEAFWA) at the end of April.

Motion To Adjourn:

The Board moved and approved to adjourn the meeting at approximately 7:00 pm.

Date: March 8, 2023
To: Board of Directors, Vermont Fish & Wildlife Department
From: Andrew C. Phelan
Cc: Catherine Gjessing, General Counsel, Vermont Fish & Wildlife Dept.
Christopher Herrick, Commissioner, Vermont Fish & Wildlife Dept.
Jaclyn Comeau, Black Bear Project Leader, Vermont Fish & Wildlife Dept.
Andrew Timmins, Game Programs Supervisor, Bear Project Leader, NH Fish & Game
Ben Kilham, Kilham Bear Center, Lyme, New Hampshire

Subject: **Petition For the Department to: (1) Pass a Regulation that Prohibits the Deliberate Killing of black bear Sows with Cubs; and (2) Require Bear Education for Hunters As a Condition to Obtain a Bear Hunting License**

Introduction

On an October evening in 2022, a video camera on a front porch in the Mad River Valley captured a black bear mother with two cubs, about 8 months old, as they crossed a field to feed under an apple tree. They fed for a while, the cubs played. Close together, they were clearly a family group. Something caused the sow to try to take her cubs to safety. Together, they moved off-screen to the left. A hunter entered from the right, crouching and stalking them. On video, he shot the mother bear and dragged her body away behind his truck. Three weeks later, a neighbor walking in nearby woods found one of her cubs starved to death near a stream, with no signs of dismemberment or injury. When she returned several days later, its body had been moved and scavenged. By the time I was shown the site a month later, all that remained were tufts of fur and black hair. The other cub was never seen again and likely suffered the same fate.

I do not oppose ethical and humane hunting. What happened here was neither. Deliberately killing a mother with cubs is cruel. In most cases, and as clearly demonstrated here, it leaves the orphaned cubs extremely vulnerable to suffering a prolonged and painful death from exposure, starvation, or predators. A regulation that bars deliberately killing mother bears with cubs, together with mandatory bear education that includes cub dependence and other salient bear/cub information would, every year: (1) spare dozens of helpless cubs the cruelty and pain the cub here suffered; (2) require no substantial expenditure of money or time; and (3) likely have broad support across Vermont, from both hunters and non-hunters alike.

Discussion

A. The Department’s “recommendation” against killing mothers with cubs does not protect vulnerable cubs.

Assuming this killing was unlawful, I researched the topic. Although numerous states prohibit the deliberate killing of mothers with cubs, Vermont is not one of them. The Department’s statements and literature, however, already seem to support a prohibition against killing sows with cubs. A heading in Vermont’s 2022 bear hunting pamphlet said, “Don’t Shoot Sows With Cubs,” followed by text that the Department

“recommends not shooting sows accompanied by cubs or a bear that is part of a group of bears as bears seen together in the fall are most likely a female accompanied by her cubs.”

Other text urges hunters to be ethical and humane, including to spare sows because the “cubs are still dependent on their mothers this time of year and will stay with her until the following spring.” These recommendations, however, are readily disregarded by hunters. The Mad River Valley hunter showed nothing but contempt for the Department’s recommendations and appeal to humane hunting. As long as it remains legal, such hunters will continue these killings.

The Department has no idea how many other hunters deliberately kill mothers with cubs each year or how many cubs suffer the same fate as the Mad River Valley cub. The Department does not track that information and likely has no reliable way to do so. It happens far more frequently than any of us would like to admit. Numerous publications across the country, year after year, identify hunter killings as either the top or a top cause of orphaned cubs, often followed by vehicle strikes, dispatch of nuisance bears, and den disruption.

The Board can and should pass a hunting regulation to prohibit these killings. The Department is responsible for humanely managing Vermont’s wildlife for all Vermonters. It should not cede this key responsibility by leaving the killing of mother bears to the discretion of hunters. Passing this regulation would also correct an omission necessary to ensure compliance with Vermont’s bear quota. Vermont law allows hunters to kill only one bear per year. Allowing hunters to deliberately kill mothers with cubs sanctions violations of this limit. A cub is a bear. Killing the mother makes it very likely that her cubs will also die. Killing the mother causes not just her death, but the death of two or more bears, depending on the size of her litter. That the hunter did not also shoot the cubs does not render them any less dead. Killing the mother directly caused each additional cub’s death.

B. The proposed regulation would have immediate effect and require no significant resources or time.

The Department's black bear hunting reports note that, in 2020 and 2021, Vermont hunters killed 459 and 355 sow bears, respectively, for an average of 407 per year. Even conservatively assuming that just 15% of the sows had first-year litters of only 2 cubs each, means more than 120 cubs every year (on average) are exposed to suffering the same fate as the Mad River Valley cub. Sparing these cubs that cruelty would require no new, expensive, or time-consuming initiative. It may even save resources spent rescuing even the few cubs that Vermonters find orphaned after their mothers were shot. Most of those orphans will die alone and unnoticed off in the woods. The regulation would also save resources of rehabilitators like the Kilham Bear Center, which are already swamped by too many orphaned cubs.

Saving so many cubs annually would be achieved simply by passing the regulation. This is because the vast majority of law-abiding hunters will comply. In recent years, the Department has issued more than 12,000 bear-specific hunting permits and 80,000 general hunting permits that allow "opportunistic" bear hunting while targeting other species. Spread out across Vermont, it is inevitable that these many thousands of hunters will find many mother bears with cubs. With the regulation in place, the vast majority of these hunters, knowing it is illegal, will not kill those mother bears and will take more care to look for cubs nearby. All those cubs, left to be raised by their mothers, will enhance the diversity and health of the Vermont bear population by learning how to survive in the wild from their wild mothers and be less likely to become nuisance bears.

C. By passing the regulation, Vermont will join numerous other states, likely even a majority, that ban this practice.

The requested regulation is far from extreme. Indeed, it seems that Vermont is one of the few states that allows killing mother bears. Even in the limited time I had to survey other states, I found ten with long hunting traditions that explicitly prohibit killing mother bears with cubs: Montana, Idaho, Michigan, New York, New Jersey, West Virginia, California, Wisconsin, and Oregon. Alaska also prohibits these killings in most parts of the state. From this research, it appears that a majority of states, perhaps even most states that allow black bear hunting, prohibit the cruel practice of killing mothers with cubs. Vermont should join them.

D. Most Vermonters, hunters and non-hunters, likely would support this regulation.

I spoke with dozens of people from many walks of Vermont life while researching this petition and after publishing commentaries on the Mad River Valley killing in VT Digger, Front

Porch Forum, and the Valley Reporter. Without exception, every person with whom I spoke or who responded expressed disgust at the cruelty and lack of ethics this killing demonstrated. Significantly, many were hunters, including a member of this Department's Board. Without exception, every hunter told me that neither he nor any hunter he knew would have killed the sow. Even the owner of the business that hosts the game reporting station where this killing was reported told me he would support a regulation that bars deliberately killing mother bears with cubs. Sightings of mother bears with cubs are favored wildlife sightings for many Vermonters. They create lasting memories. Hunters are not immune from that reaction either. In researching this petition, I came across numerous blogs across the country where hunters wrote that, when they spotted a sow with cubs, they did not pull the trigger and, instead, took some time to enjoy watching the bear family, relieved that they had not fired. The only people who might oppose the regulation are the unethical hunters, whose input I trust the Department would not credit.

E. In tandem with the regulation, the Department should require bear-specific education in order to obtain any license that would allow targeted or opportunistic hunting of bears.

Hunters who are informed of the important reasons behind a regulation are more likely to comply with it and, importantly, will then be equipped to share that information and persuade other hunters to comply as well. This education will be useful in many ways, including to correct erroneous notions that most first-year orphaned cubs can survive without their mothers. It would help hunters avoid adverse bear interactions, by, for example, providing tips for safe interactions when hunters come across a sow with cubs (e.g., not getting between them; leaving the bears an escape route, etc.). It would provide training on specific things a prudent hunter does to check for cubs before shooting. It could include what Andrew Timmins, New Hampshire's Game Programs Supervisor and Bear Project Leader, recently told me: hunters spotting cubs should not be a significant problem, as some people may claim. By the time fall hunting season begins, the cubs are weaned and eat on their own, rather than suckling. So they are no longer stashed in trees while the sow goes off to feed. Rather, the family groups typically stay close together and feed together. This proximity was clearly displayed with the Mad River Valley bear and cubs on video. The hunter shot the sow with her cubs by her side.

F. Available facts, studies, expertise, and common sense indicate that most orphaned first-year cubs will die without their mothers.

As a matter of black bear biology and evolutionary development, cubs stay with their mothers for 18 months before separating. There is a natural reason that bears have evolved this

way: this period is needed for the cubs to grow and learn to survive while being protected from predators. Born in February at less than a pound, cubs need extended guidance and protection. They need time to learn to forage for food in different seasons, including when soft- or hard-mast is scarce. They need to learn how to avoid human food sources and traffic, how to build up fat reserves needed to survive hibernation, how to den, how to hibernate, and, critically, they need protection and help in their depleted condition when they emerge from their first hibernation and must find scarce early-spring food to survive.

As noted earlier, the Department’s hunting pamphlet and website recognize first-year bear cubs’ reliance on their mothers until their second spring. A Department bear biologist, Forrest Hammond, also recognized in a published study that black bear cubs need their mothers to survive through their first hibernation. Having tracked 17 mother/cub litters in this study over an extended period, Hammond noted that any black bear cubs that were “not present in the den with their mothers as yearlings were assumed to have died.”¹

Significant current knowledge about orphaned black bears and their survival capabilities comes from extensive hands-on work with orphaned bear cubs at the Kilham Bear Center (“**Kilham**”) in New Hampshire.² For the past 30 years, Kilham has rehabilitated, and released orphaned black bear cubs from Vermont, New Hampshire, Connecticut, and Massachusetts. Kilham has released over 500 orphaned cubs back to the wild. Kilham does not return first-year cubs to the wild for the simple reason that they are not ready and would be unlikely to survive. Kilham releases them at about 18 months, in the spring after their first successful hibernation and after they have bulked up from hibernation depletion. This release age is no coincidence: it is the same age at which, in the wild, they are ready to live independently and separate from their mothers.³

¹Hammond, Forrest M., *Stratton Mountain black bear Study, The Effects of Resort and Residential Development on black bears in Vermont*, Vermont Agency of Natural Resources, Department of Fish and Wildlife Final Report (November 2002) at 11.

²Link: kilhambearcenter.org. Of particular interest is a recent (October 2022) New Hampshire Union Leader article on Kilham, which details the work of that Center and current orphan cub statistics, and identifies coordination efforts with the Department’s bear and other wildlife staff.

³Bear cub rehabilitators are scarce. New England is fortunate to have Kilham, which grew out of Ben Kilham’s concern for orphaned cubs. His Center survives on private donations. Food alone for each cub costs up to about \$2,500. This figure does not include the substantial labor performed by the Kilham family. <https://forestsociety.org/forest-journal-column/orphan-bear-cubs>. Kilham can take in only a fraction of cubs orphaned each year. It already has too much work and too few resources to handle the volume of orphaned cubs in need, which in 2022 was projected to be over 100 orphaned cubs.

G. The notion that most orphaned first-year black bear cubs can survive without their mothers is based on flawed articles from decades ago that continue to be cited today, often inaccurately.

A common rationalization for the failure to prohibit killing mother bears with cubs is the flawed notion that most orphaned first-year black bear cubs 5 to 8 months of age readily survive on their own in the wild after they lose their mothers. For ease of reference, I will refer to this as the “**Broad Survival Notion.**” Although I looked for them, I found no recent or modern studies that support this Notion, apparently because such survival is very hard to study.

Recent orphaned black bear survival studies do exist, but they focus not on any release of first-year cubs, but, rather, on release of yearlings. Yearlings are cubs in their second year: they have come through their first full winter hibernation and are released at about 18 months. This appears to be the modern view and focus: that survival is far more likely for orphans released as yearlings and not in their first-year. *See* J. Clark, M. Pelton, B. Wear, D. Ratajczak, *Survival of Orphaned Black Bears Released in the Smoky Mountains* (2002); W. Smith, P. Pekins, A. Timmins, B. Kilham, *Short-term fate of rehabilitated orphan black bears released in New Hampshire* (2016).

With no recent study on the survivability of first-year cubs to fill the void, many people, including some wildlife authors, continue to rely on the same very old authorities as supposedly supporting the Broad Survival Notion. Two principal articles are cited time and again: A. Erickson, *The Age of Self-Sufficiency in the Black Bear* (1959) (“**1959 Erickson**”); and G. Alt & J. Beecham, *Reintroduction of Orphaned Black Bear Cubs in the Wild* (1984) (“**1984 Alt & Beecham**”). A third article is also often cited: N. Payne, *Unusual Movements of Newfoundland Black Bears* (1975) (“**1975 Payne**”). None of these articles, however, says that most orphaned black bear cubs will survive, nor do I think that their authors expected them to be so interpreted. But that seems to be what has happened. This has probably resulted from the fact that these articles, in the absence of anything more recent, have been cited time and time again without the people who cite them going back to carefully read these original works. As a result, they cite them, often innocently but nevertheless carelessly, as supposed proof for the Broad Survival Notion that most if not all 5 to 8 month first-year orphaned cubs can survive in the wild without their mothers.⁴ The more these articles have been cited, the more widespread the Broad Survival

⁴An oft-cited publication by a Vermont bear biologist also repeats the Broad Survival Notion. C. Willey, *The Vermont Black Bear* (1976). Of course, he cites the 1959 Erickson article. *Id.* at 7 & 63. His recitation of this Notion is by rote, like so many other authors. Willey asserted the Notion of first-year orphan survivability from a mere 5 months of age as purported fact because he relied, innocently but erroneously, on the Erickson article. Willey is also incorrect in asserting that cubs as small as 18 pounds readily survive. He also bases this entirely on Erickson’s article. Perhaps it can survive for 14 days

Notion has become despite its inaccuracy. But repeating a faulty Notion, no matter how many times, does not make it true.⁵

I do not claim to know more about bears than biologists or experienced wildlife professionals. But, as a lawyer who, for decades, handled litigation matters for the Justice Department and in private practice, a significant part of my work has involved assessing numerous expert reports prepared by professionals in various fields in order to determine whether what they did supported the opinions they asserted. I applied the same approach to a careful review of the three articles and found it clear that, in them, their own authors did not assert the Broad Survival Notion and the data they compiled also does not support that Notion. In Appendix A to this petition, I explain in detail my analysis of these articles. I summarize the salient parts of each and then explain how they do not support the Broad Survival Notion.

It is not disputed that some remarkable orphaned first-year cubs can survive on their own. For this to happen, however, requires the rare confluence of numerous favorable events, including: (1) a remarkable cub, the older and larger at the time it is orphaned the better; (2) readily available natural food, preferably with bumper crops of soft- and hard-mast; (3) unusual luck in avoiding or escaping predators, vehicles, and humans (including their trash); (4) the instinct to divine how and where to safely den to survive their first winter in hibernation; and (5) skills and luck to avoid predators and find scarce early-spring food when the cub emerges from hibernation in depleted physical condition. Because the confluence of all of these is so rare, the vast majority of orphaned first-year cubs die the same kind of death suffered by the Mad River Valley by a stream last October, mere weeks after the hunter killed its mother.

Conclusion

In only one sense can something positive come from the Mad River Valley hunter's killing the mother bear and dooming her cubs to suffer and die. He was unwittingly captured on video clearly and deliberately killing the mother bear in the immediate presence of her cubs and a Vermonter walking in nearby woods just a short time later happened across the dead, starved cub. Most hunting kills take place out in the woods where nobody sees them and only the hunter

(Erickson's standard) or even somewhat longer, but modern bear experts can confirm that survival of such a small cub is extremely unlikely. Such small cubs are easy prey for Vermont carnivores like adult bears, coyotes, fisher cats, dogs, and even bobcats or large raptors, to say nothing of their greater likelihood to succumb to starvation or failed hibernation. Willey's publication contains a wealth of detailed, useful, and accurate black bear information, but his assertions about the likely survivability of most orphaned 5-7 month black bear cubs are incorrect.

⁵Some, such as unethical hunters or those who favor completely unrestricted hunting, have no interest in accuracy and will continue claiming, falsely, that these articles support the Broad Survival Notion.

knows what actually happened. And when hunters kill mothers with cubs, the fate of those cubs remains unknown but shrouded behind the Notion that first-year cubs readily survive on their own. The stark facts here contradict both aspects and identify a blind spot in our law that we should and must clear. Hunters do deliberately kill mothers with cubs. That is a fact. And most of their orphaned first-year cubs will die as a direct result. That also is a fact.

We now have the opportunity – really, the obligation – to re-examine both the failure to prohibit killing mothers with cubs and the validity of the flawed articles that have been used for decades to justify or rationalize that failure. Rote reliance on, or even exaggerated expansions of, these decades-old articles should end. Modern knowledge of black bear cub development among wildlife biologists and extensive and direct experience among cub rehabilitators contradicts the Broad Survival Notion and demonstrates that most first-year cubs need 18 months to grow and learn to survive independently.

The only rationale I can think of that would prompt the Board to not pass the requested regulation here is that the it does not consider cruel deaths each year of dozens of orphaned first-year cubs by predators, exposure, and prolonged starvation to be a sufficiently important public interest to address as part of its obligation to humanely manage wildlife for all Vermonters. If that is the case, it is very troubling and disappointing where the suffering and deaths of orphaned cubs is so easily preventable and results directly from activity that the Department currently endorses by allowing hunters to kill sows with cubs.

I hope that the Department considers this issue an important one. The 18 months that cubs need is unfortunate (for the cubs) and inconvenient (for the hunters inclined to deliberately kill their mothers) because this period will always span one bear-hunting season. But it is a minor inconvenience. The cubs really are helpless. They cannot fend for themselves and need protection. The least we should do as regulators charged with humanely managing vulnerable wildlife, is to prohibit these deliberate killings. This regulation can protect countless helpless and vulnerable cubs from the senseless suffering that we know the Mad River Valley cubs here experienced, and that uncounted others will experience as well.⁶

A.C.P.

⁶ In Appendix B below, I respond to several potential other objections that some might raise to the proposed regulation. If those or any others appear to the Board to have significant merit that I have not addressed, please let me know. I am available to discuss this issue further.

APPENDIX A

Analysis of 1959 Erickson, 1985 Alt & Beecham, and 1975 Payne Articles

1. Summary of the Three Articles.

The 1959 Erickson Study. Erickson stated that the purpose of his study was to “report[] experiments to determine whether black bear cubs 5 to 8 months old can survive by themselves in Michigan’s Upper Peninsula when released from steel traps ... or when orphaned by hunters.” He noted that, a “hunting season which permits killing the mother before the young become self-reliant necessarily results in the loss of her young as well.” The standard for his opinion on survivability (he called it “self-reliance”), was whether the cubs survived for at least 14 days after release. He said, “Recoveries [i.e., killings or re-trappings] 2 weeks or longer after release were considered adequate evidence of self-sufficiency.” The data upon which he based his opinion was as follows: he released 20 orphaned cubs and compared their “survival” against a control group of 12 cubs released with their mothers. Of the 20 orphaned cubs, 13 were never seen again, only 1 overwintered (shot at 391 days), 1 was re-trapped after 17 days and 5 were shot within 47, 54, 88, 102, and 117 days. Of the 12 control group cubs, 8 were never seen again, 3 were shot within 95 days and one was retrapped 348 days later.⁷

In addition, Erickson released one 5.25 month cub and one 6.5 month cub, each on a small uninhabited island (one had a Coast Guard station). A third cub released on one of the islands was shortly thereafter killed by a trapper. Erickson described the islands as having relatively poor natural food sources for bears and no other bears. When he returned to the islands the next July, he found recent evidence of the bear cubs on both islands, indicating that they had overwintered but one was shot that month as a nuisance to the Coast Guard station.

The 1984 Alt & Beecham Study. Alt and Beecham studied various ways to save orphaned cubs. These included, for example, rehabilitating cubs until they were 15-18 months before release and efforts to get other sows to foster orphans (such as by tossing them near or into natal dens, treeing natural cubs and adding the orphan to the tree before the mother returned). Relevant here, they also tried releasing first-year orphaned black bear cubs into the wild. Specifically, 23 cubs were held in captivity for 2-3 months before being released at “≥ 5 months of age.” Given the stated release dates of June 17 and August 22, and using February 1

⁷Looking at these figures with so many orphaned first-year cubs being shot makes it clear that another significant danger orphaned cubs face is being mistaken for adult bears because, as orphans, they will move not as a family group and be recognizable as such and not shot – at least by ethical hunters, but as single bears more prone to be shot.

as the approximate birth date, the cubs must have ranged between 5.5 and 7 months at release. The authors defined success/survivability as follows:

“Reintroductions of pen-reared orphans were classified as failures if cubs were found dead or if they became a chronic nuisance. They were classified as successful if the orphans were recaptured in non-nuisance situations after 30 days.”

Of the 23 cubs: 14 were never seen again; 5 were deemed “successful” and 4 were deemed “failures.” The “4 failures included 3 recoveries in nuisance situations soon after release and one that died of unknown causes within a week after release.” The authors do not explain anything about the 5 they deemed “successful,” such as the number of days before recapture, so we assume that, per the definition, that they were recaptured in non-nuisance situations after 30 days. They did not identify any that survived for any extended length of time, let alone any that survived overwintering to become yearlings.

The 1975 Payne Article. Payne did not conduct a study. Rather, he wrote a brief article on “unusual” travel by several black bears in Newfoundland. Two were caught and shipped to an island a considerable distance away but returned to the capture site. A third bear, with three cubs, also traveled a very long distance to return to her capture site, but returned with only two of her cubs. She was killed, presumably as a nuisance. Payne wrote that this sow’s two cubs were recaptured a year later after again traveling great distances and observed that, as first-year orphans, they had successfully evaded predators, dened, and overwintered.

2. Observations about the Erickson, Alt & Beecham, and Payne Articles.

a. Defining “survival” or “self-sufficiency” as staying alive for merely 14 or 30 days is meaningless because it fails to account for the actual survival gauntlet that orphaned black bear cubs face from the time they are orphaned through their emergence from overwintering.

Successful “survival” is not reasonably or reliably projected by the fortuity that, for periods as short as 14 or 30 days, a few cubs can manage to find some food and avoid predators. Survivability must be examined for a much longer period because orphaned cubs must overcome many challenging obstacles to survival over the course of the many months into the spring after their first overwintering. These diverse and challenging obstacles do not last a mere 14-30 days. They last until an orphaned cub would normally leave its mother naturally at 15-18 months. Alone with no guidance or protection, orphaned cubs must survive the starvation-exposure-carnivore gauntlet. For this entire time – not just 14-30 days, or even for a couple of months – orphans must forage for sufficient food to gain weight. They must do so across

increasingly difficult seasons: summer, fall, early winter (before hibernation) and early spring. They must do so in both high and low-mast years, and switch between foods in times of scarcity. For all those months while they search for food, they must also avoid carnivores (e.g., bears, coyotes, fisher cats, even unleashed dogs), vehicles, and human foods. Critically, they must gain sufficient mass and fat to hibernate successfully, so their food requirements are high. They must build functional dens that avoid collapse, flooding, etc., and stay warm through hibernation and avoid rapid energy depletion without the obvious benefit of their bulky mother's shared body heat. Then, upon emerging from hibernation in depleted physical condition, they must find scarce early spring food while again avoiding or fighting off hungry predators. Bear biologists recognize the early spring as "undoubtedly the most difficult time of year" for the cubs. C. Willey, *The Vermont black bear* (1976) at 9. None of this is captured by the almost nonsensical notion that survivability can be judged by survival for a mere 14 or 30 days. The role of the mother is to help her cubs through this lengthy survival gauntlet. An orphaned cub must survive that entire period alone.

Significantly, the Alt & Beecham article admits the critical need to survive overwintering. People who cite them for the Broad Survival Notion that cubs survive from a mere 5 months overlook that the authors explicitly recommended that orphaned cubs not be released before 15-18 months due to concern that, without their mothers, they would not be able effectively to forage for sufficient food. They made the following specific recommendation:

"If releases are to be in remote areas, we recommend holding pen-reared bears until they are 15-18 months old, especially if there is a poor supply of natural foods during the summer and fall that they are cubs."

They do not define "remote" or say how it differs from other release sites. The only explanation I can think of for this is that they could mean that, in remote locations, human food sources will not be available to supplement natural forage. Well, all cub releases should be in "remote" locations because the last thing anyone wants is for them to (artificially) survive on human food, which will likely cause them to later require destruction as "nuisance" bears. In all events, it is very significant that, despite asserting that they would deem releases of bears at 5 months to be "successful" if those cubs were survived for a mere 30 or more days in non-nuisance situations, the authors explicitly recommend holding pen-reared cubs until they are 15-18 months old. Well, this recommendation trumps their "success" assertions at younger ages. After all, pen reared cubs at least have humans to help care for them. Orphaned cubs in the wild have nothing but themselves: no mothers and no humans.

Alt and Beecham's 15-18 month pre-release recommendation also not only identifies the extreme importance of good natural food supplies for survival, it also spans the overwintering period (usually month 12 to month 15 or 16), and the early-spring bulk up period, ending only at the 18th month at which non-orphaned black bears normally separate from their mothers. All of this further negates the Broad Survival Notion of cubs as young as 5-7 months and highlights the need to measure survivability through the age when cubs would normally leave their mothers at 18 months.⁸

b. If the correct survivability measuring period runs from each orphan's loss of its mother through overwintering, then both studies utterly fail to provide any basis for the Broad Survival Notion: across those two studies only a single cub survived that long.

In Erickson's mainland orphan cub study, there was only evidence that 1 of the 20 cubs overwintered. This yields a proven survival rate of just 5%. Even if we disregard the unknown fates of the 13 cubs, only 1 cub overwintered and the remaining 6 were shot or captured before winter, for a survival rate of a mere 14%. In their study, Alt & Beecham reported no evidence that any of the original 23 cubs, or even any of the 9 cubs that they deemed to be "successful" or "failures" ever overwintered. Whether we assess all 23 or just the 9, Alt & Beecham demonstrated an overwinter survival rate of 0%.

c. The unknown fates of numerous orphaned cubs in both the Erickson and Alt & Beecham studies undermine the assertion that those studies support the Broad Survival Notion.

Erickson did not know the fates of 65% (13 of 20) of the mainland orphaned cubs. Alt & Beecham did not know the fates of 60% (14 of 23) of the orphaned cubs. This may be because digital tracking was not available or not economical. Whatever the reason, it substantially undermines those studies. The unknown fates of so many missing cubs in studies where their

⁸This need to measure survivability through the overwintering months was also noted by a more recent first-year orphan black bear study. See L. Rogers, *Aiding the Wild Survival of Orphaned Bear Cubs*, USDA Forest Service (1992). In this study, Rogers claimed "successful overwinter survival" where 9 of 14 orphaned cubs older than 7-months survived their first full winter. The author readily admitted, however, that a "confounding factor in the high survival" rate in his study was the fact that all the cubs, even after being orphaned, "had access to supplemental food." In fact, they accessed the same human food sources that prompted the destruction of their mothers as nuisance bears. This negated his "survival" rate because, as he admitted, the cubs were far better able to survive because, due to the human food, they "grew more rapidly than cubs with mothers" and were not "wild" because they were essentially human-fed and not self-sufficient. They also were likely doomed as nuisance bears by their habituation to people and trash. Rogers' work did confirm a very important point: to accurately assess first-year survivability requires us to account for the period through overwintering.

fates were so critically important for the study itself, shows the methodologies wanting. After all, the only purpose of the studies was to see if the orphans could survive death from starvation, exposure, and predation without their mothers. But 27 cubs across the two studies simply disappeared. Common sense and the laws of probability given the myriad risks that faced these orphans would indicate that the most likely reason they went missing is because they died from the gauntlet of risks they faced all alone – risks that the control group cubs with their mothers did not face. In all events, that an equal percentage of cubs went missing from the control group is meaningless for proving any aspect of survivability.

d. Evidence that some first-year orphans overwintered shows that some can survive without their mothers, but does not even remotely support the Notion that most could survive

In his article, Payne identified two Newfoundland first-year orphaned cubs that overwintered and survived. This demonstrates that some first-year cubs can survive. Payne did not, however, extrapolate from this that such survivability is or could even be expected to be widespread. Further, combining Payne's 2 observed cubs with the ones shown to have overwintered in Erickson (3 of 22, including the two island cubs) and Alt & Beecham (0 of 23), yields a total of 5 cubs for which there is proof of overwintering from a combined group of 47, for an extremely low successful overwintering rate of just 10%, which does not support at all the Broad Survival Notion.

Payne's article is also useful in underscoring key capacities that must be learned or demonstrated in order to survive. He observed that the two cubs were able to build suitable dens, overwinter, and avoid mortality from encounters with grown bears and other predators. Two of those occur during the 12-15th month of a cub's life (denning and overwintering) the third occurs throughout all 18 months until the orphan would normally have left its mother. These observations from a wildlife biologist further support the notion that survivability assessments must measure survival capacity through overwintering into early spring.

Regarding Erickson's two surviving overwintering cubs on the two islands, several survivability points are worth mentioning that weaken even that "proof" of survivability. The environments into which he placed them were artificial and lacked significant risks orphans face in the wild. First, both islands had no bears and, further, Erickson made no mention of any other potential predators. Adult bears are the prime predation danger to unrelated cubs. Second, the absence of other bears also meant that these cubs, each on a separate island, had no competition for any bear forage. Third, Erickson admitted that one of the cubs had to be killed as a yearling in early summer (July) as a nuisance to the Coast Guard station. This raises significant concern

that human food artificially contributed to the cub's survival through early spring. Erickson said that the Coast Guardsmen may have fed the bear, but he did not think so. Attraction to human food, however, is the principal reason bears become nuisances and need to be destroyed. Erickson did not disclose what made this bear a nuisance, but it likely was the most common reason: acclimation to human food sources.

A.C.P.

APPENDIX B

Responses to Other Potential Objections

Objection 1: We need to control the number of bears, there are too many.

Response: If the bear population is a problem, the solution is to adjust some other aspect of adult bear hunting, not to visit on helpless cubs prolonged and inhumane suffering and death from starvation, the elements, or predation.

Objection 2: Hunter education is enough, there is no need to prohibit killing mothers with cubs.

Response: Education alone is not enough. The current law makes it legal to kill a mother with cubs. No amount of education will prevent unethical hunters from deliberately killing sows with cubs where that killing is legal and therefore permitted by the Department. The education is important as a supplement to the prohibition because it explains the rationale for the prohibition, which encourages compliance, and will teach ethical hunting, including the responsibility to check for cubs. It will also likely persuade previously uninformed hunters of the valid reasons for sparing the mothers and those hunters will spread that information to other hunters.

Objection 3: Most hunters would not kill a mother with cubs, so this is not needed.

Response: There are several responses to this. First, there is no data to support this assertion. The Department does not know, and cannot know, the number of mothers who are killed or the number of their cubs that starve or die from starvation, exposure, or predators.

Second, if killing a mother with cubs is wrong for all the reasons stated in the body of the petition, then there is no legitimate reason why such killings should not be illegal. If the Department continues to permit the deliberate killing of mothers, hunters will kill them.

Objection 4: The Department does not get reports of such killings so it is not a problem.

Response: First, all such killings – even if it were just a few each year – should be prohibited because they are cruel and unethical and cause the cubs painful suffering and death.

Second, the Department does not know how often this happens. Of the 814 sows taken by hunters in 2020 and 2021 combined, the Department has no idea how many were mothers or how many cubs were orphaned and died as a result. By the same token I have no data to prove exactly how often it happens or how many cubs suffered and died. We delude ourselves, however, if we say it is not a problem. With hundreds of sows harvested every year in Vermont coupled with the fact that hunters through the present know it is perfectly legal to kill mother bears, it is baseless, even reckless, to turn a blind eye and deny that it

happens far more frequently than we all would like. The killings are most often hidden from view off in the woods with no witnesses. The chance of again capturing such a killing on video, as we did here, and followed quickly by the discovery of the dead, starved cub is remote at best. But we have it now and that video, hopefully, has highlighted for all of us a blind spot in our hunting laws and management that we should now correct.

Objection 5: The cubs were big enough to survive, they were yearlings, they were all adults even though they were together.

Response: As explained in detail above, black bear cubs need to stay with their mothers for about 18 months for the protection and learning needed to survive. The no-kill prohibition needs to be black and white. It cannot leave gray areas for some hunters, who are about to take the shot, to rationalize the killing and kill the sow based on their own actual or feigned conception of cub survivability. A blurry and weak prohibition that leaves open the decision to shoot the sow based on one or another “exception” would substantially reduce the effectiveness of the regulation in protecting vulnerable cubs.

Objection 6: It could be too hard to enforce in individual cases, so it is not worth it.

Response: As explained at the start of the petition, the focus of the requested regulation is not enforcement in individual cases. It is much more far-reaching and important than the much narrower enforcement focus. The principal focus is to save cubs by the immediate impact the regulation will have on the thousands of Vermont hunters who come across mother bears with cubs. They will not take that shot because they are law-abiding and know that such killing is unlawful.

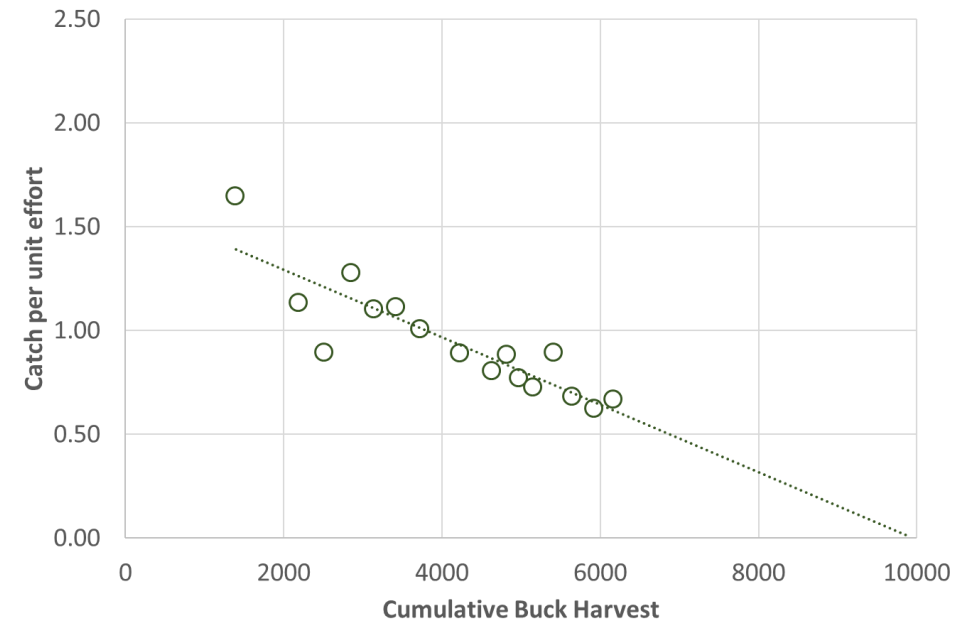
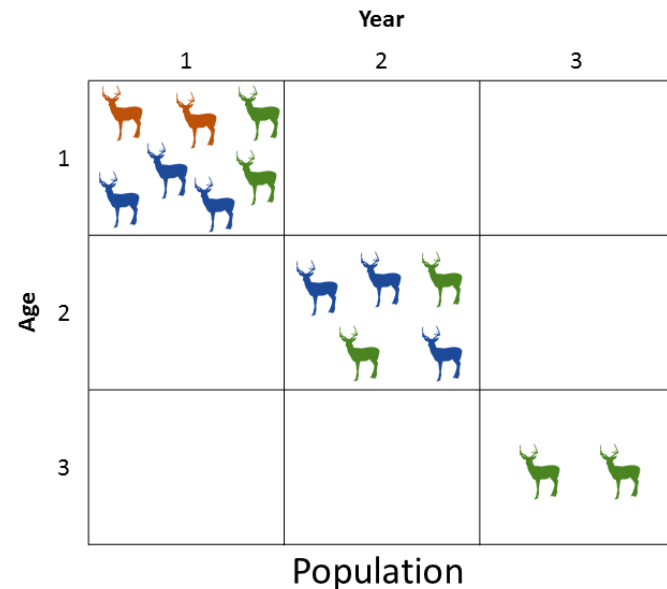
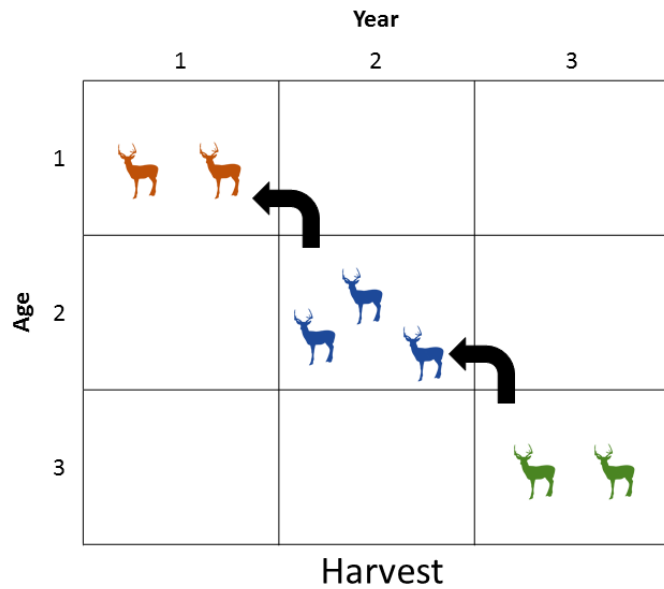
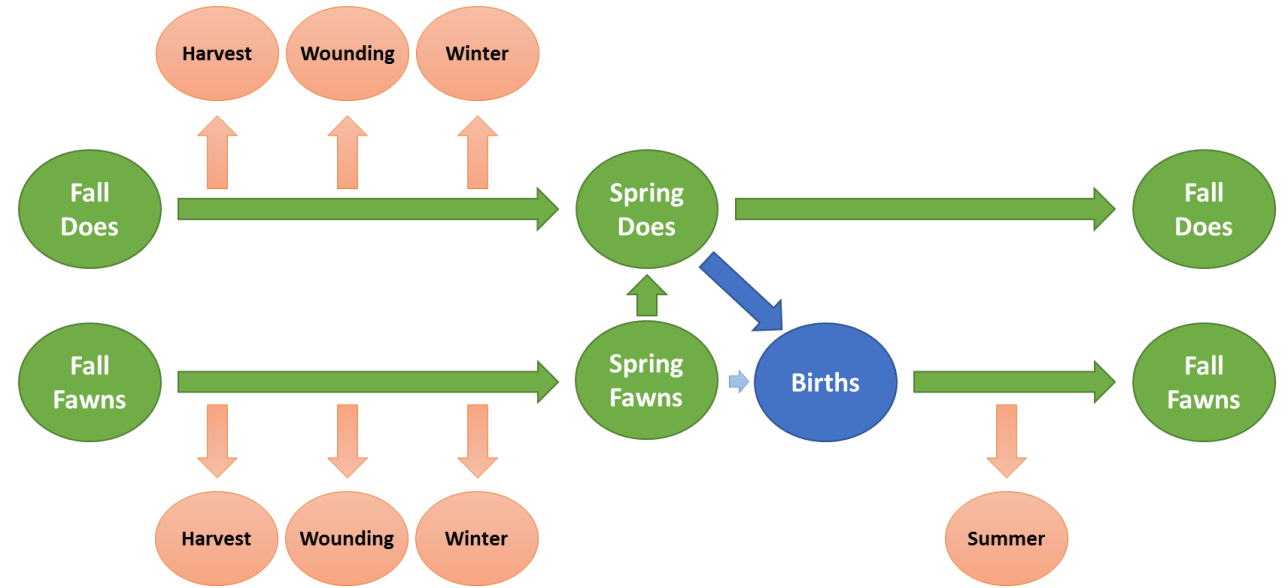
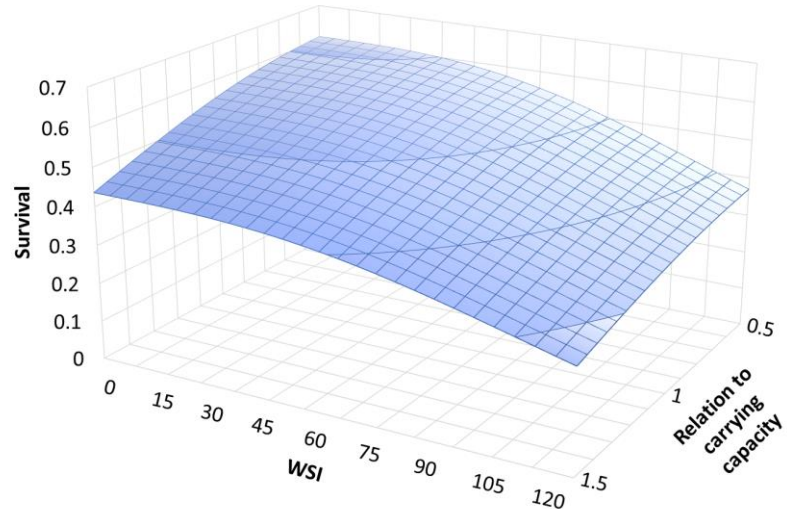
Even as to enforcement in individual cases, this objection fails. First, in some cases it would be very easy to enforce – the Mad River Valley hunter’s killing of the mother clearly with her cubs was captured on videotape, for example. An illegal and gruesome killing of a mother bear and her cubs in their den was captured on wildlife video in Alaska recently, leading to convictions of both hunters. Second, the enforcement of that regulation will be no more difficult or different than the situation presented to game wardens and law enforcement every day as they enforce countless other laws. Exercising their discretion based on their investigation and the facts presented is what they are trained to do. Allowing such a cruel, unethical, and painful practice to continue against vulnerable cubs just because enforcing it might at times be inconvenient or difficult fails to pursue ethical and humane wildlife management.

A.C.P.

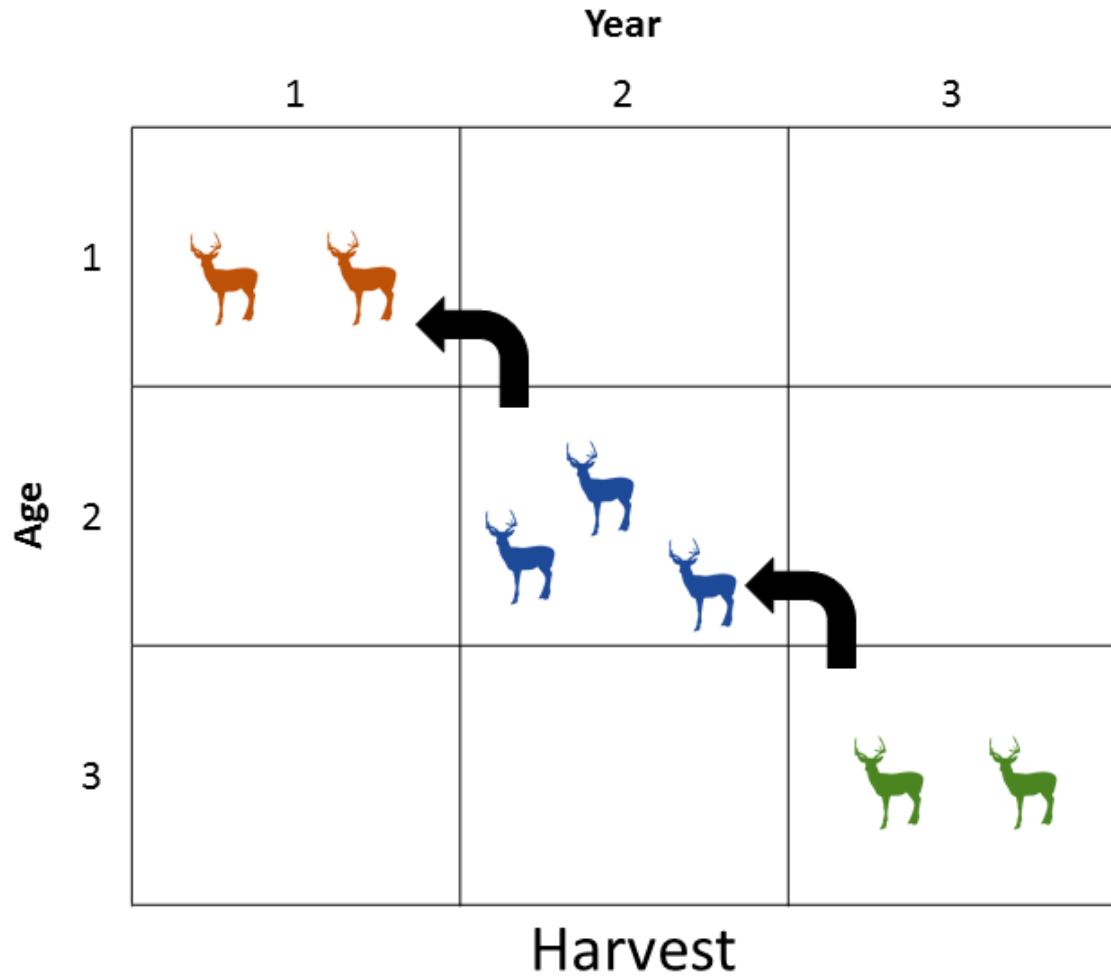


2023 Antlerless Harvest Recommendation

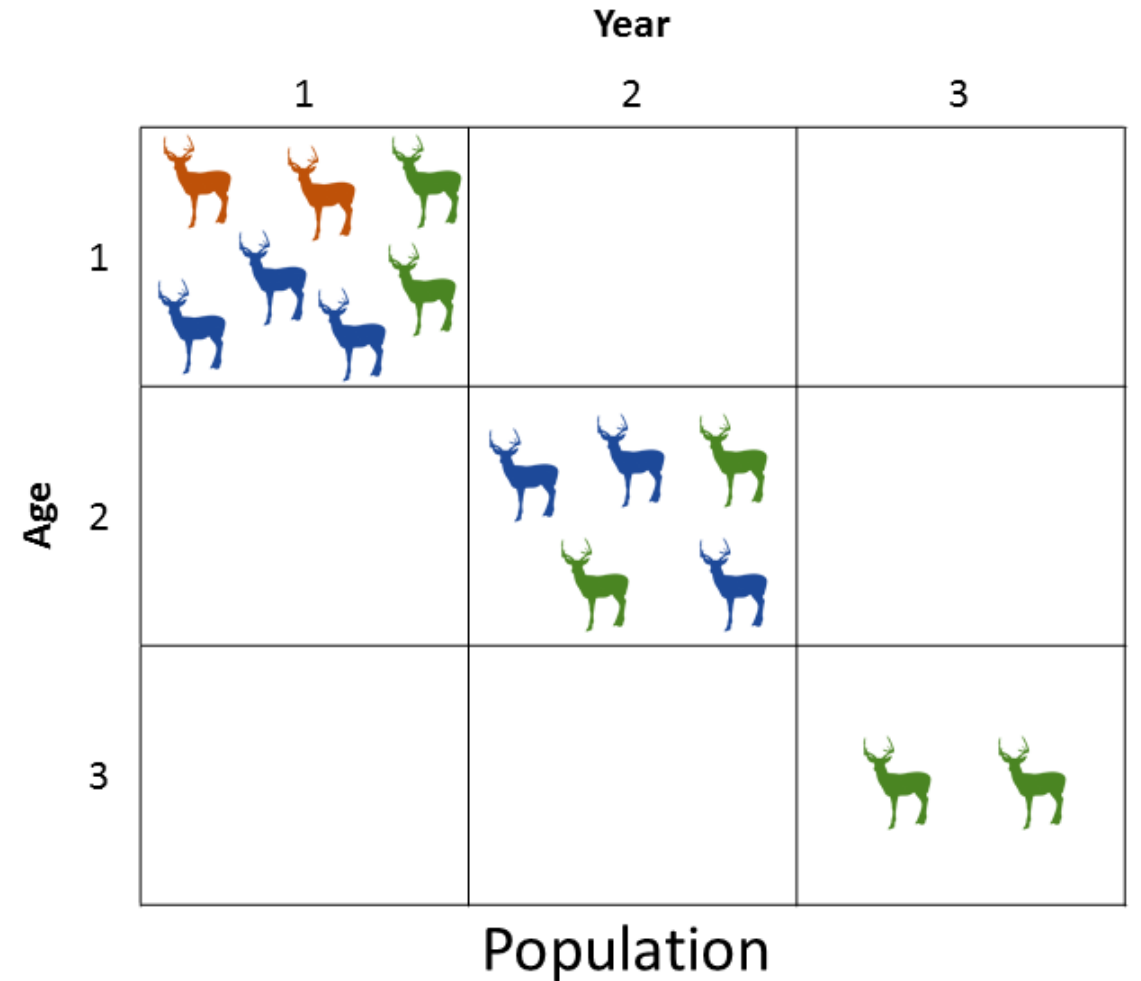
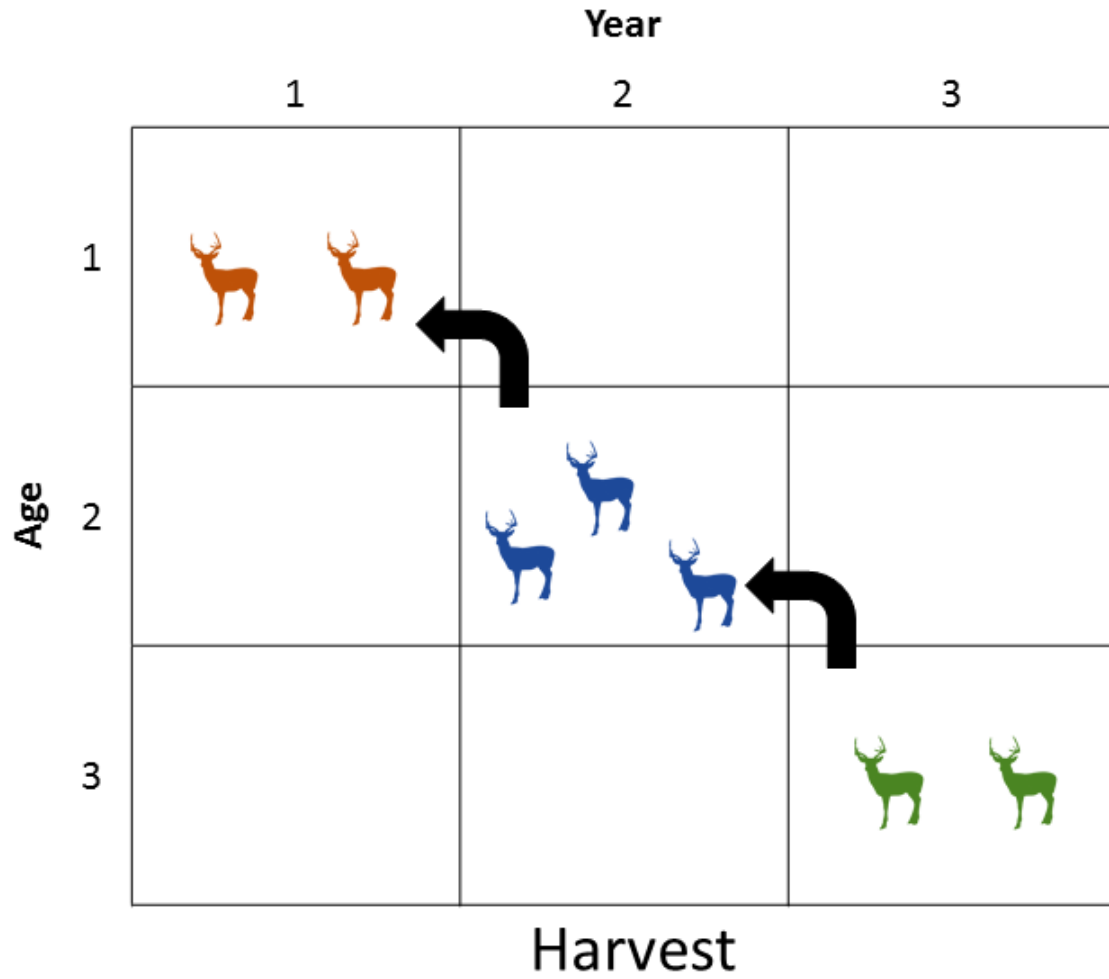
Population Models



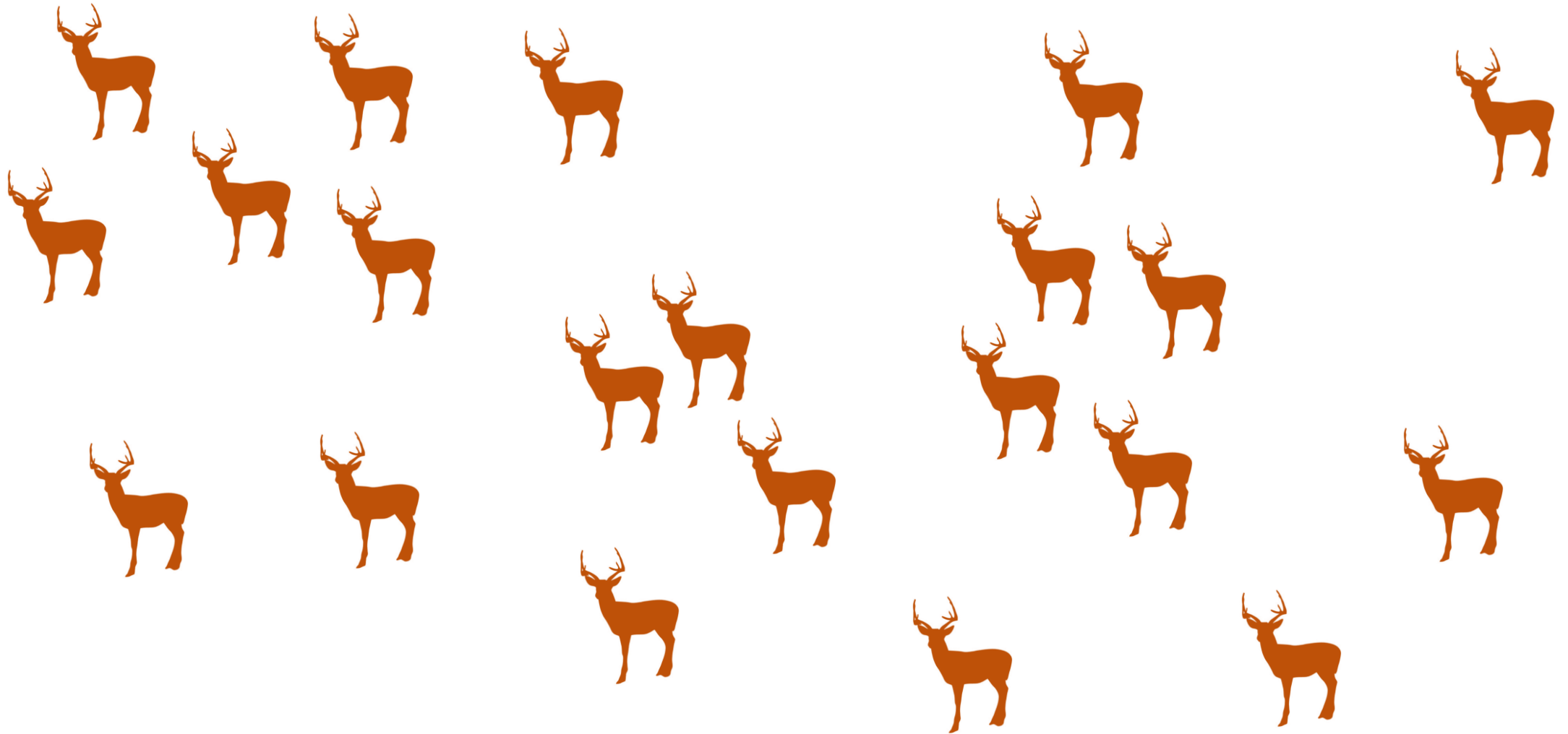
Reconstruction Model



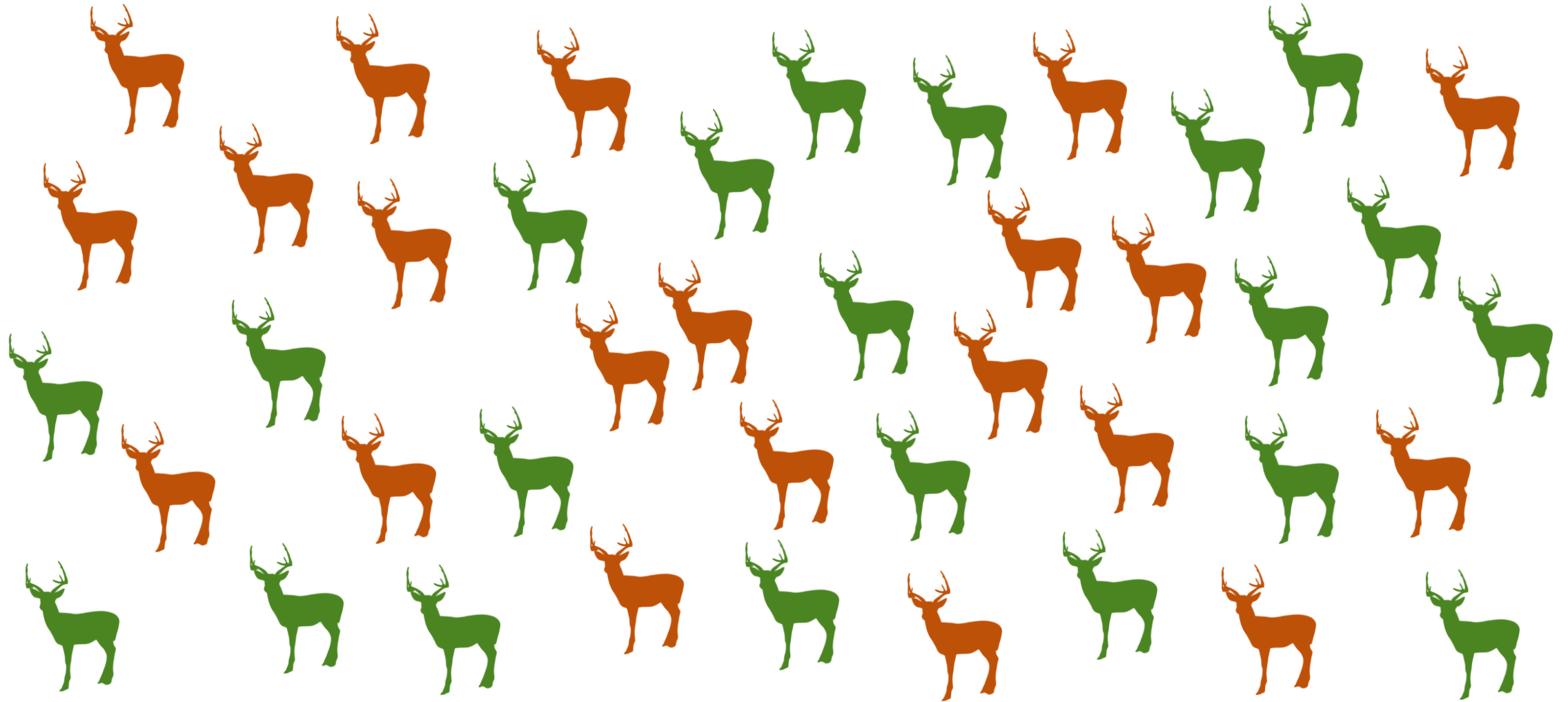
Reconstruction Model



Sex-Age-Kill (SAK) Model



Sex-Age-Kill (SAK) Model



Sex-Age-Kill (SAK) Model

Buck Harvest

X

Buck Harvest Rate

=

Bucks

Bucks

X

Sex Ratio

=

Does

Does

X

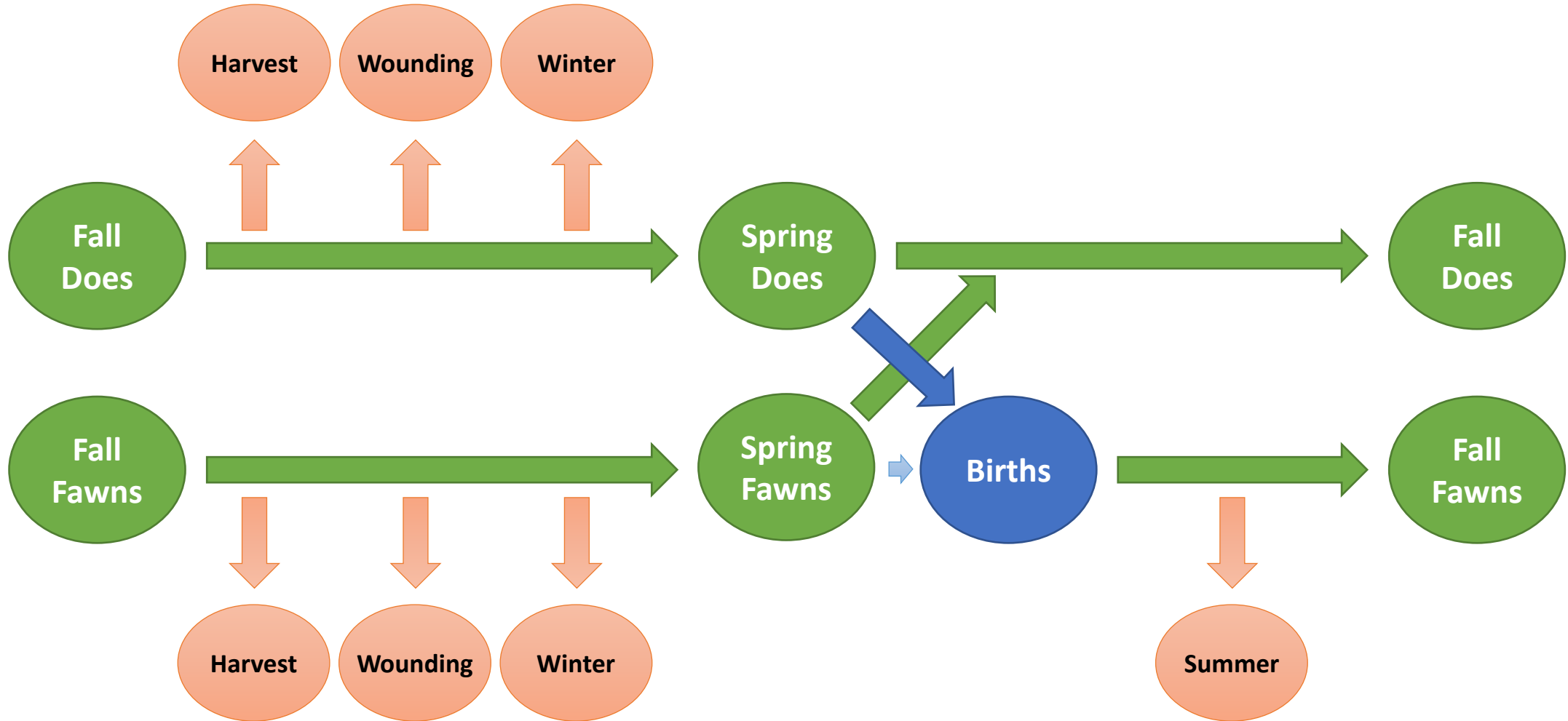
Fawns per Doe

=

Fawns



DOEPOP Model



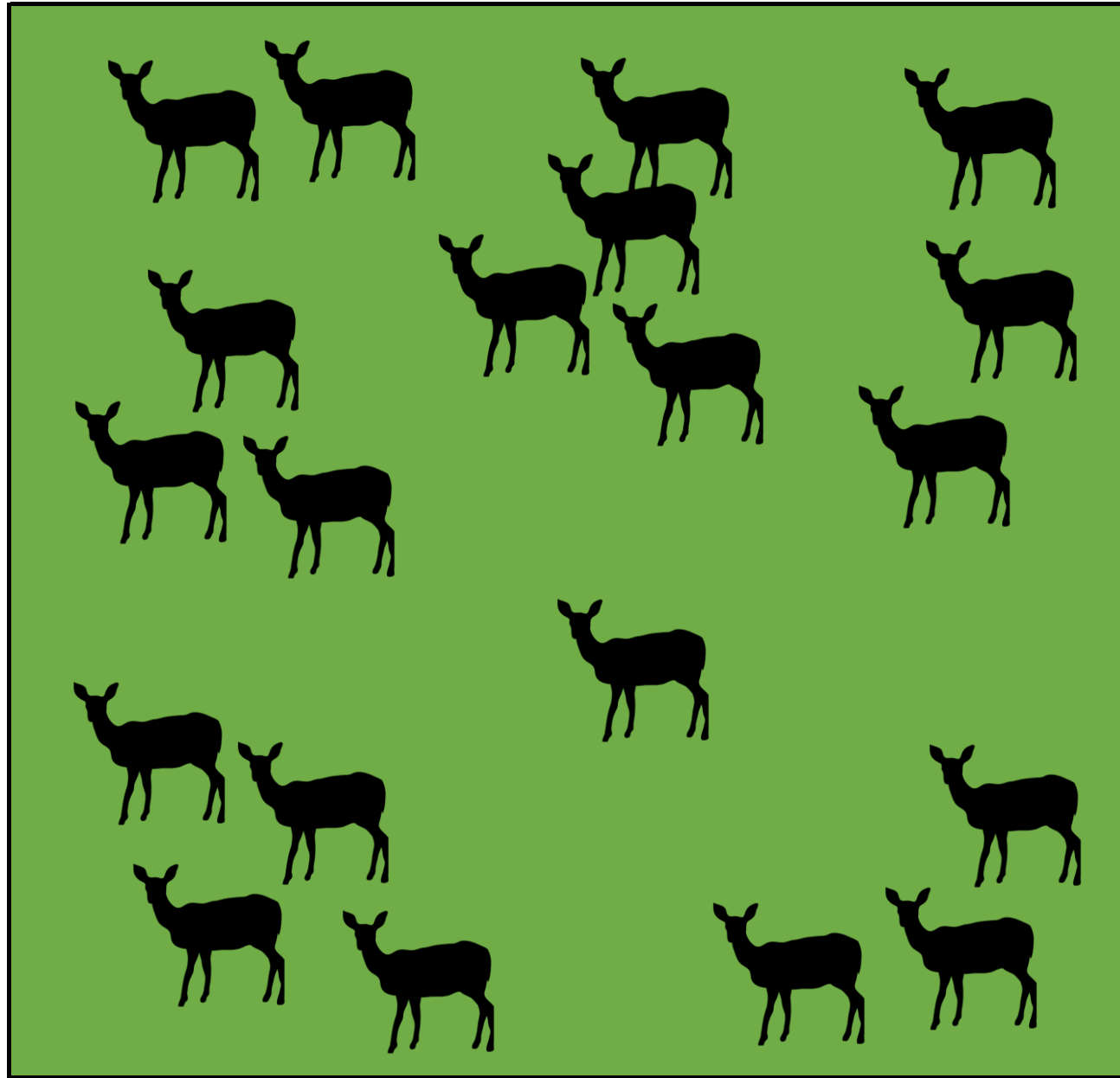
**We Do Not Need to Know
How Many Deer There Are**

**We Do Not Need to Know
How Many Deer There Are**

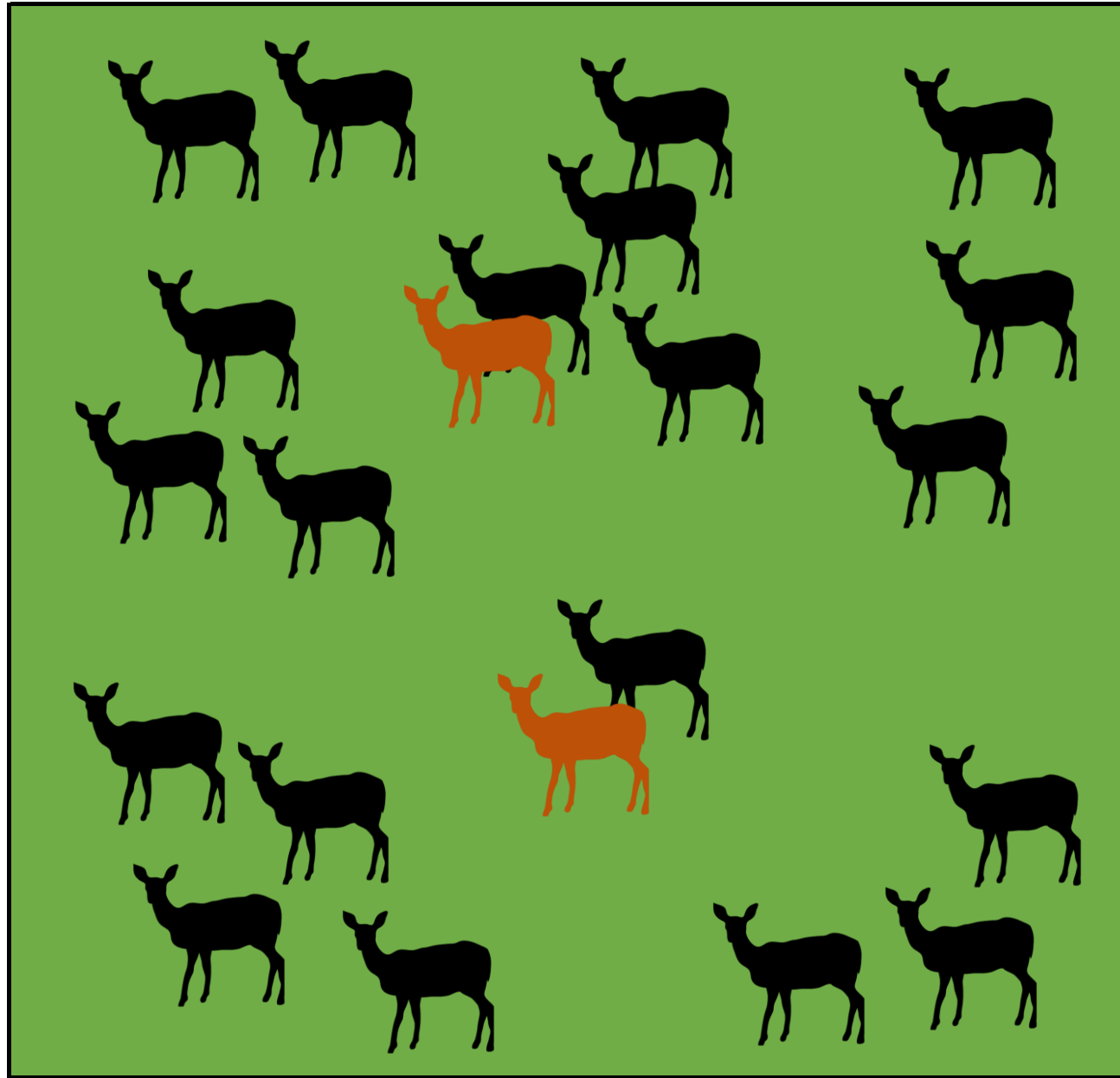
We Do Need to Know...

- **If the population is increasing, decreasing, or stable**
- **If the population is above, below, or in balance with carrying capacity**

What is Carrying Capacity?

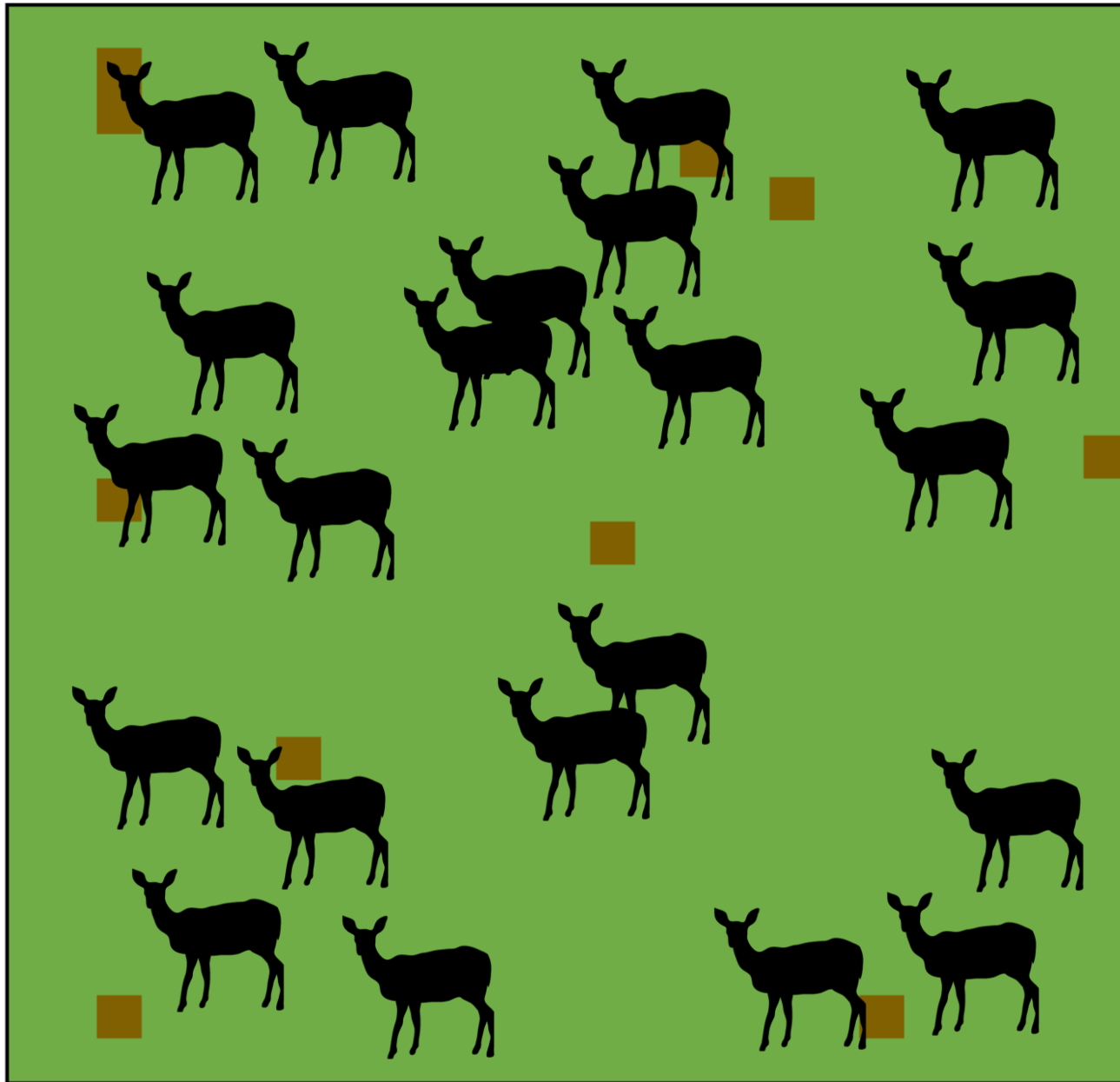


Supports 20 deer



Supports 20 deer

Add a couple more.
What happens?



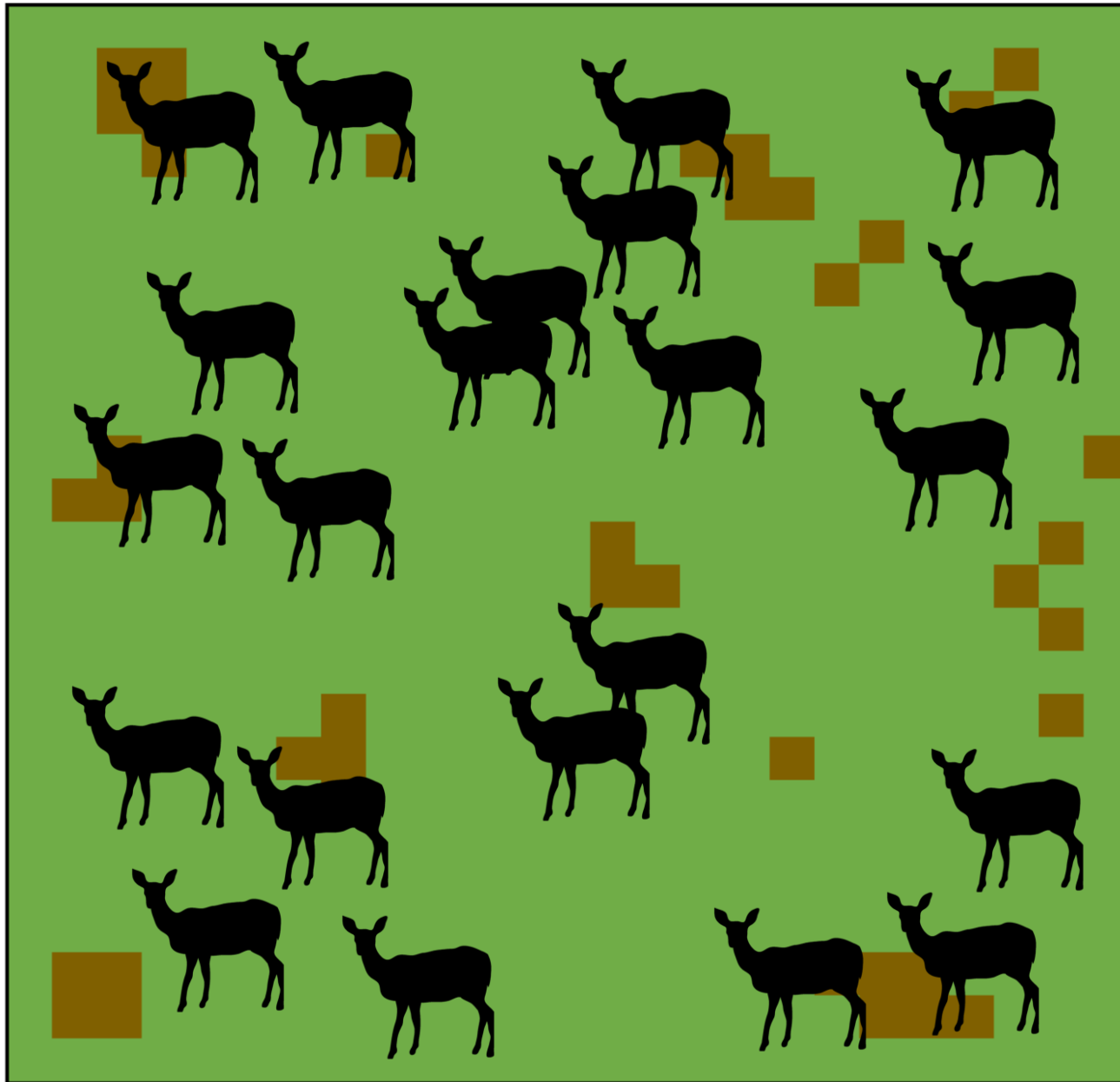
Add a couple more.
What happens?

Habitat damage

More forage consumed
Increased competition for preferred species
Undesirable species increase

Physical condition declines

Less food/lower quality food
for each individual



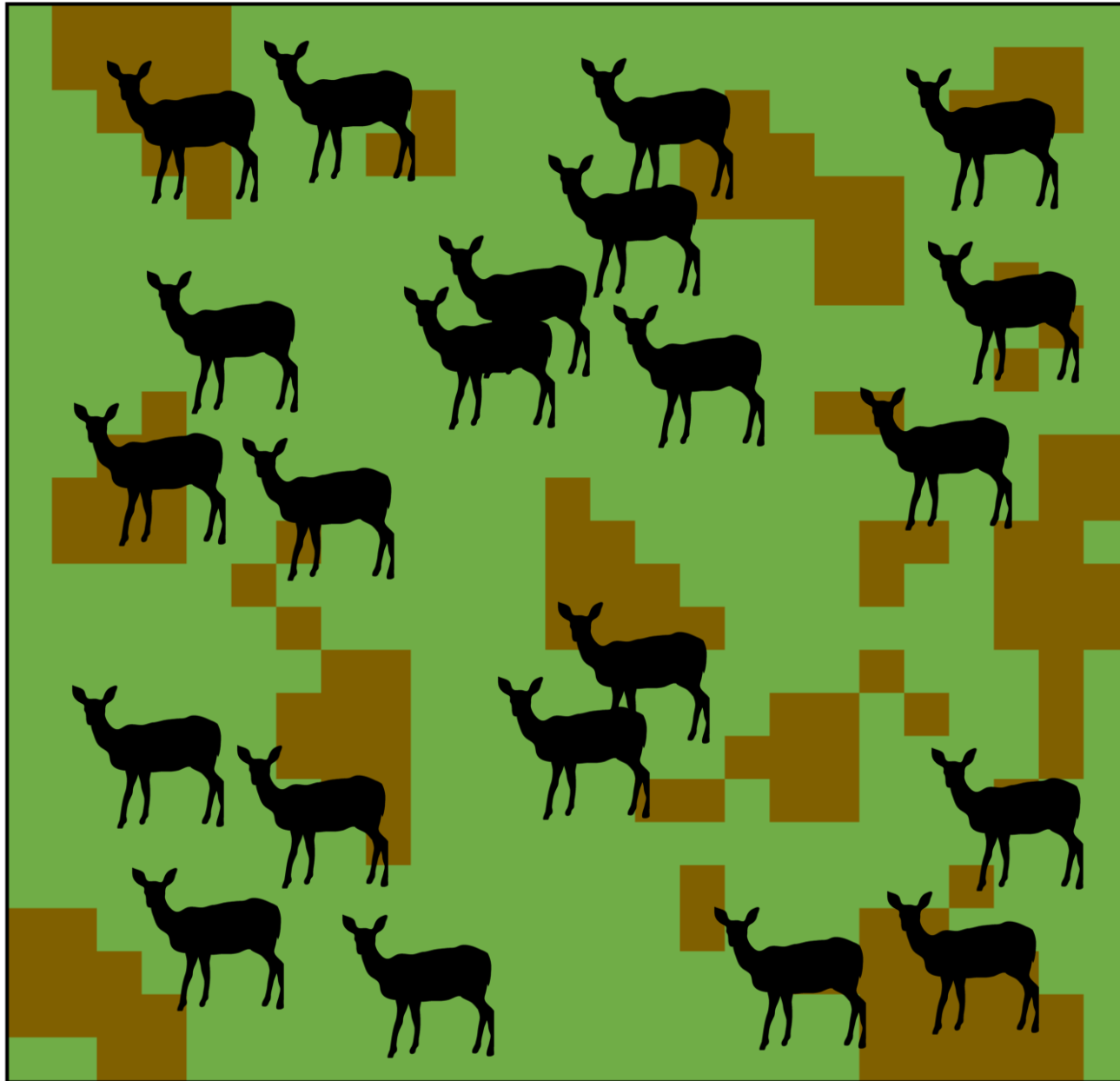
Add a couple more.
What happens?

Habitat damage

More forage consumed
Increased competition for preferred species
Undesirable species increase

Physical condition declines

Less food/lower quality food
for each individual



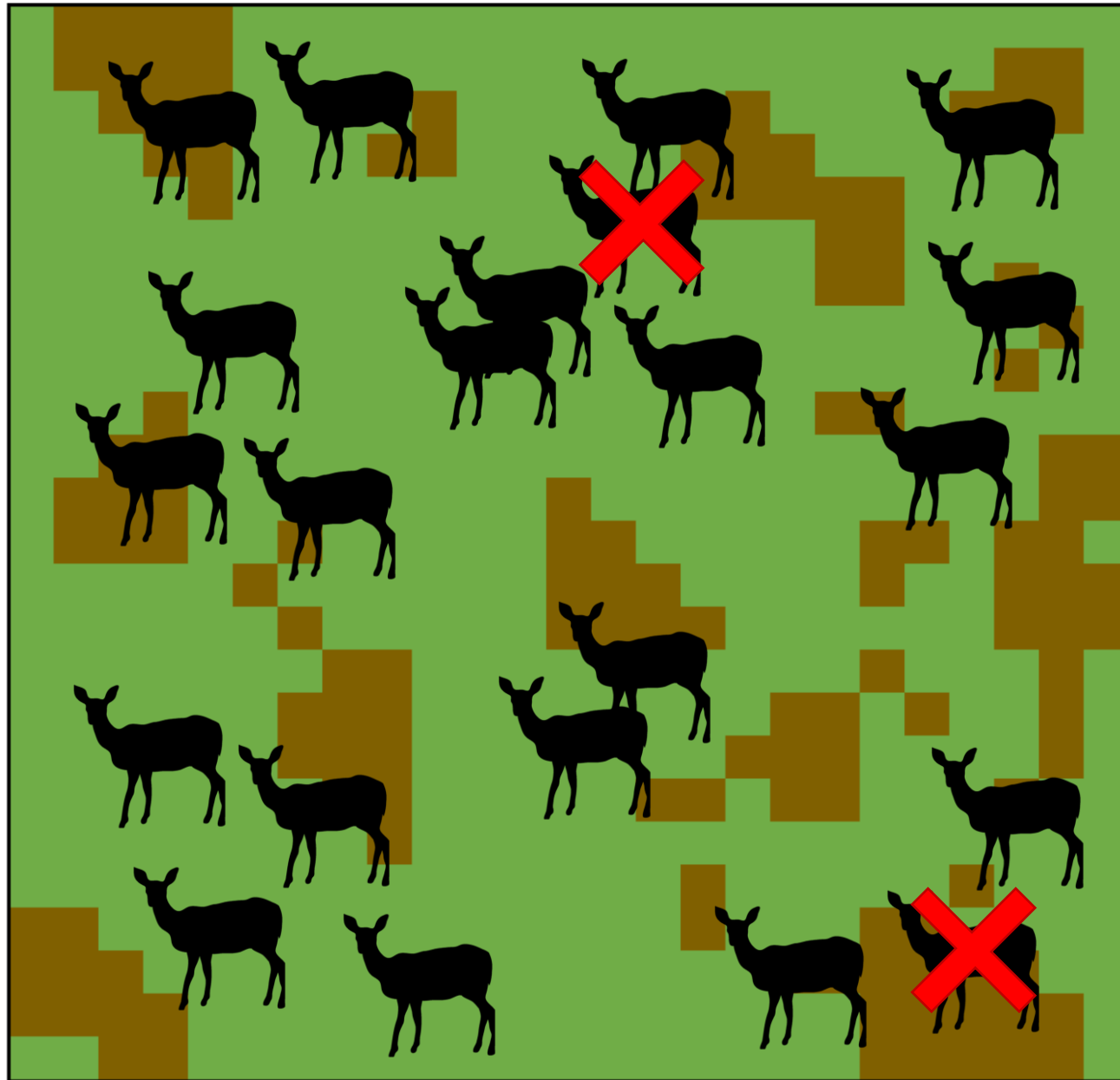
Add a couple more.
What happens?

Habitat damage

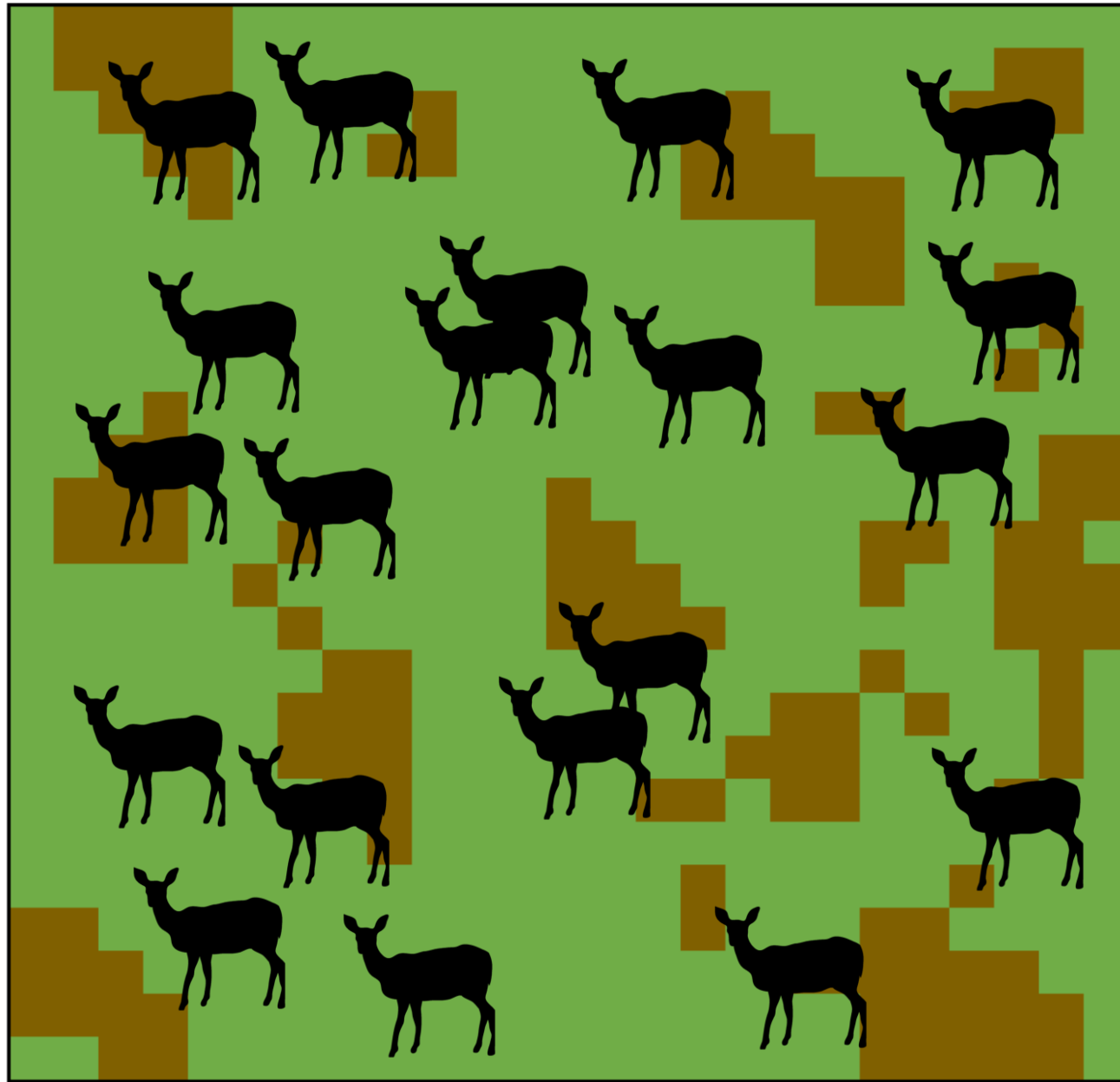
More forage consumed
Increased competition for preferred species
Undesirable species increase

Physical condition declines

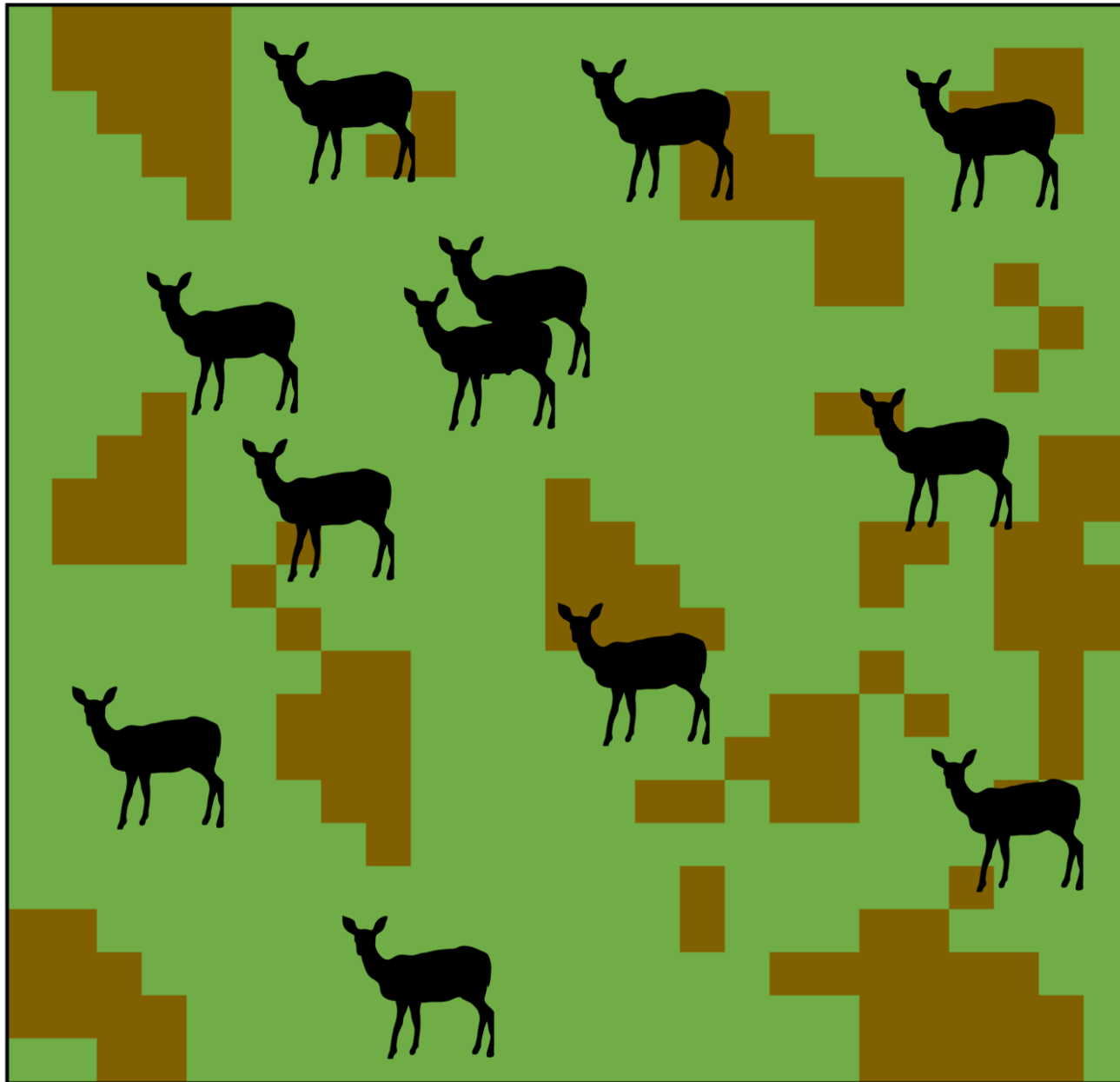
Less food/lower quality food
for each individual



Back to 20.
What happens?



Back to 20.
What happens?



How many deer can the habitat support?

How few deer will be necessary to allow the habitat to recover?

In reality...

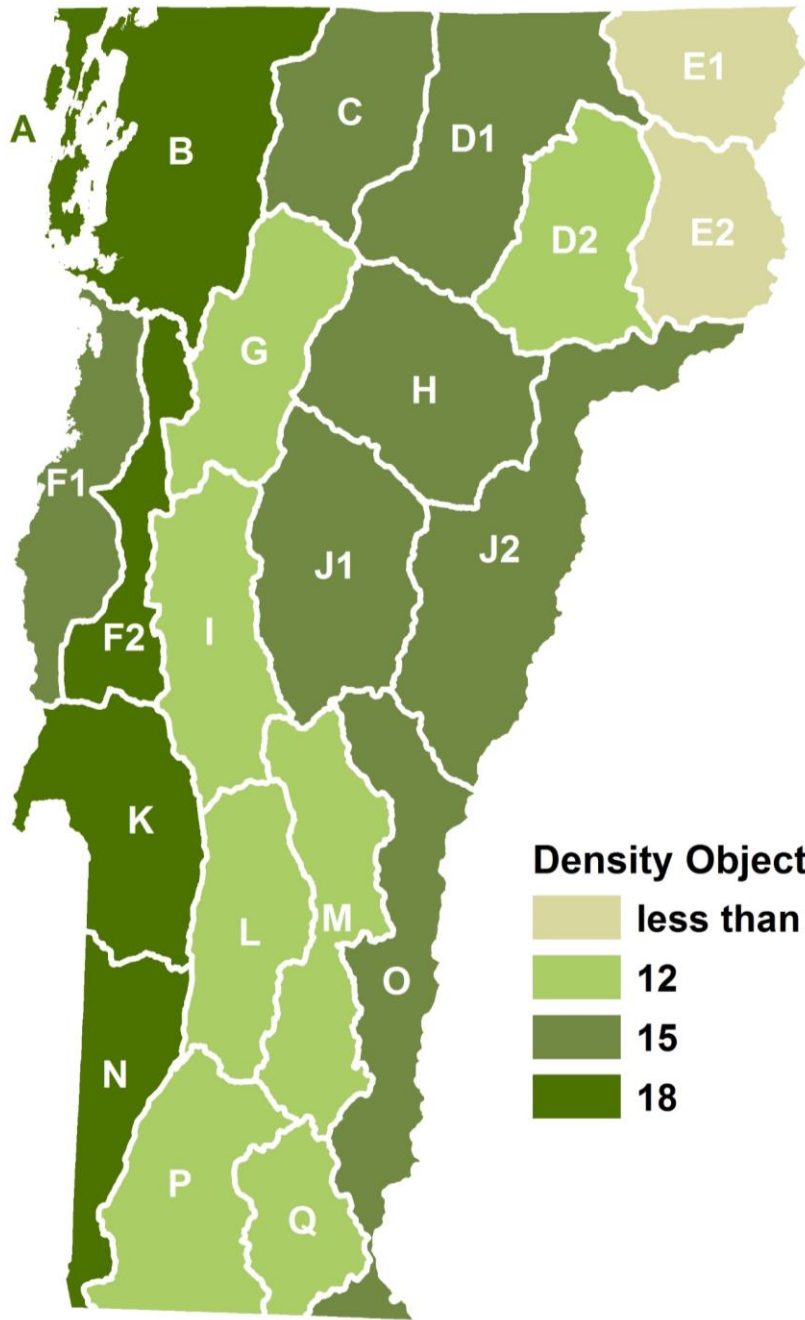
Habitat (carrying capacity) is constantly changing

In reality...

Habitat (carrying capacity) is constantly changing

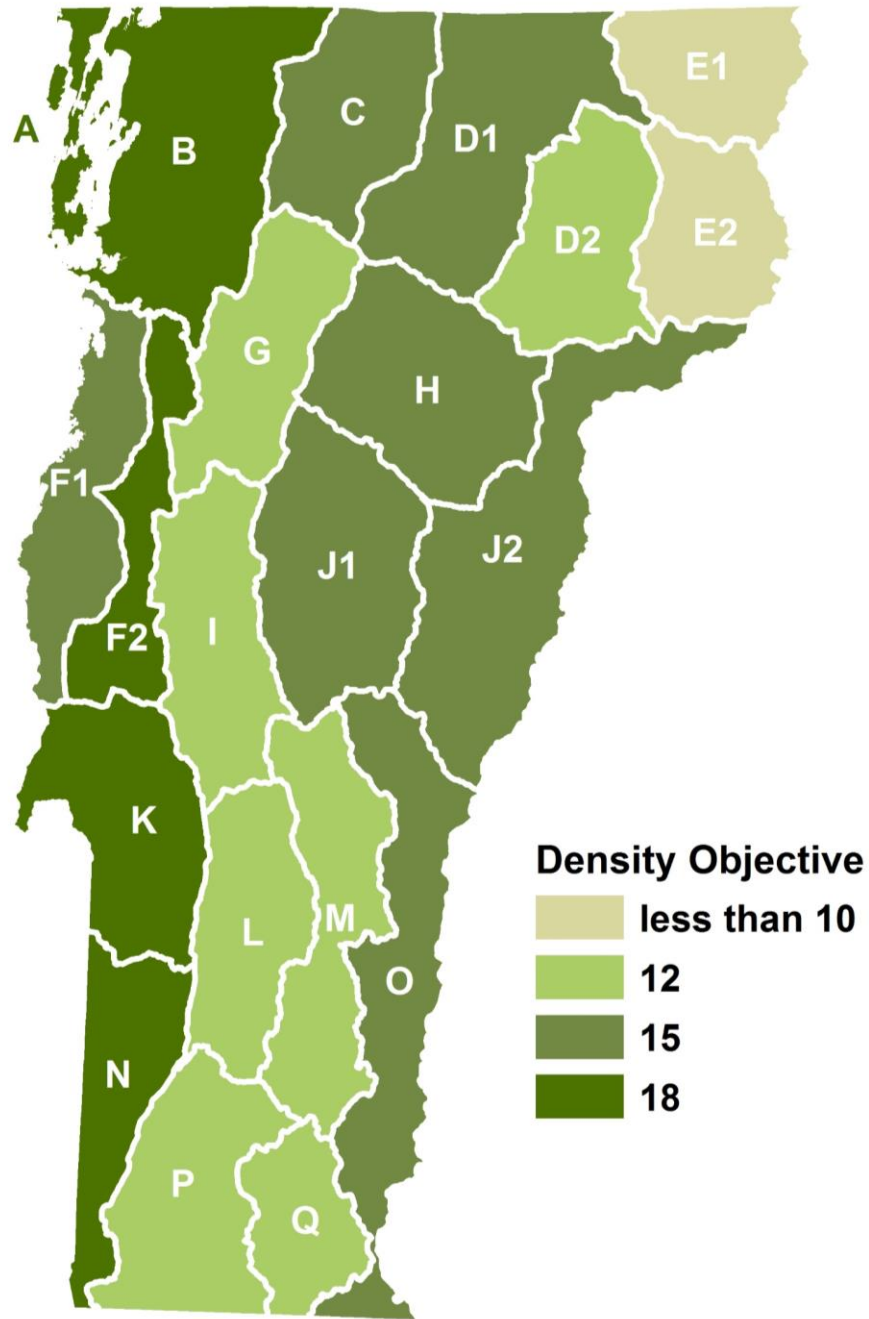
Density-independent factors

(not affected by the number of deer)



Density Objective

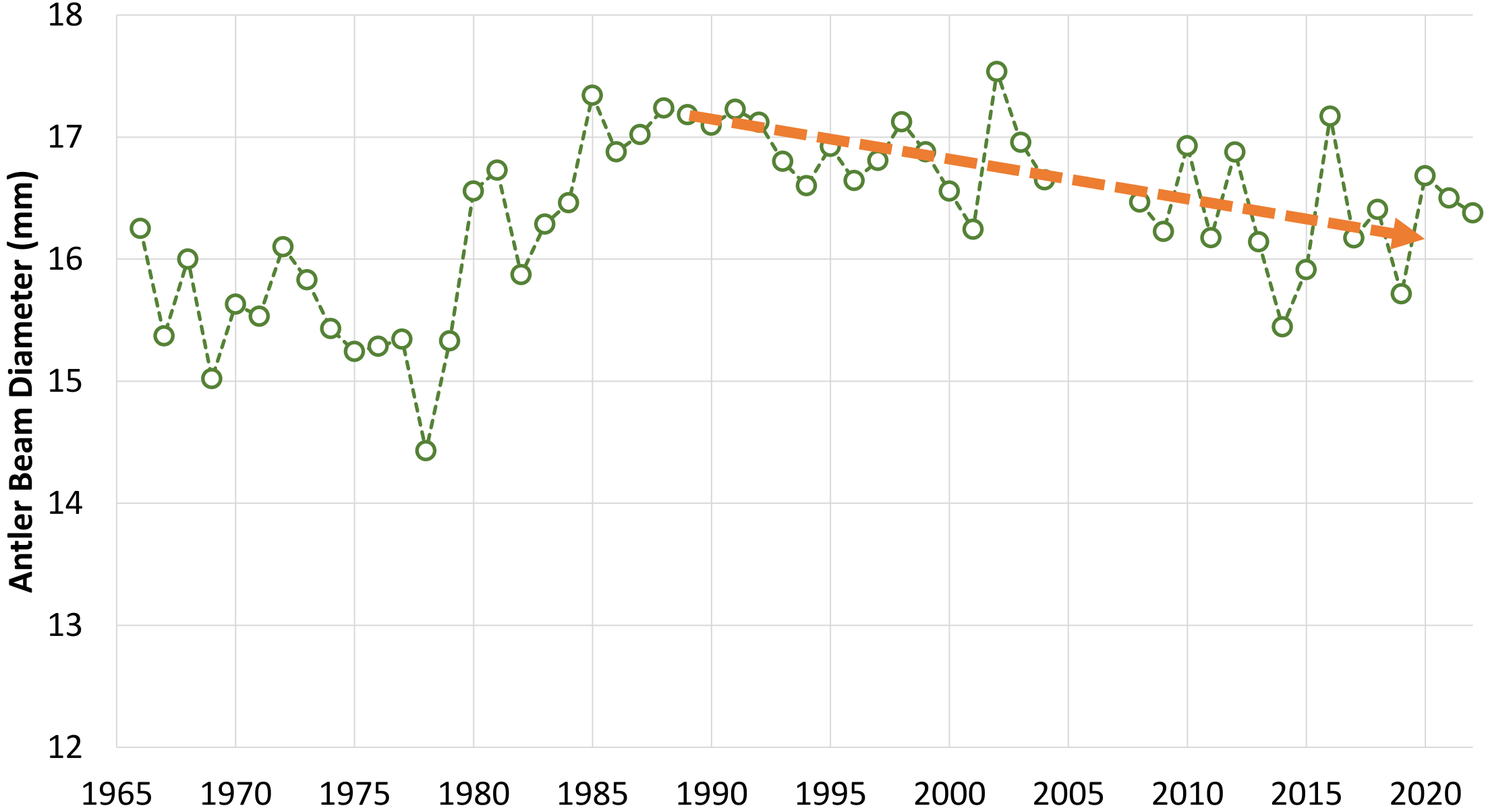
- less than 10
- 12
- 15
- 18



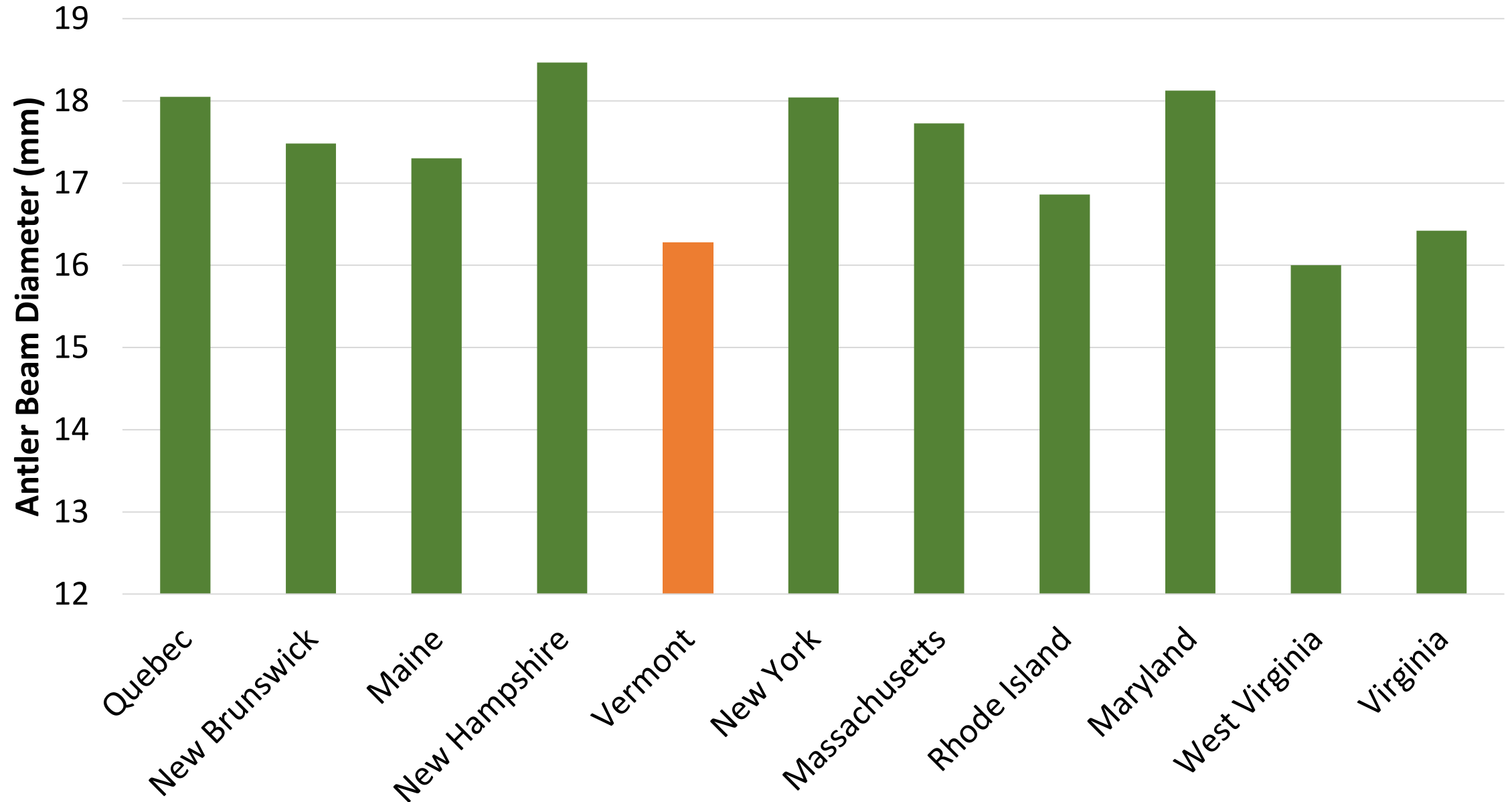
Minimum Physical Condition Thresholds

WMU	Yearling ABD (mm)	Yearling Male Weight (lbs)	Fawn Weight (lbs)	Birth Rate (fawns/does)
A	17	118	60	1.60
B	17	118	60	1.60
C	17	118	60	1.60
D1	17	118	60	1.60
D2	17	118	60	1.60
E1	17	118	60	1.60
E2	17	118	60	1.60
F1	17	118	60	1.60
F2	17	118	60	1.60
G	16.5	115	60	1.60
H	16	115	60	1.60
I	16.5	115	60	1.60
J1	16	115	60	1.60
J2	16	115	60	1.60
K	16.5	115	60	1.60
L	16.5	110	60	1.60
M	16.5	110	60	1.60
N	16.5	110	60	1.60
O	16	110	60	1.60
P	16.5	110	60	1.60
Q	16.5	110	60	1.60

Yearling Antler Beam Diameter, 1965-2021



Yearling Antler Beam Diameters in NE States, 2017-2021

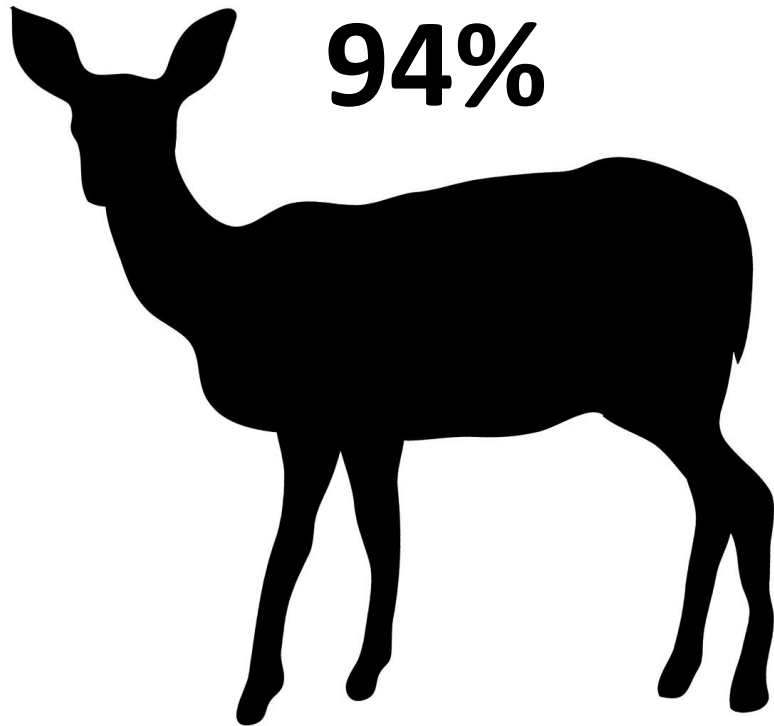


White-tailed Deer Productivity & Recruitment

Pregnancy Rates by Age Class

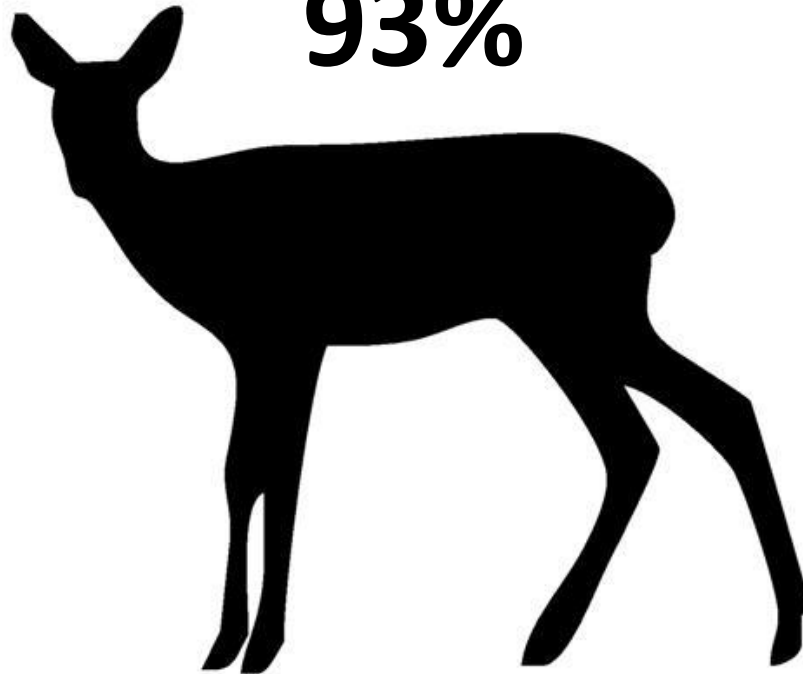
Adult

94%



Yearling

93%



Fawn

5%

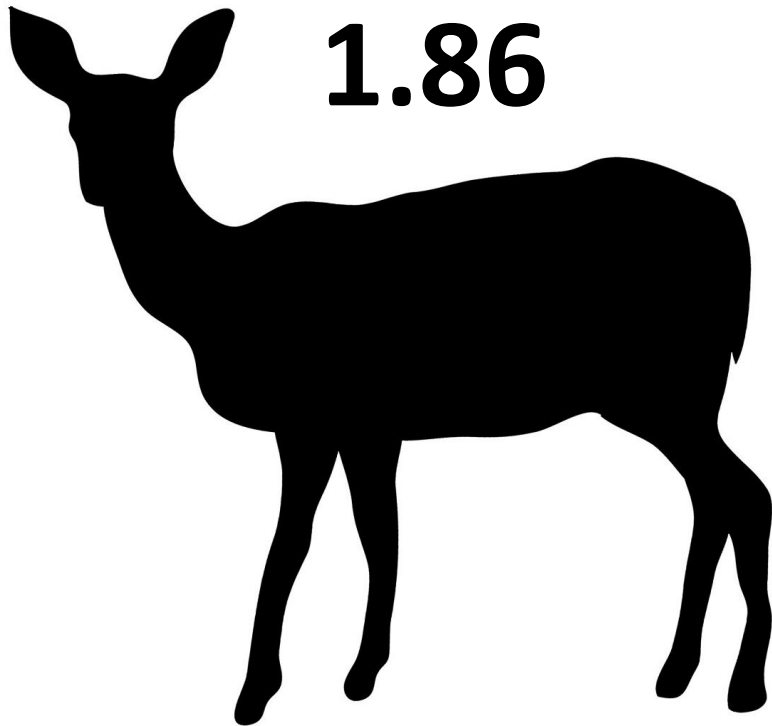


Fecundity by Age Class

Fecundity = fetuses per pregnant doe

Adult

1.86



Yearling

1.49



Fawn

1.28

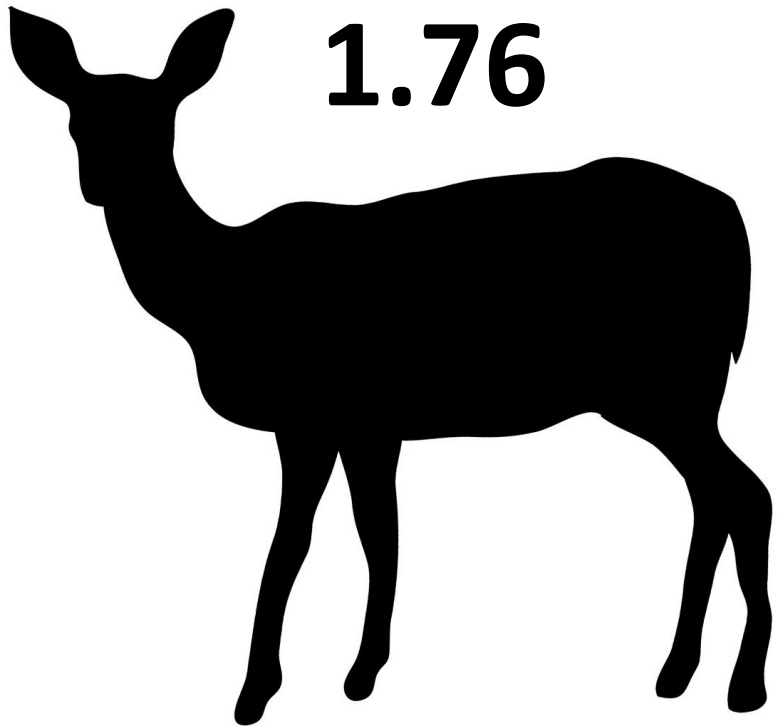


Birth Rate by Age Class

Birth Rate = fetuses per doe

Adult

1.76



Yearling

1.35

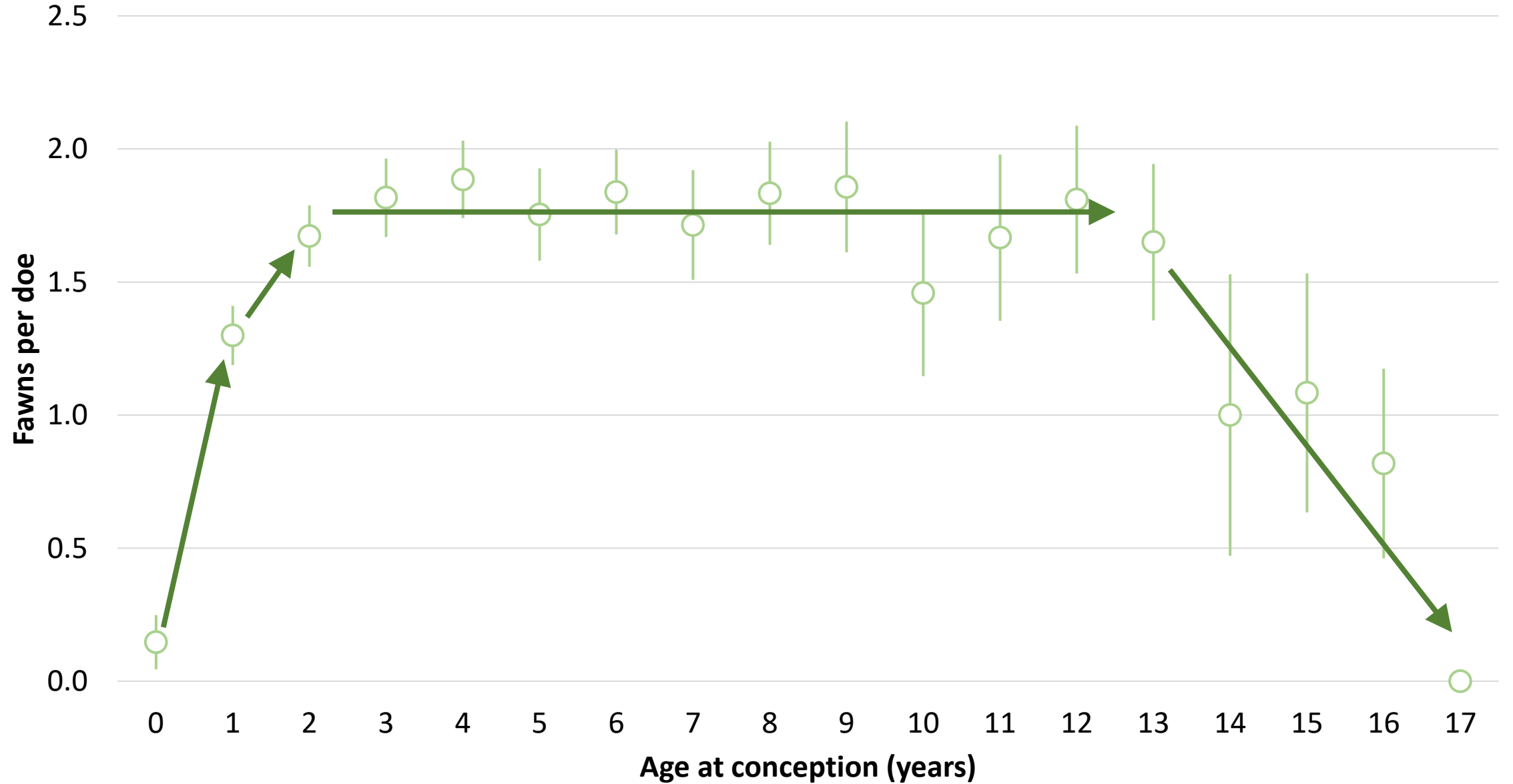


Fawn

0.06

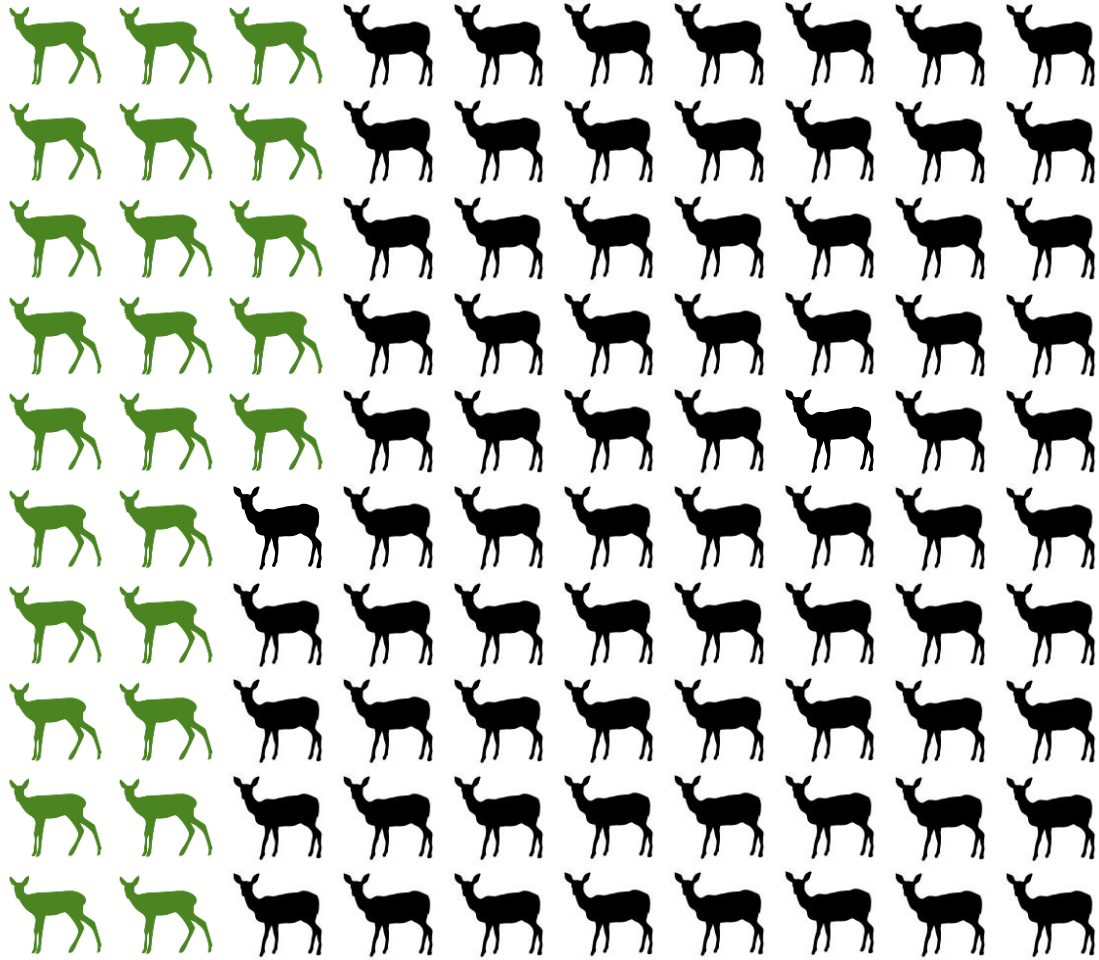


Birth Rate by Age

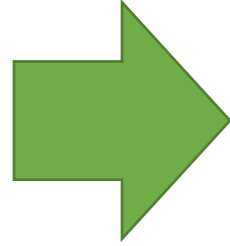
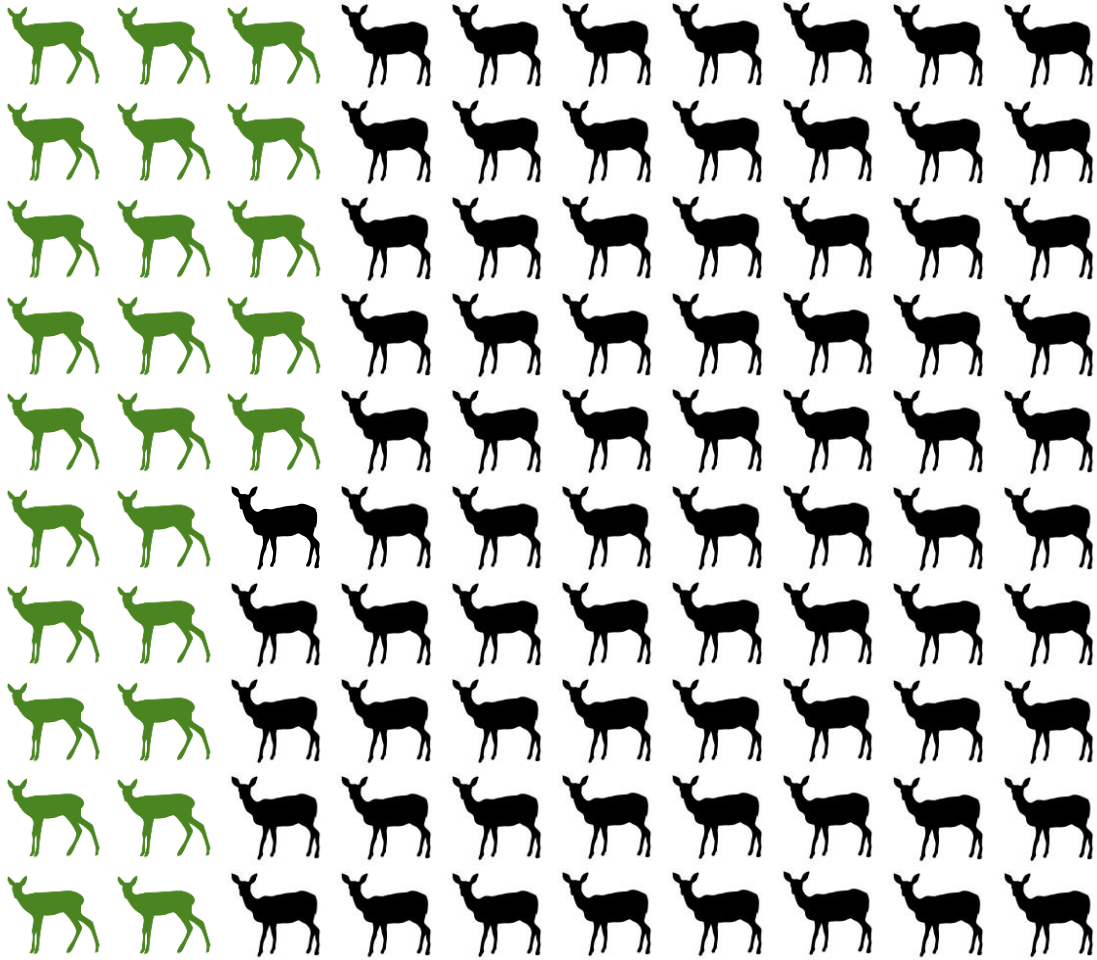


Population of 100 Does

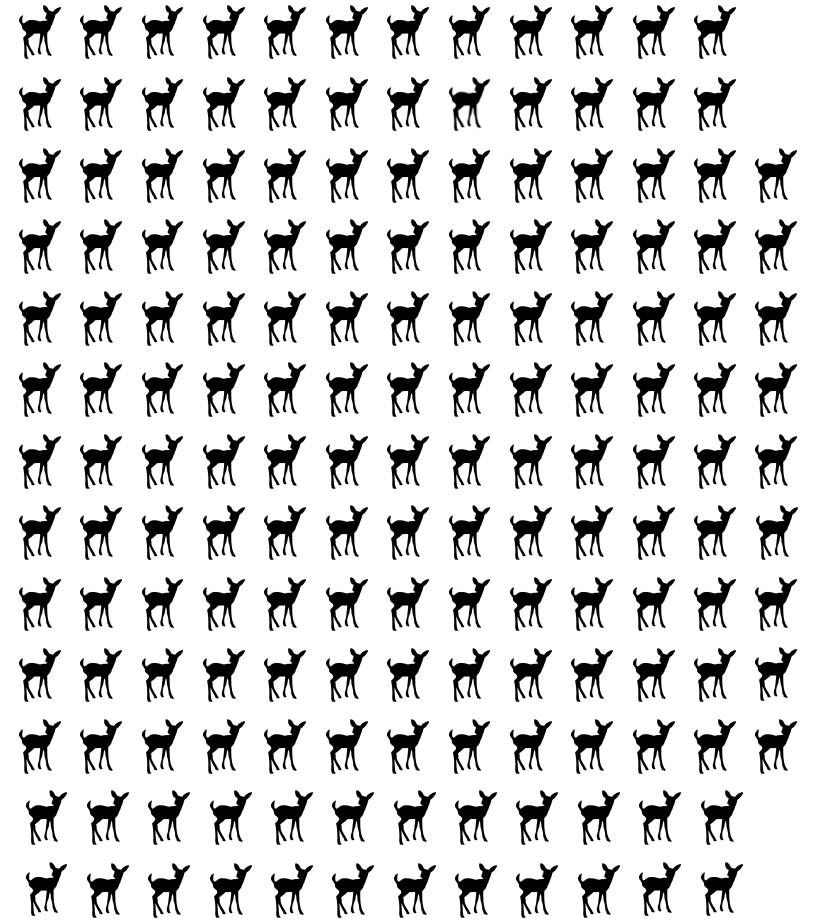
25 Yearlings / 75 Adults



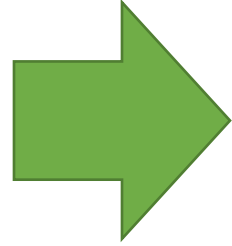
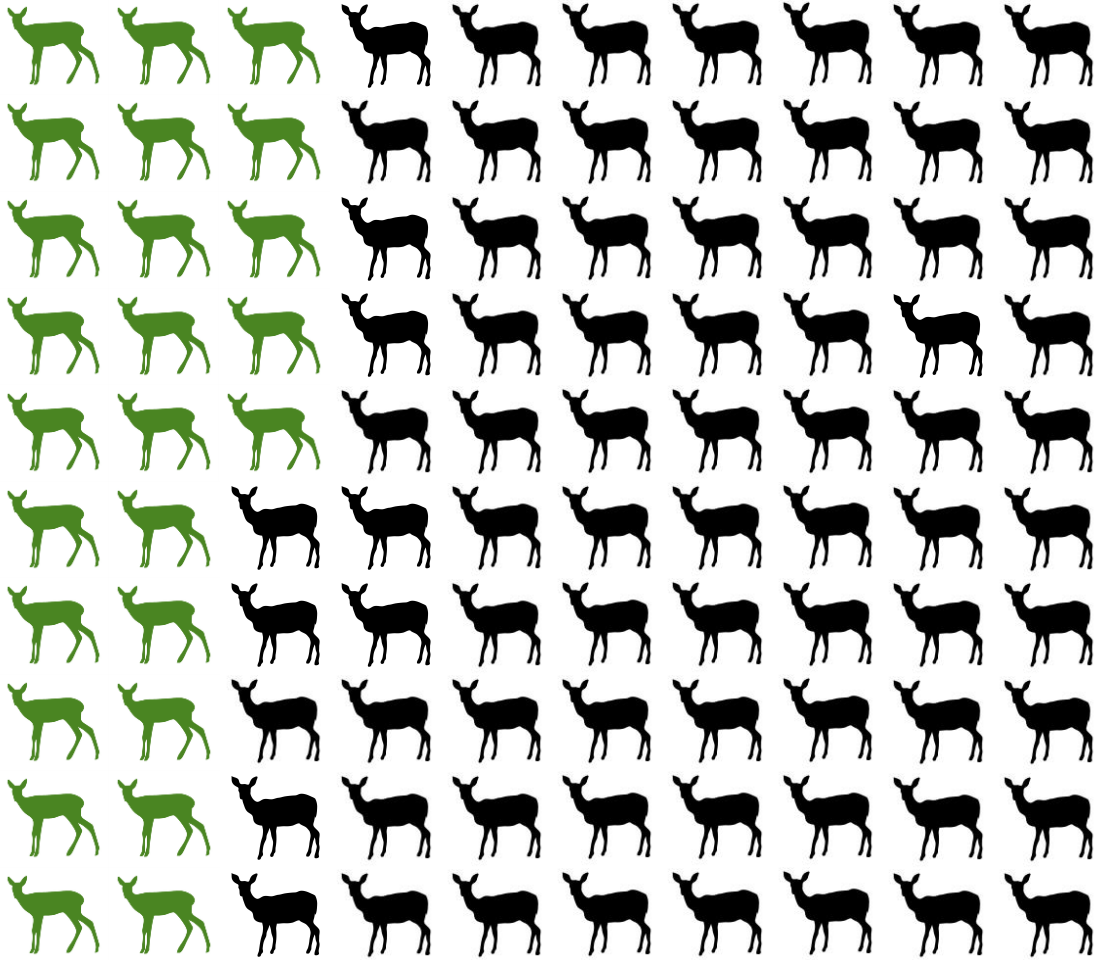
Population of 100 Does
25 Yearlings / 75 Adults



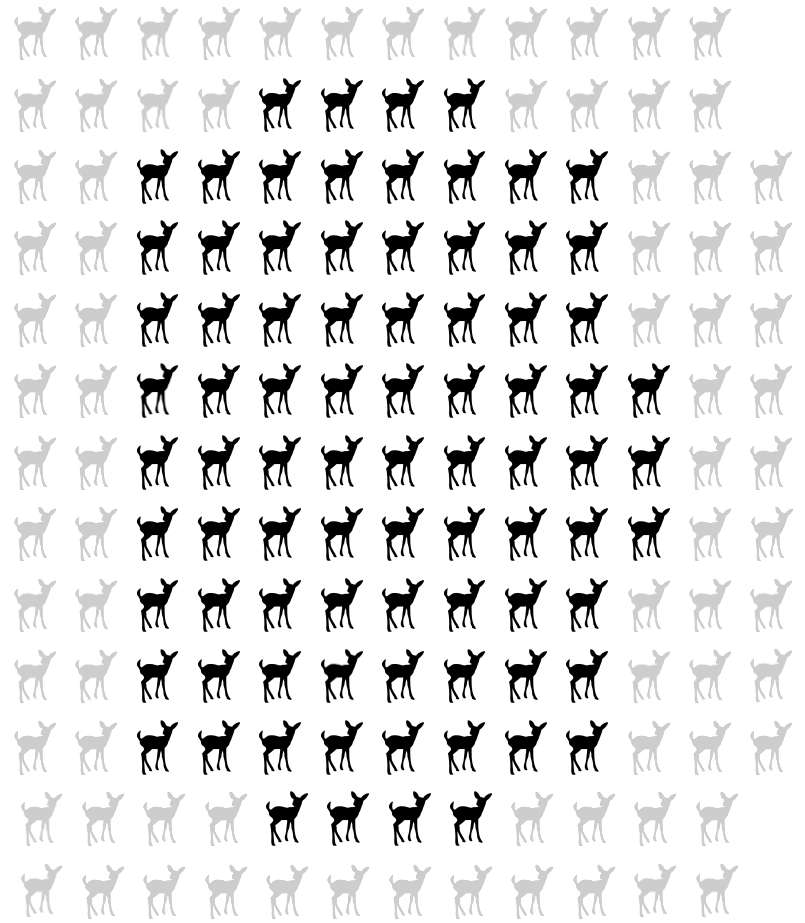
Produces
165 Fawns



Population of 100 Does
25 Yearlings / 75 Adults

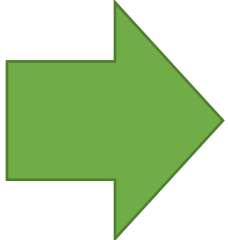
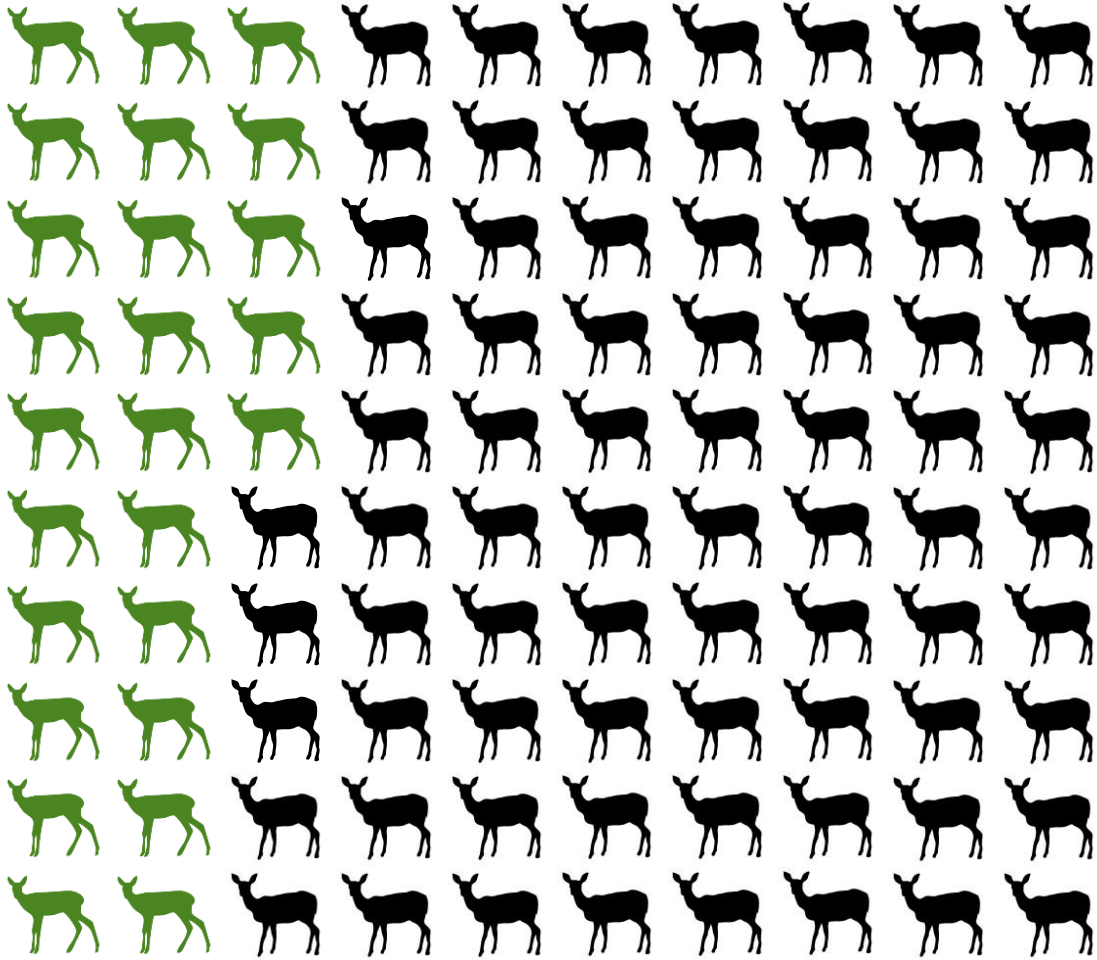


Recruits
83 Fawns
(To Fall)



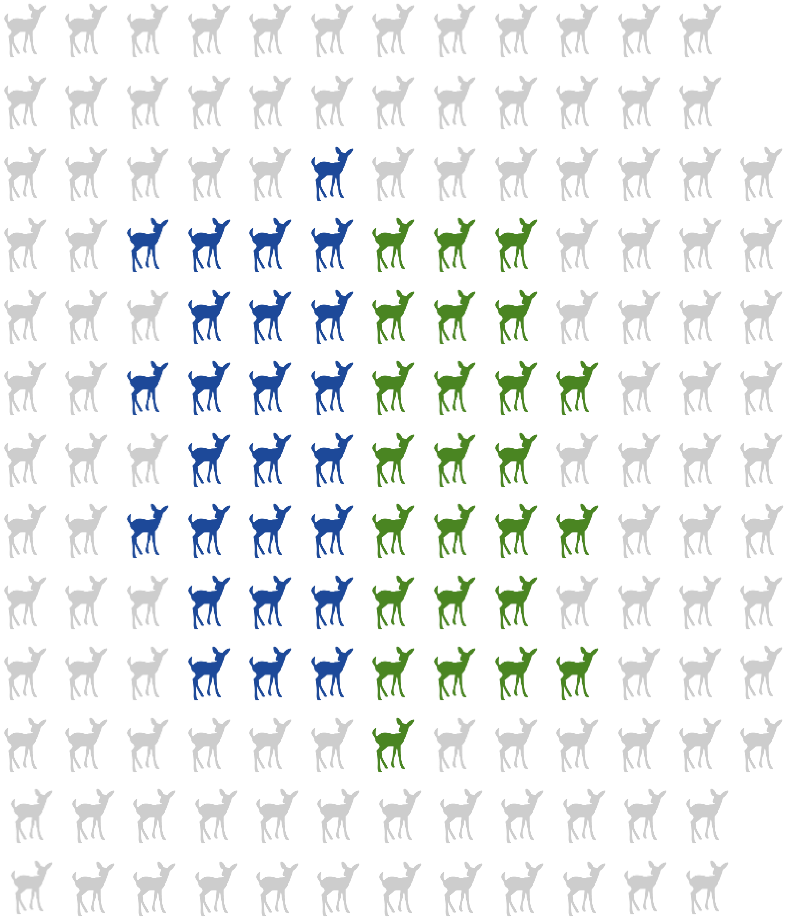
Population of 100 Does

25 Yearlings / 75 Adults

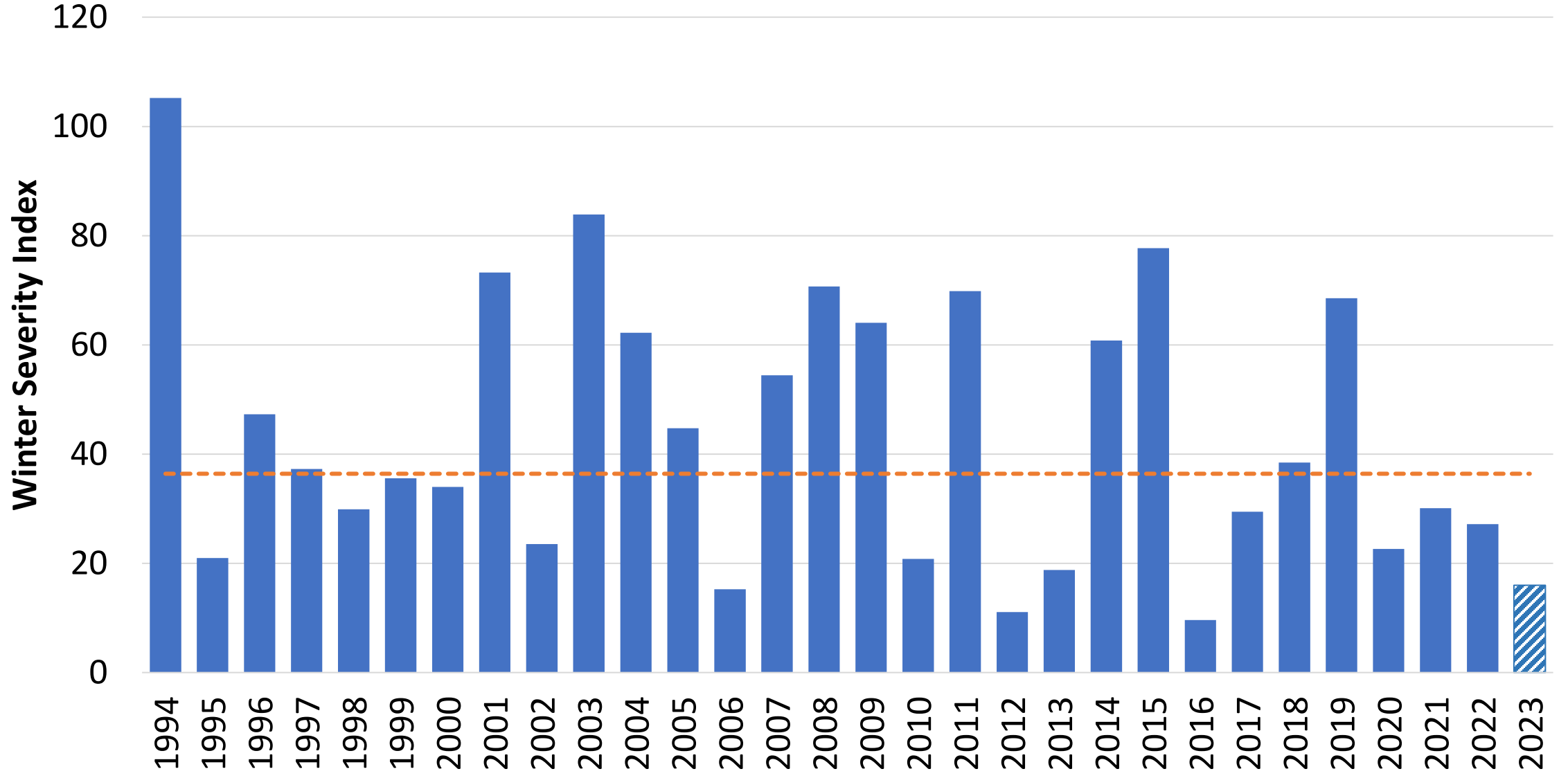


Recruits

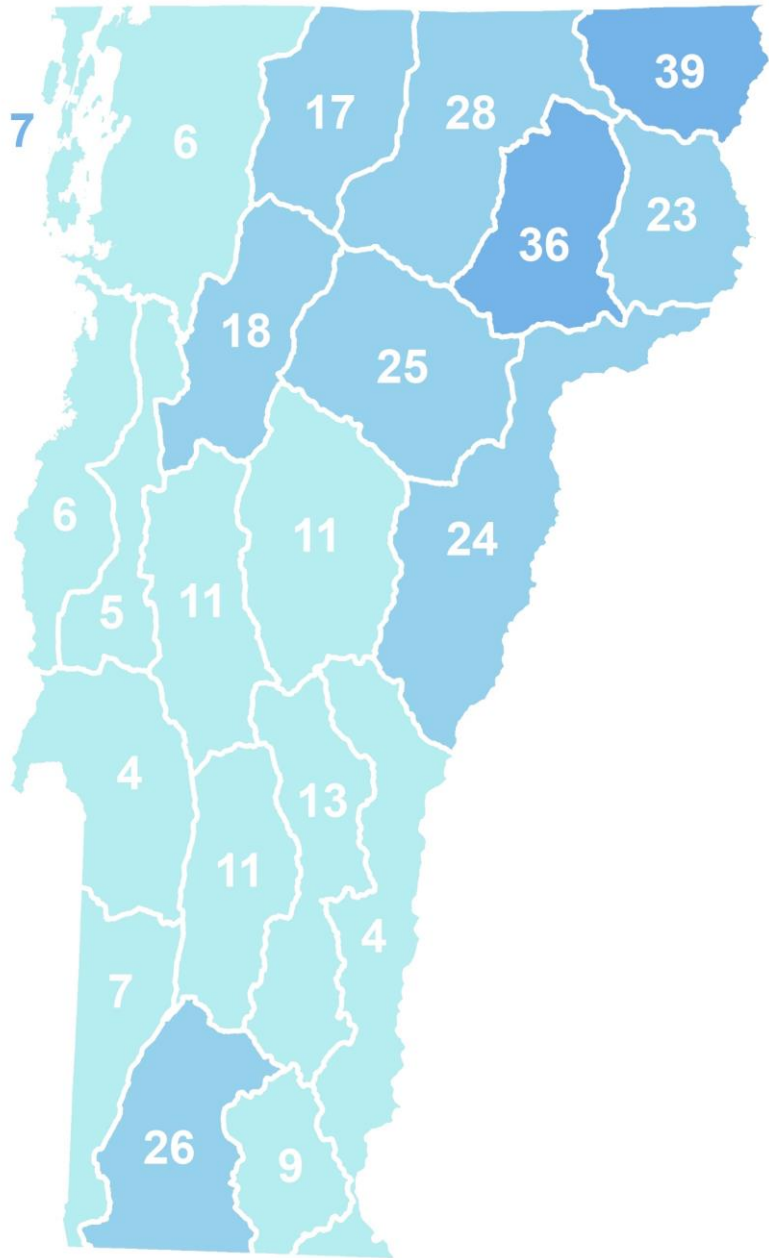
50 Fawns
(To 1 Year)



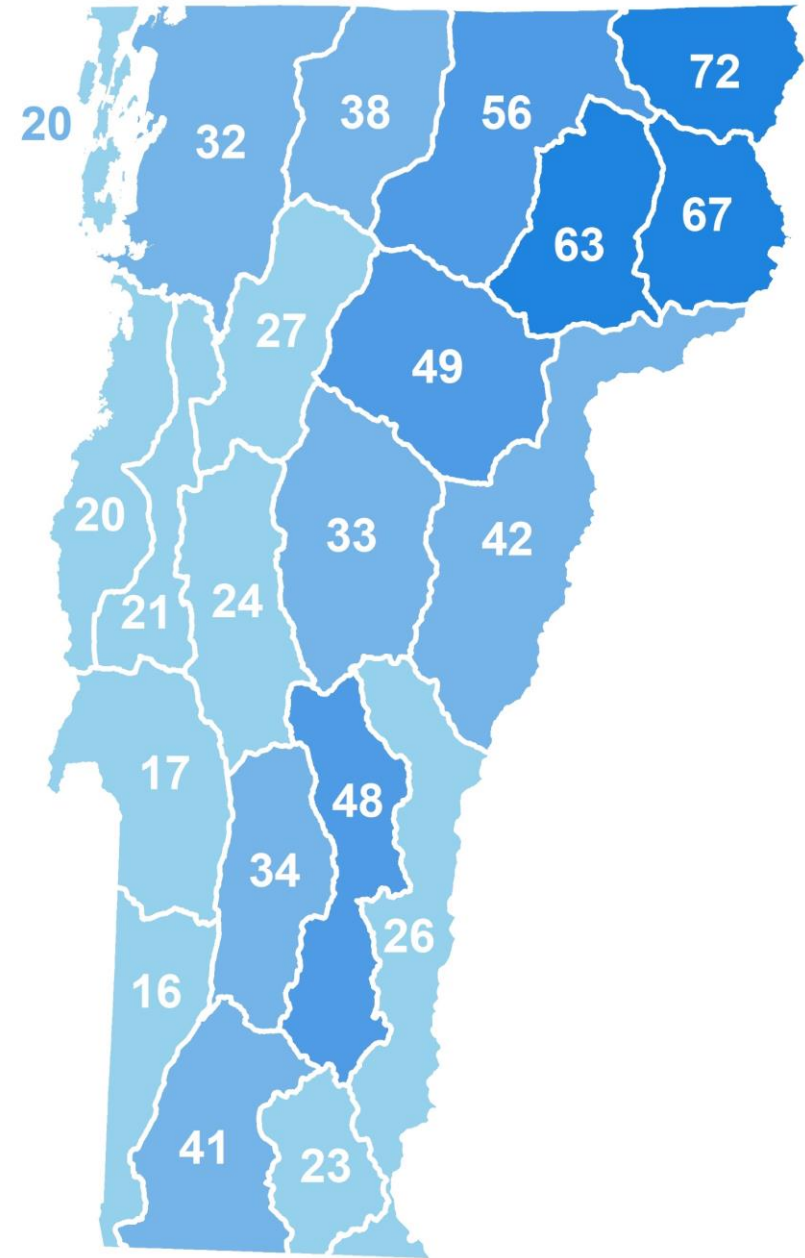
2023 Recommendation



2023

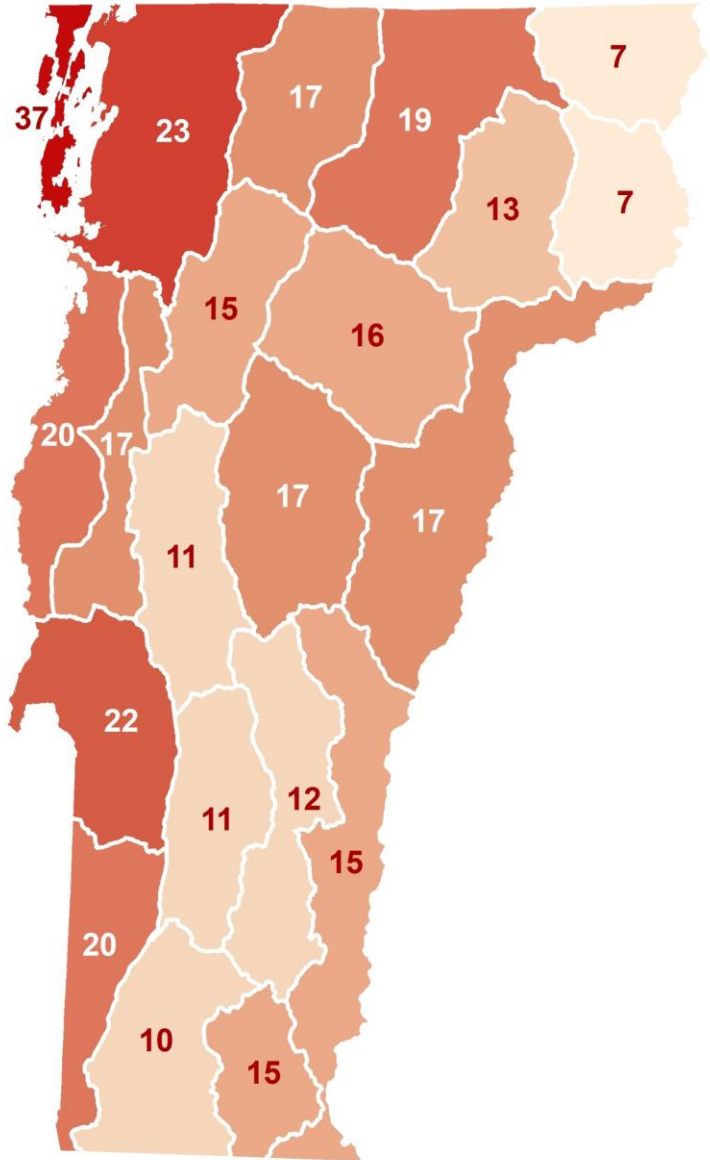


30-year Median

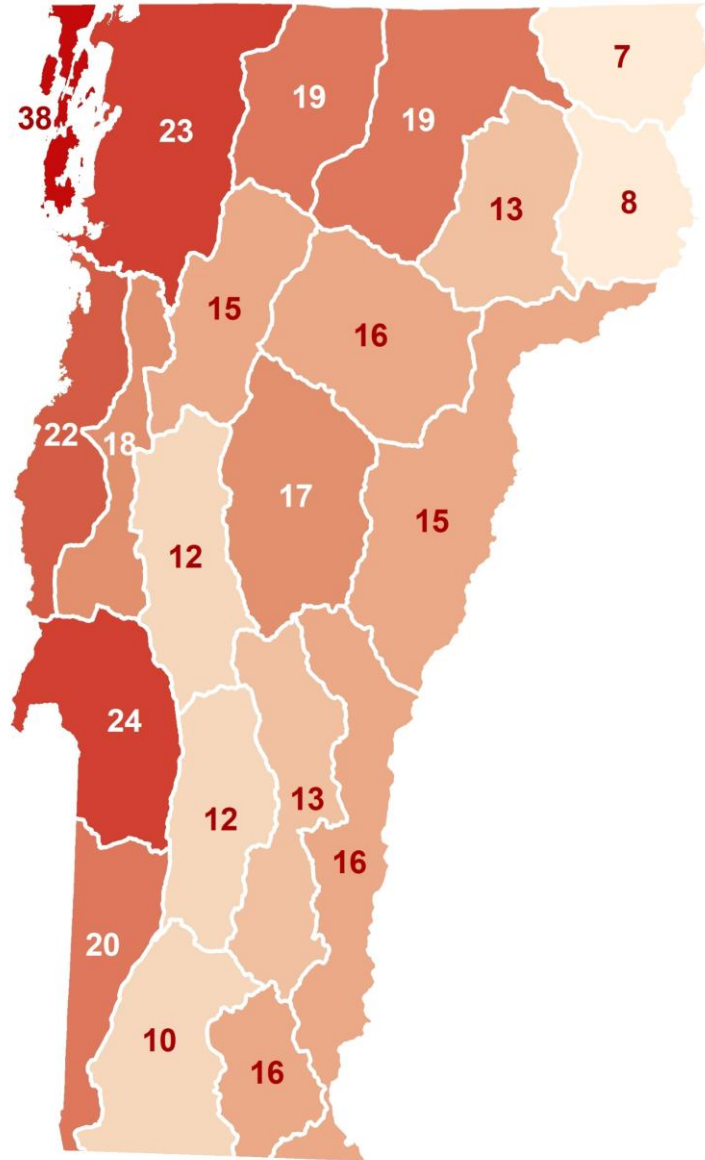


Deer Densities

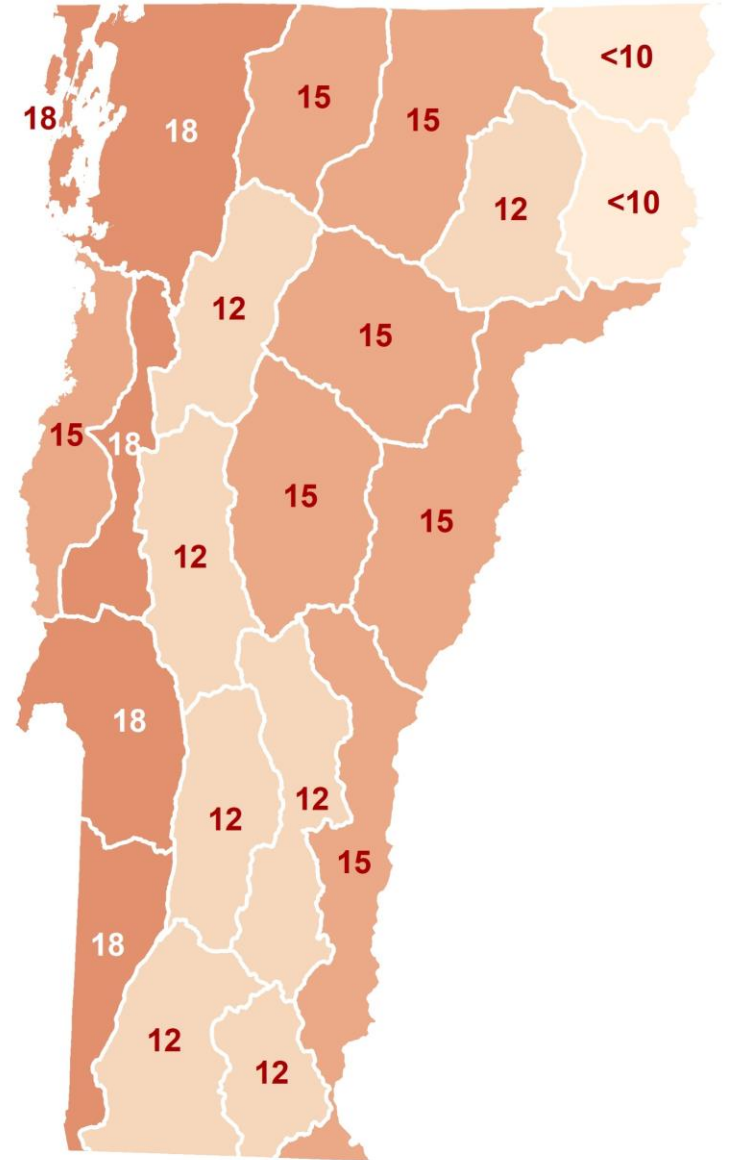
2022

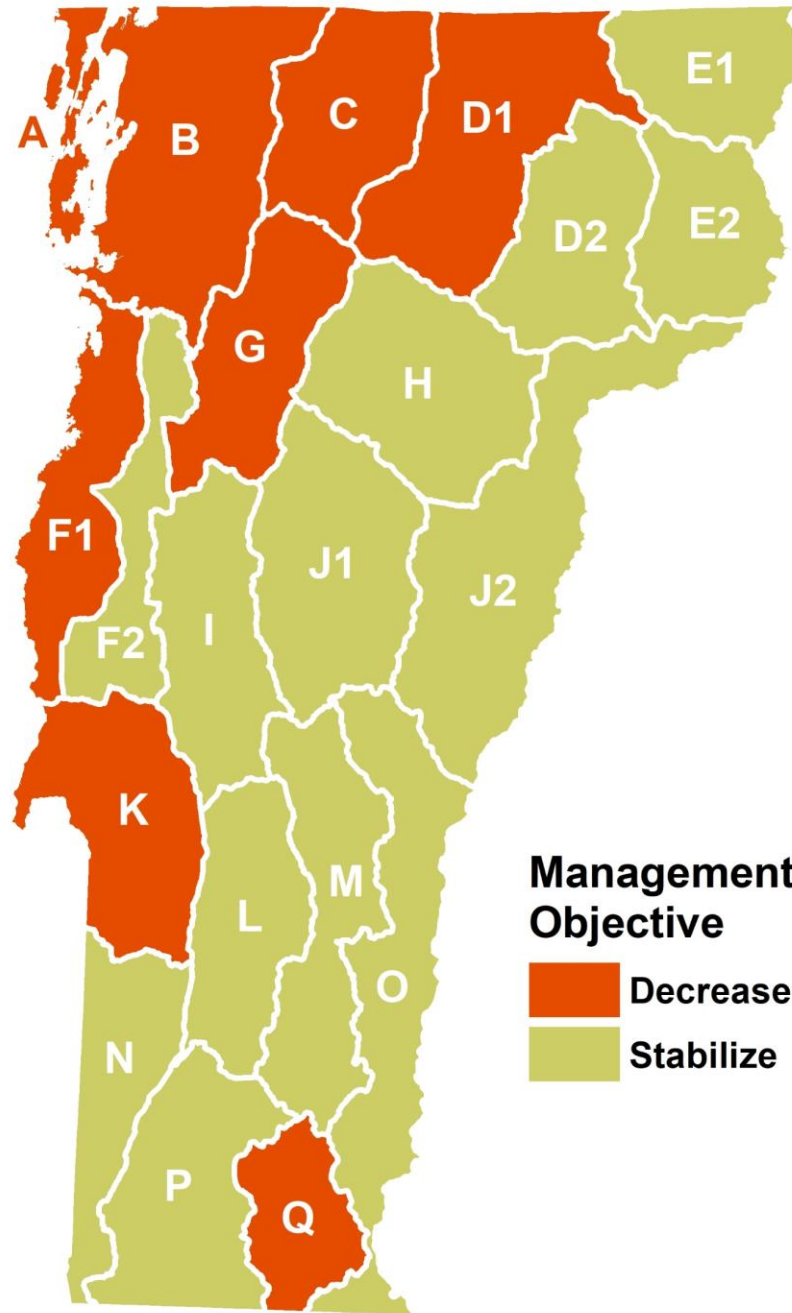


2023 *projected*



Objectives





A

71

mi² deer habitat



Management Objective

Decrease

Recommended Antlerless Harvest

Archery

164

Youth/Nov

23

Muzzleloader

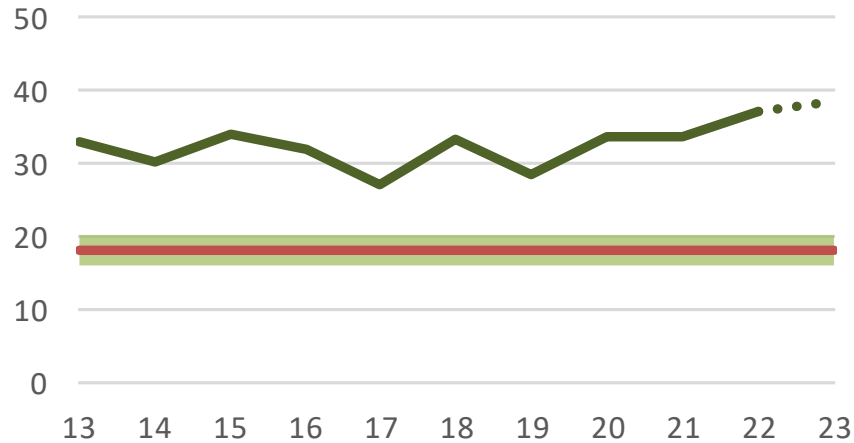
137

1000 permits

Total

324

Deer Density (deer/mi²)



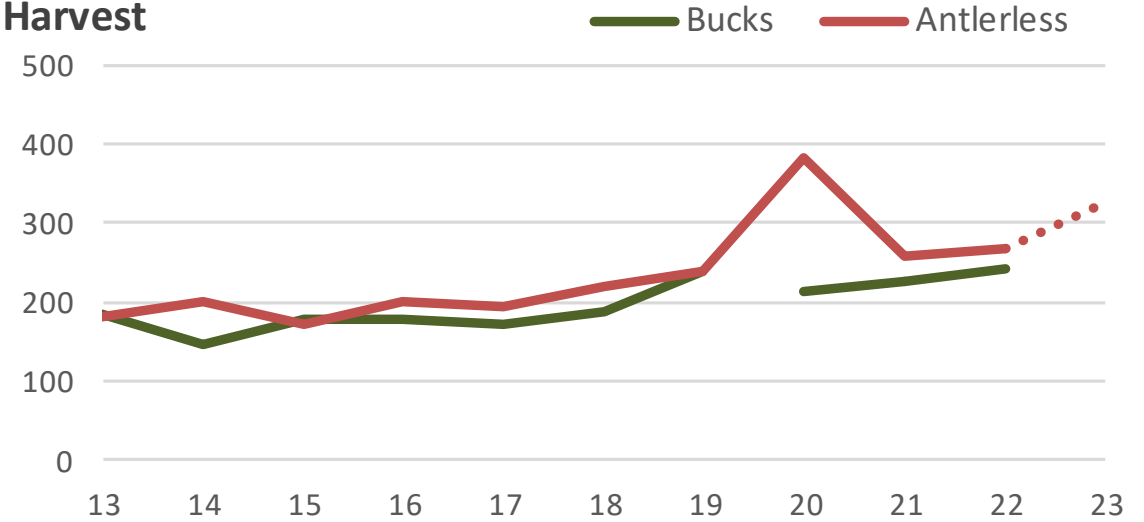
2023 Estimate

39

Objective

18

Harvest



— Bucks — Antlerless

Yearling Male

Beam Diameter

3-Year Avg.

17.4

 (5)

Minimum

17

Weight

3-Year Avg.

128.8

 (6)

Minimum

118

Fawn Weight

3-Year Avg.

55.3

 (3)

Minimum

60

Adult Birth Rate

5-Year Avg.

2.20

 (5)

Minimum

1.60

Winter Severity

Median WSI

20

expected non-hunt mortality

9%

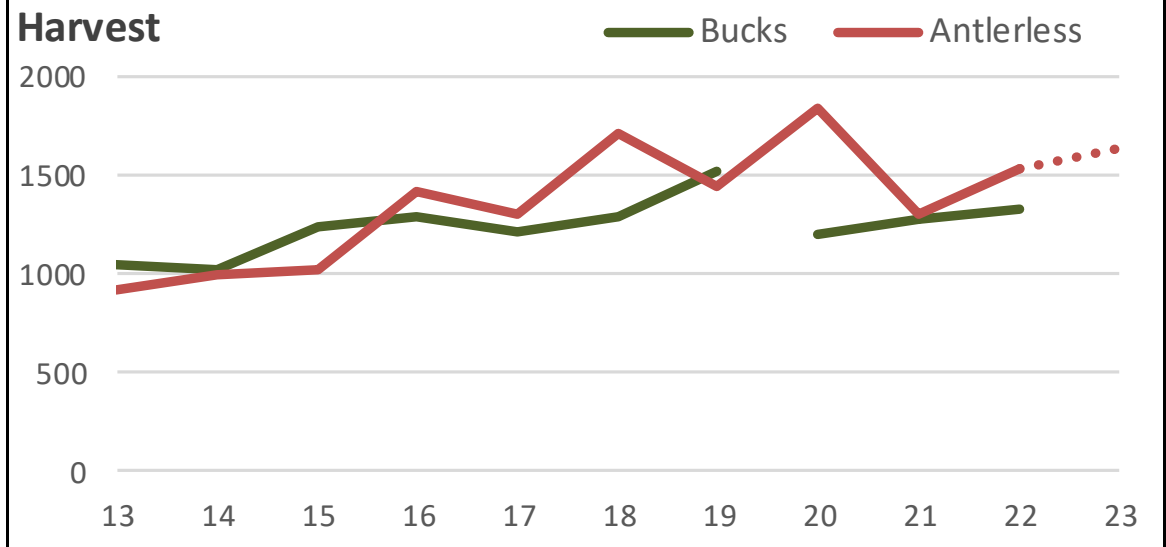
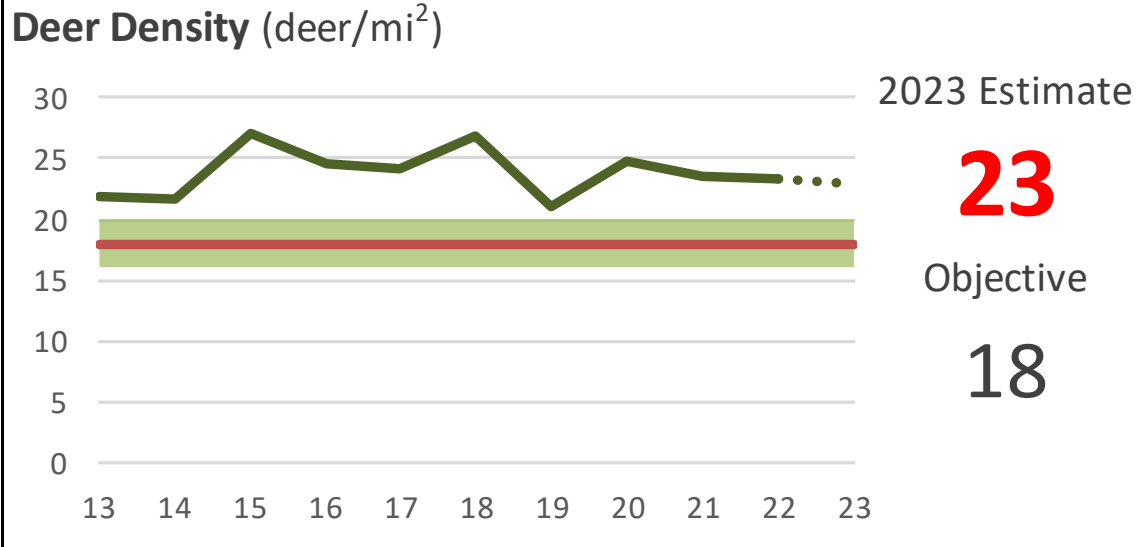
B

616

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Decrease	717	148	766 <small>5000 permits</small>	1630



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 16.0 (90) Minimum 17	3-Year Avg. 117.3 (92) Minimum 118	3-Year Avg. 59.0 (44) Minimum 60	5-Year Avg. 1.90 (20) Minimum 1.60	Median WSI 32 <small>expected non-hunt mortality</small> 11%

C

386

mi² deer habitat



Management Objective

Decrease

Recommended Antlerless Harvest

Archery

232

Youth/Nov

53

Muzzleloader

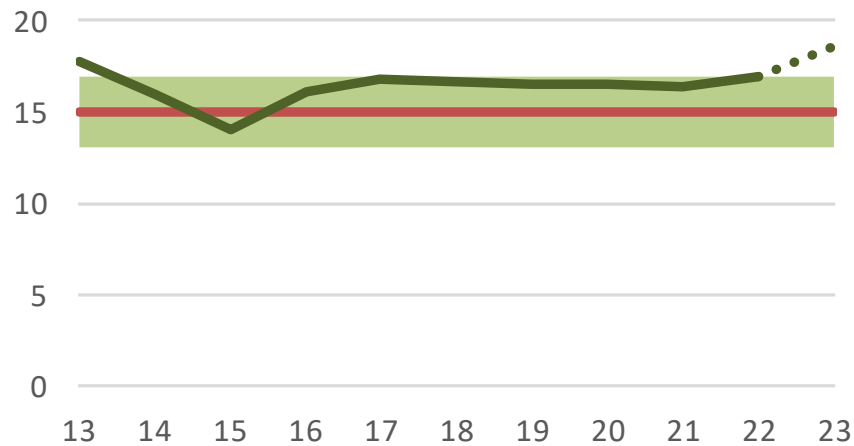
100

500 permits

Total

385

Deer Density (deer/mi²)



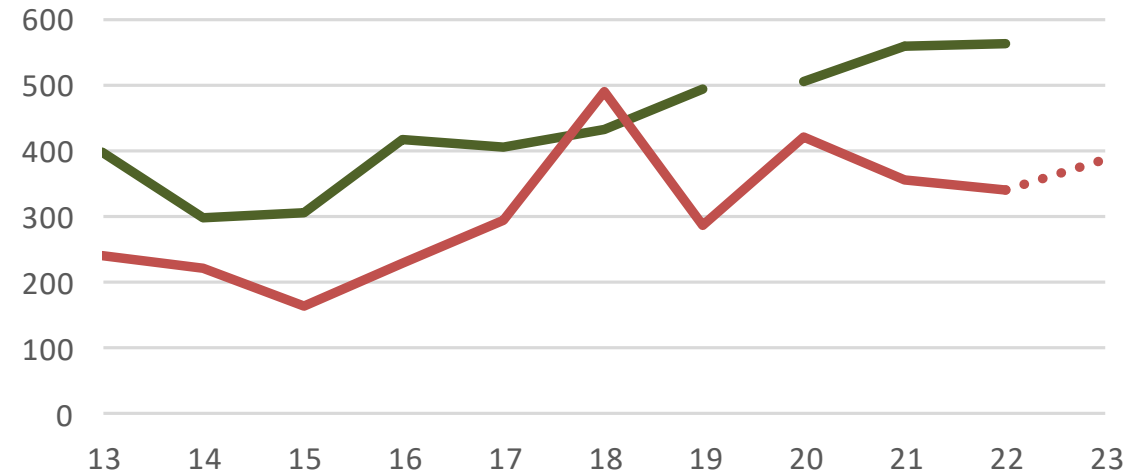
2023 Estimate

19

Objective

15

Harvest



— Bucks — Antlerless

Yearling Male

Beam Diameter

Weight

3-Year Avg.

3-Year Avg.

16.8

 (16)

117.4

 (16)

Minimum

Minimum

17

118

Fawn Weight

Adult Birth Rate

Winter Severity

3-Year Avg.

5-Year Avg.

Median WSI

57.8

 (19)

1.64

 (11)

38

Minimum

Minimum

expected non-hunt mortality

60

1.60

12%

D1

570

mi² deer habitat



Management Objective

Decrease

Recommended Antlerless Harvest

Archery

Youth/Nov

Muzzleloader

Total

390

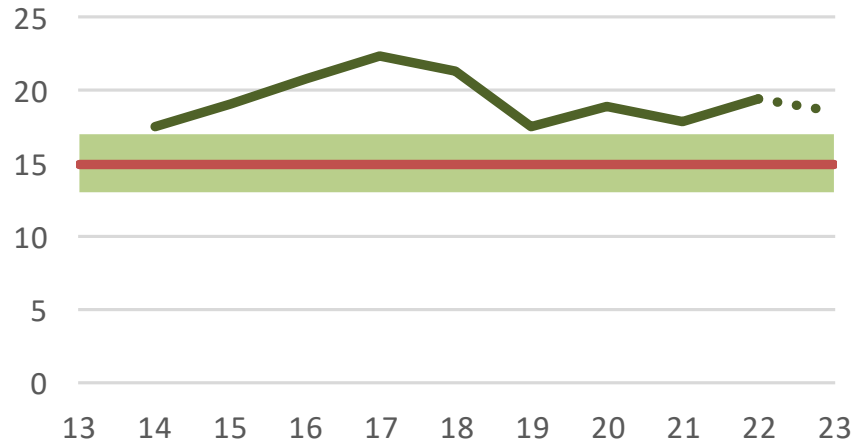
115

211

716

1000 permits

Deer Density (deer/mi²)



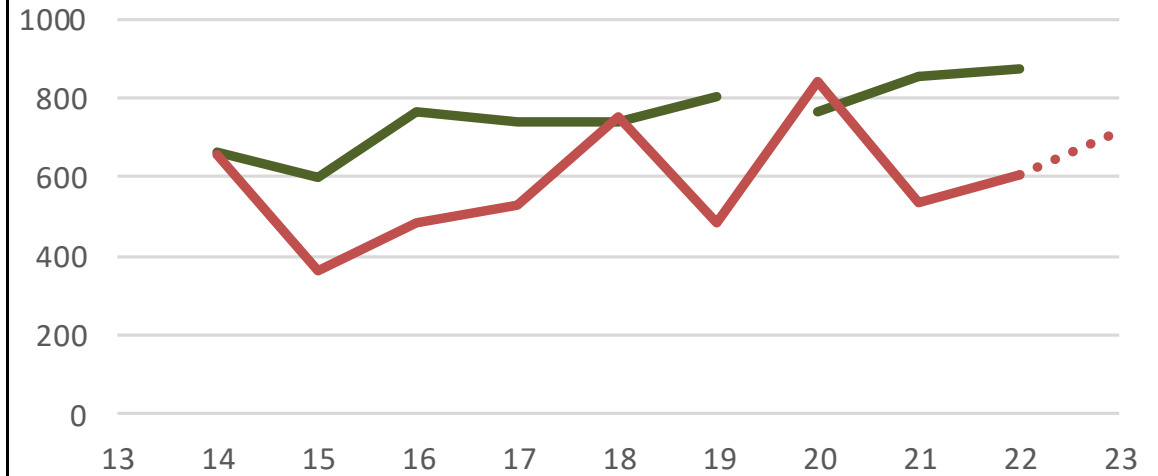
2023 Estimate

19

Objective

15

Harvest



— Bucks — Antlerless

Yearling Male

Beam Diameter

Weight

Fawn Weight

Adult Birth Rate

Winter Severity

3-Year Avg.

3-Year Avg.

3-Year Avg.

5-Year Avg.

Median WSI

16.6 (40)

118.4 (41)

59.2 (22)

1.87 (30)

56

Minimum

Minimum

Minimum

Minimum

expected non-hunt mortality

17

118

60

1.60

15%

F1

316

mi² deer habitat



Management Objective

Decrease

Recommended Antlerless Harvest

Archery

Youth/Nov

Muzzleloader

Total

175

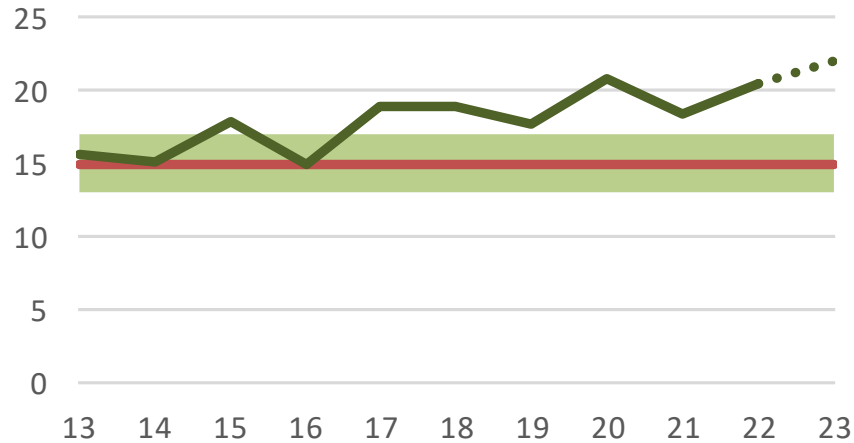
30

245

450

1800 permits

Deer Density (deer/mi²)



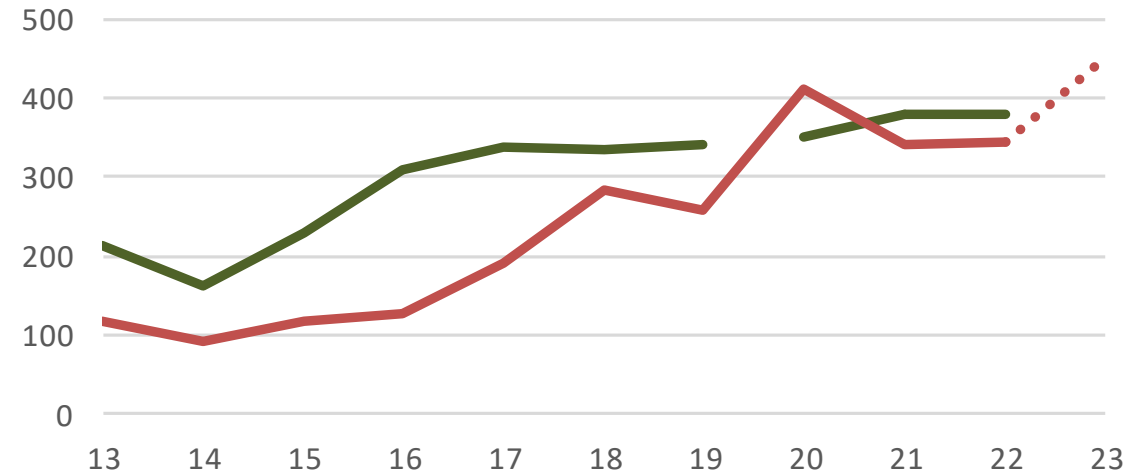
2023 Estimate

22

Objective

15

Harvest



— Bucks — Antlerless

Yearling Male

Beam Diameter

Weight

Fawn Weight

Adult Birth Rate

Winter Severity

3-Year Avg.

3-Year Avg.

3-Year Avg.

5-Year Avg.

Median WSI

16.3 (22)

119.6 (23)

62.6 (9)

2.08 (12)

20

Minimum

Minimum

Minimum

Minimum

expected non-hunt mortality

17

118

60

1.60

9%

K

438

mi² deer habitat



Management Objective

Decrease

Recommended Antlerless Harvest

Archery

Youth/Nov

Muzzleloader

Total

215

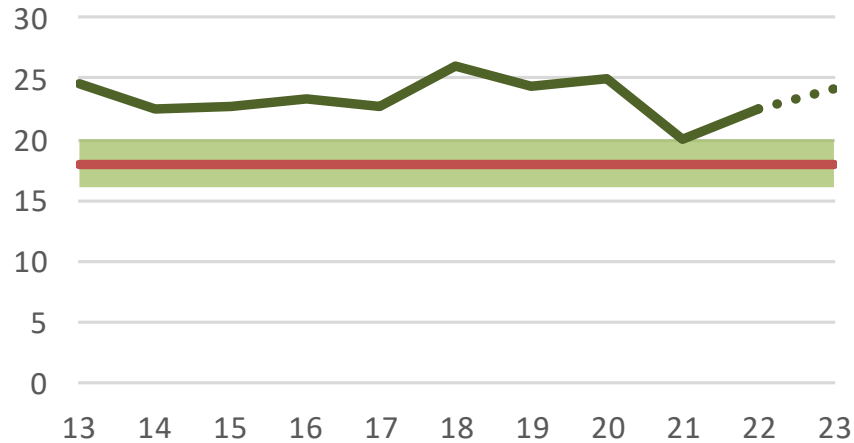
55

394

664

3000 permits

Deer Density (deer/mi²)



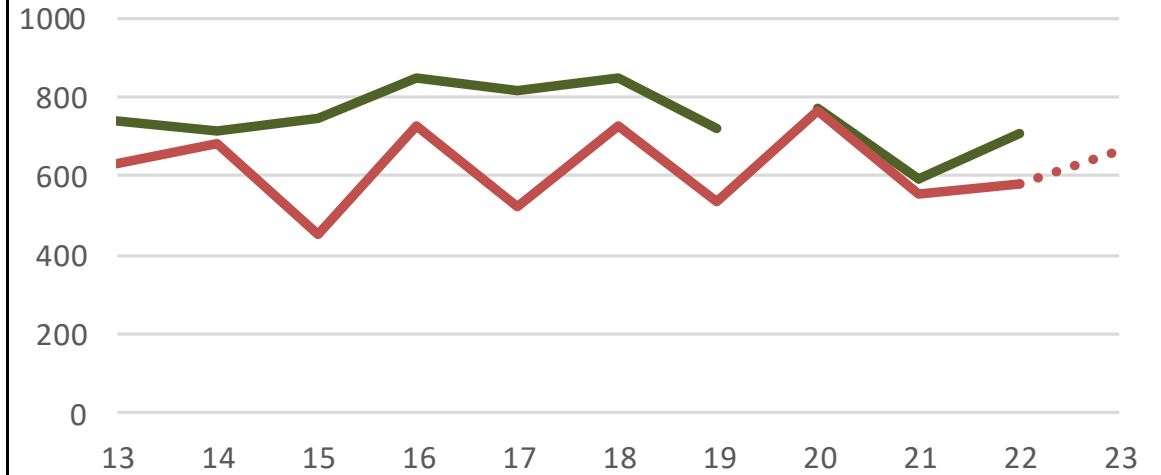
2023 Estimate

24

Objective

18

Harvest



— Bucks — Antlerless

Yearling Male

Beam Diameter

Weight

3-Year Avg.

3-Year Avg.

17.2

 (18)

114.3

 (22)

Minimum

Minimum

16.5

115

Fawn Weight

Adult Birth Rate

Winter Severity

3-Year Avg.

5-Year Avg.

Median WSI

64.3

 (14)

1.54

 (24)

17

Minimum

Minimum

expected non-hunt mortality

60

1.60

9%

Archery Season

All WMUs open to
Antlerless Hunting

Archery Season

**All WMUs open to
Antlerless Hunting**

Youth/Novice Season

**One deer of either sex
Including any buck (no APR)
In all WMUs**

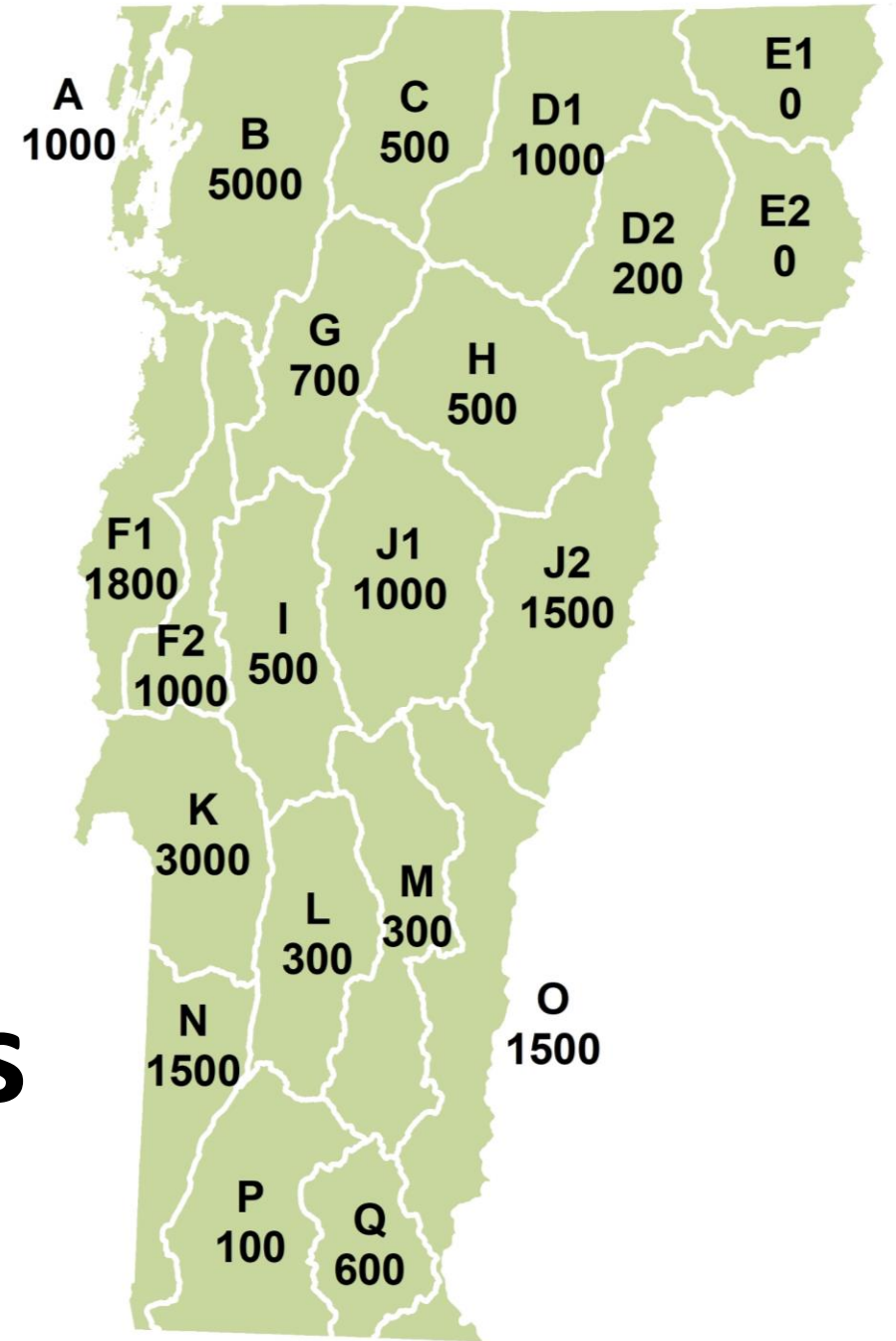
Archery Season

All WMUs open to
Antlerless Hunting

Youth/Novice Season

One deer of either sex
Including any buck (no APR)
In all WMUs

22,000 Antlerless Permits





Next Steps

Tonight

- Presentation to Board
- Preliminary Approval
(vote on what is presented to public for comment)

Public Comment

- Public Hearings
 - 5/9 – Middlebury
 - 5/17 – Montpelier
 - Presentation & recommendation available online
- Public Comments by email

May 24th

- F&W Board Final Vote

2023 Antlerless Harvest and Youth/Novice Season Recommendation

to the
Vermont Fish and Wildlife Board



Vermont Fish and Wildlife Department
Agency of Natural Resources
1 National Life Drive, Davis 2
Montpelier, VT 05620-3208
802-828-1000

Summary of Key Points

- Recent antlerless harvests have been sufficient to stabilize deer numbers in most WMUs.
- Vermont had a relatively easy winter in 2023.
- Yearling antler beam diameters, fawn weights, and other physical condition metrics are below optimal levels in many areas, indicating that deer numbers have exceeded the level their habitat can support long-term.
- Deer populations in eight WMUs are projected to be above their respective population objectives in 2023. The recommended antlerless harvest is intended to reduce deer populations in these WMUs.
- Populations in all other WMUs will be close to their respective population objectives and the recommended antlerless harvest is intended to stabilize populations and provide additional harvest opportunities.
- The recommended permit allocations are expected to result in the harvest of 3,257 antlerless deer during the antlerless (early muzzleloader) and December muzzleloader seasons. This would result in an estimated total harvest from all seasons of approximately 8,262 antlerless deer.

Executive Summary

The Vermont Fish and Wildlife Department estimates there will be approximately 139,000 white-tailed deer on the Vermont landscape prior to the start of the 2023 deer hunting seasons. This represents an increase of 2 percent from the retrospective 2022 pre-hunt estimate. Deer populations in 8 Wildlife Management Units (WMU) are expected to be above their respective density objectives established in the *2020-2030 Big Game Management Plan*. The remaining 13 WMUs will have deer densities close to their respective density objectives. Deer are not evenly distributed across Vermont. As a result, harvest management strategies that account for regional differences in deer density are essential to the health and proper management of Vermont's deer herd.

For deer to be healthy and productive, deer populations must be kept below the carrying capacity of the habitat through the regulated harvest of antlerless deer. Biological information collected annually by the Department, including reproductive data, fawn and yearling body weights, and yearling antler size, indicate that deer populations have exceeded the level the habitat can support long-term in some parts of Vermont. Deer populations must be reduced or maintained below the limits of their habitat or physical condition will continue to decline, habitat damage will increase, and populations will become unstable and susceptible to substantial winter mortality.

The winter of 2023 was relatively easy for deer throughout most of Vermont. Increased antlerless harvests in recent years will limit deer population growth in many areas, but some growth is still expected. Antlerless harvests will need to be maintained or increased to reduce deer densities in those WMUs that remain above objective and to stabilize populations in other WMUs at their current level.

To achieve established density objectives, the Department recommends the harvest of 8,262 antlerless deer during the 2023 hunting seasons. The Department recommends that antlerless harvest be authorized during the archery and youth/novice seasons in all WMUs. After accounting for expected archery and youth/novice season harvests, the Department recommends that 3,257 antlerless deer be harvested, by permit, during the antlerless-only muzzleloader season in late October and the December muzzleloader season. Achieving this harvest requires the issuance of 22,000 WMU-specific antlerless permits distributed among 19 of Vermont's 21 WMUs (12 percent more permits than the 19,400 allotted in 2022).

Three public hearings were held March 20, 23, and 24, 2023 to gather comments on the deer herd. Approximately 94 members of the public participated in these hearings. Two additional public hearings will be held May 9 and 11, 2023.

2023 Muzzleloader Antlerless Harvest Recommendation

Pursuant to 10 V.S.A. §§4081, 4082 and 4084, and Appendix Chapter 1 §2c, hereafter is the Department's 2023 antlerless harvest and youth season recommendation. Based on population estimates, a harvest of 8,262 antlerless deer is recommended during the 2023 hunting seasons. This includes 5,004 antlerless deer harvested during the archery, youth, and novice seasons, and 3,257 antlerless deer harvested, by permit, during the antlerless (October muzzleloader) and December muzzleloader seasons. Adult females are typically 84 percent of the total antlerless deer harvest, so harvesting this number of antlerless deer would yield approximately 6,904 adult does.

Population Status

The 2022 deer hunting seasons saw a buck harvest one percent higher than the previous 3-year average (see *2022 Vermont White-tailed Deer Harvest Report* for more information). Seven WMUs had retrospective population estimates in 2022 that exceeded their respective population objectives established in the *2020-2030 Big Game Management Plan*. The winter of 2023 was relatively easy for deer in most of the state; however, increased antlerless harvests in recent years are expected to limit deer population growth in most WMUs.

Winter Severity 2023

The Department has long recognized the influence that winter weather can have on Vermont's deer herd and has been collecting winter severity data since 1970. Between December 1 and April 15, volunteers record one winter severity index (WSI) point for each day with at least 18 inches of snow on the ground, and one point for each day the temperature reaches 0°F or below. These data have proven useful to describe deer population dynamics; however, how well deer survive winter depends largely on three factors: 1) body condition of deer as winter begins, 2) availability of quality deer wintering habitats, and 3) the timing of snow in the fall and snowmelt in spring. Snow cover that remains late into spring can cause significant negative impacts by delaying spring green up and, consequently, reducing fawn survival.

The winter of 2023 was relatively easy for deer, with a state-wide average WSI of 16 points (**Figure 1**). This was well below the 30-year median of 36. All WMUs experienced an easier-than-normal winter (**Figure 2**). Statewide, the month of January was the easiest on record, and December–February collectively was the easiest on record. While March brought more normal conditions, the lack of deep snow across much of the state for much of the winter allowed deer to utilize habitats outside of traditional wintering areas and access the best available foods. As a result, overwinter mortality was minimal.

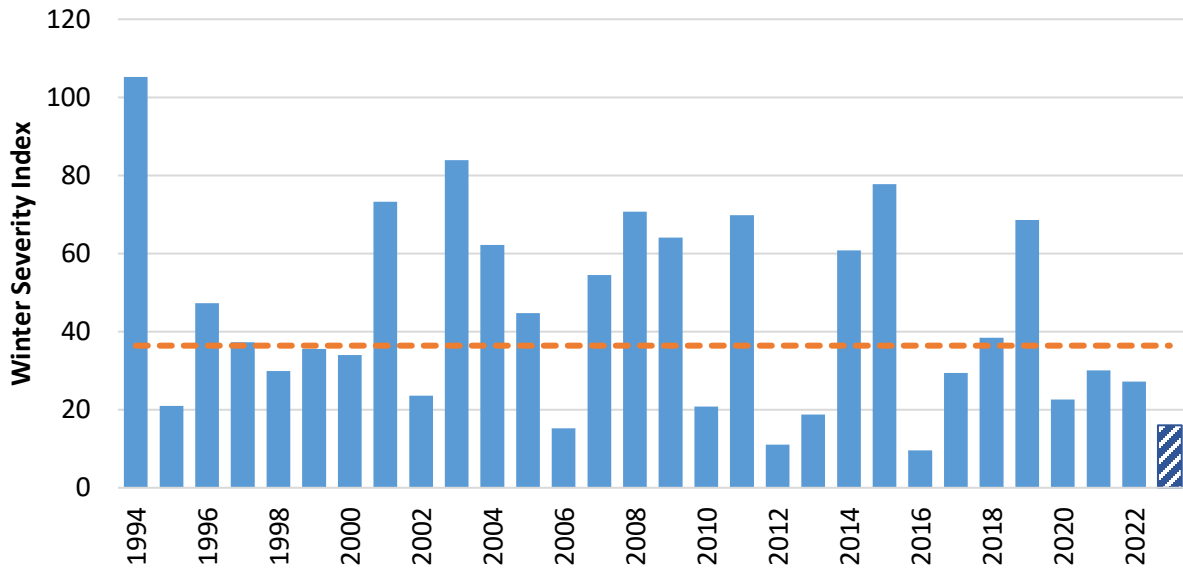


Figure 1. Statewide winter severity index (WSI), 1994–2023. The dashed line shows the 30-year median of 36.4.

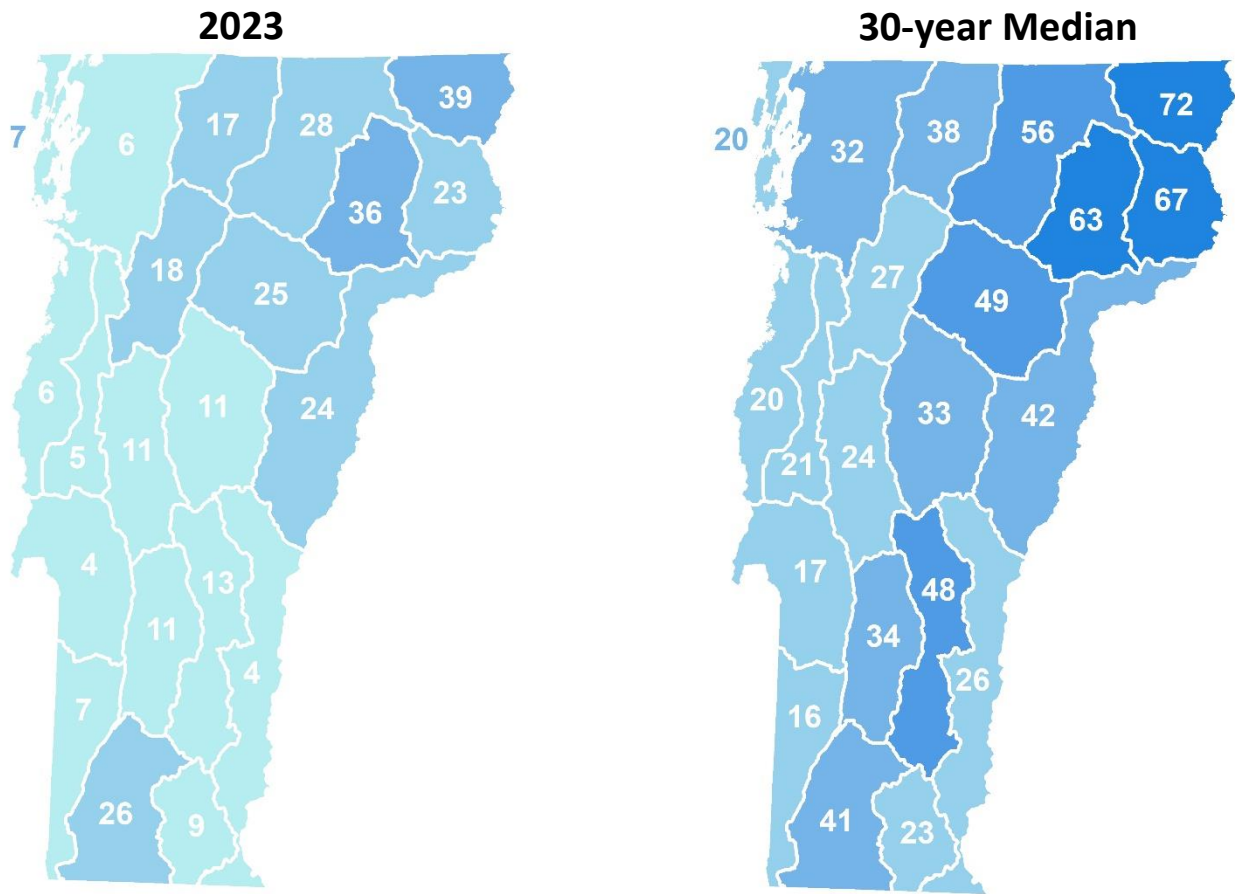


Figure 2. Winter severity index by Wildlife Management Unit in 2023 and the 30-year median.

Population Health

Biological information collected annually by the Department, including reproductive data, fawn and yearling body weights, and yearling antler size, indicate that deer populations have exceeded the level the habitat can support long-term in some parts of Vermont (**Figure 3**, see Appendix A for individual WMU information). In many cases, this does not appear to be a new problem. Instead, this appears to be a subtle but chronic problem that may have occurred for decades in some areas. Declines in measures like yearling antler beam diameter have been slow (**Figure 3**); therefore, it takes many years of data to separate the trend from normal annual variation.

Health concerns are most pronounced in central Vermont but are evident in many parts of the state (see Appendix A for more detail). In most cases, the Department believes the primary driver of declines in physical condition was not a recent increase in deer abundance, but rather a slow, steady decline in the quality of deer habitat. Deer abundance has been relatively stable during the past 15 years, and, arguably, the past 30 years. However, Vermont's forests are aging and the amount of young forest (less than 20 years old), which provides critical forage for deer, is declining. Other factors, including hunter access to private land, proliferation of invasive plants, and climate change are also important, and make the problem and any solutions more complex. The simple result, however, is that the habitat cannot support the number of deer it used to, and it is likely that carrying capacity will continue to decline. Deer populations must be reduced below the limits of their habitat or physical condition will continue to decline, habitat damage will increase, and populations will become unstable and more susceptible to disease and substantial winter mortality.

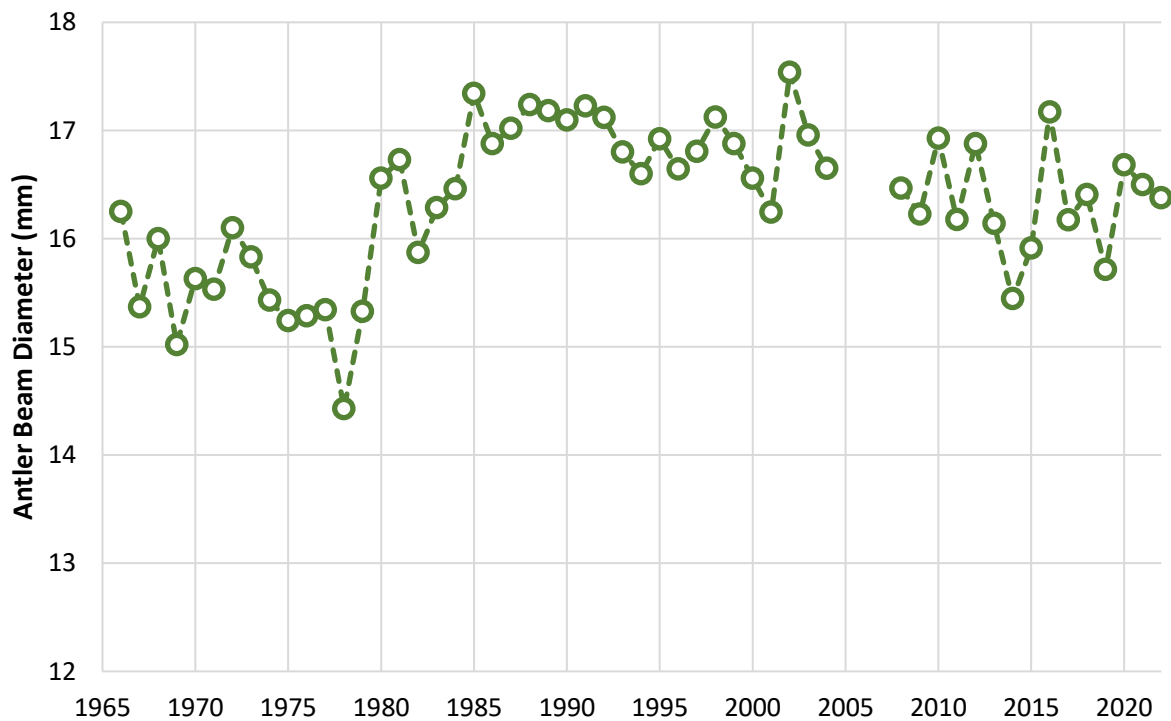


Figure 3. Antler beam diameter of yearling bucks in Vermont, 1965–2022. Data are from deer examined at biological check stations.

Population Projections and Management Objectives

Although the winter of 2023 was relatively easy for deer, increased antlerless harvests in recent years will limit population growth in most areas. Importantly, deer densities remain above population objectives in several WMUs and recent management efforts are only beginning to affect some of those populations. To provide healthy habitats and thereby keep deer healthy and productive, deer densities must be kept at established objectives (Figure 8). Maintaining a healthy deer herd is the best way to mitigate the potential effects of winter weather and provide a stable population over the long term.

Based on analysis of herd demographic data, hunter effort, deer sighting rates (Figure 4), buck harvests (Figure 5), antlerless deer harvests, and winter severity data (Figure 2), the Department expects deer numbers to remain stable in most areas with minor increases in a few WMUs (Figures 6 and 7). Importantly, eight WMUs will have deer densities that exceed their respective population objectives (Figure 8), and the Department's intent is to reduce deer densities in those areas (Figures 9). Other WMUs will have deer densities that are within two deer per square mile of their population objective and the intent is to stabilize those populations at or near their current level.

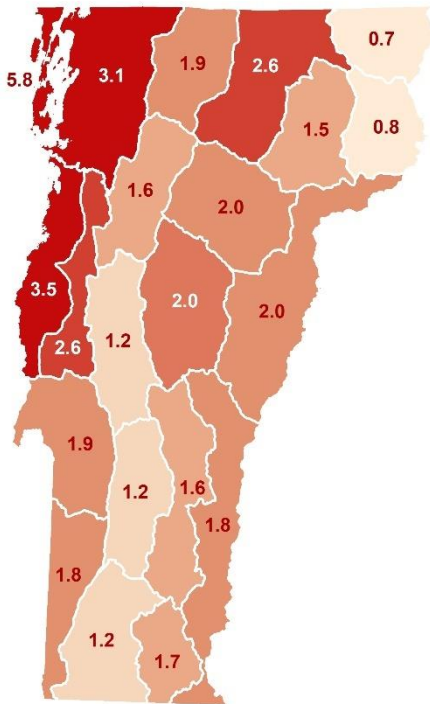


Figure 4. Deer seen per 10 hours of hunting by regular season deer hunters, 2020–2022.

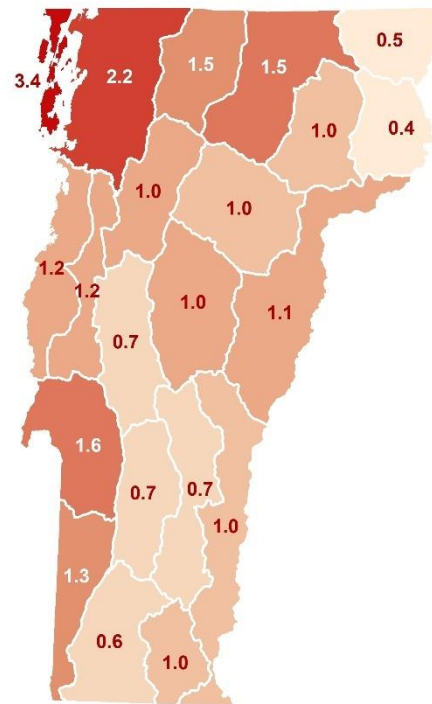


Figure 5. Adult buck harvest per square mile during the 2022 deer seasons. Buck harvest rate is affected by antler restrictions in some WMUs.

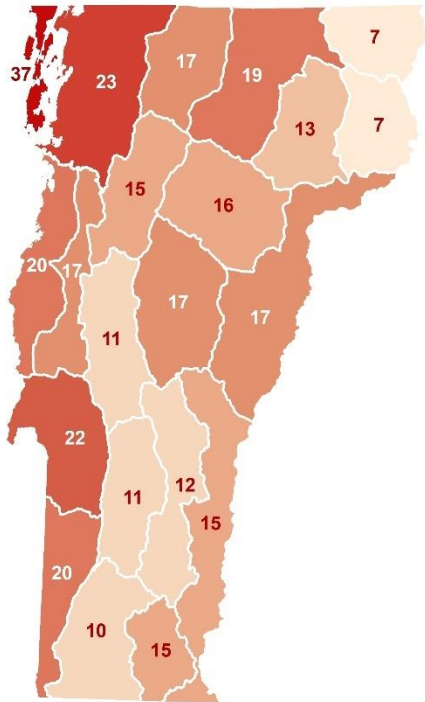


Figure 6. 2022 estimated deer density (deer per square mile of habitat), by WMU.

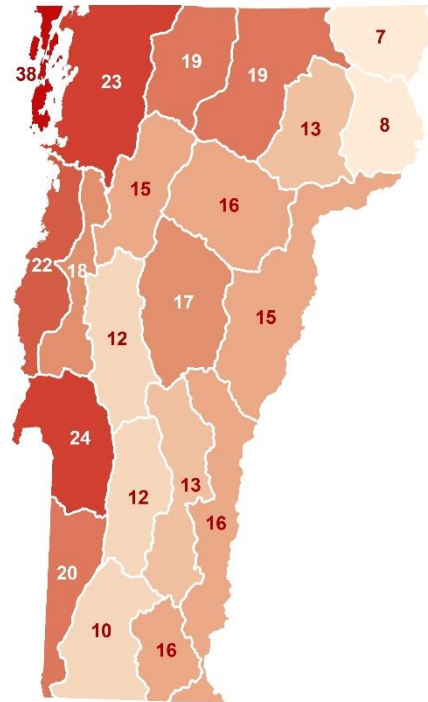


Figure 7. 2023 predicted deer density (deer per square mile of habitat), by WMU.

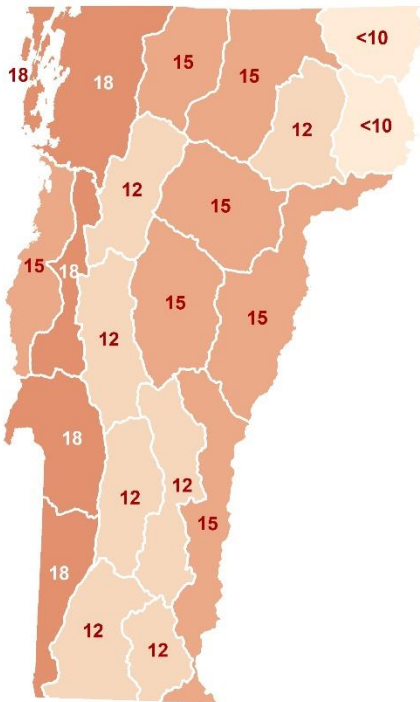


Figure 8. Deer density objectives (deer per square mile of habitat), by WMU.

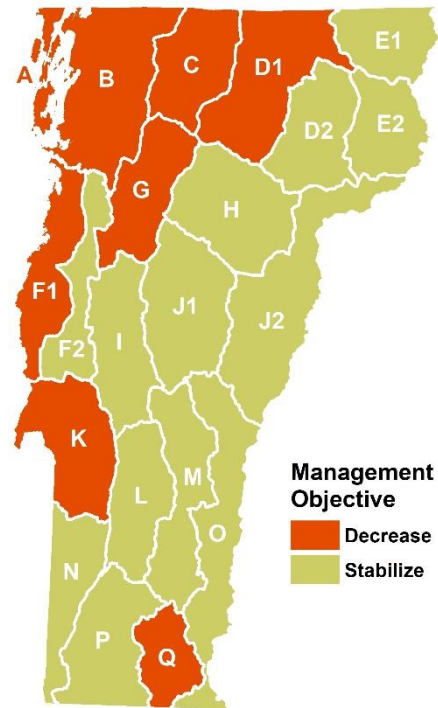


Figure 9. Desired change in the deer population, by WMU, to reach density objectives.

Antlerless Harvest and Buck Age Structure Management

Antlerless harvests are an important tool for managing buck age structure and the overall buck hunting experience. The 2018 Big Game Survey found that 74% of Vermont hunters are interested in managing for older, larger deer. Further, the most important drivers of hunter satisfaction, after “just going deer hunting,” were “harvesting an older, larger-antlered buck” and “the amount of buck sign in the woods.” Providing additional antlerless harvest opportunities helps to reduce hunting pressure on bucks, allowing more bucks to survive to older ages. Increased antlerless harvests are also necessary to achieve a more balanced buck-to-doe ratio. Perhaps most importantly, a healthy deer population produces healthier, larger-antlered, larger-bodied bucks.

Ultimately, the Department would like to maintain the buck population at its current level. It may seem counterintuitive that this can be done with fewer does in the population, but age structure and birth rate data clearly indicate that it is possible. When does are in better physical condition they give birth to more fawns, and, more importantly, are able to raise more of those fawns to adulthood. This means that fewer, healthier does can recruit more deer into the population than a larger number of less-healthy does on over-browsed habitat. If the physical condition of deer can be improved, recruitment of fawns to adulthood will improve. Since half of fawns are male, this would allow the buck population to remain at its current level, or even increase, despite fewer does on the landscape.

Antlerless Harvest Recommendation

Archery Season

The Department believes it is appropriate to have all WMUs open to the taking of antlerless deer during the 2023 archery season. Antlerless harvest in archery season is a key component in deer population management in Vermont. Archery hunters tend to distribute their hunting effort and, as a result, harvest in areas with higher deer numbers. Therefore, archery harvest has a low impact in areas with fewer deer. Importantly, archery harvest allows hunters to better regulate local deer herds in areas with high deer densities, particularly areas where firearm hunting is limited.

Youth and Novice Season

The Department is strongly committed to recruiting new hunters into Vermont’s deer hunting heritage. Based on this commitment and the importance of harvesting an adequate number of female deer each year, the Department recommends that the youth and novice season bag limit be one deer of either sex in all WMUs. This will provide these hunters with additional opportunity to harvest a deer and the opportunity to help properly manage Vermont’s deer herd. The Department also recommends that hunters during this season be able to take any buck, regardless of antler characteristics. It is critical that spike-antlered bucks be taken during this season so the Department can track their prevalence in the population (for population modeling) and obtain important biological information (e.g., weight, antler measurements) from this portion of the yearling buck population. This is the primary reason Department biologists examine deer during this season each year. This will have no impact on buck age structure management in WMUs that still have an antler restriction, as the buck harvest during this season is typically about five percent (four percent in 2022) of the overall buck harvest.

Antlerless Permits

Antlerless permits are recommended for 19 of the state’s 21 WMUs in 2023. These permits may be filled during the early antlerless-only muzzleloader season in late October or during the December muzzleloader season. The Department recommends that a total of 22,000 antlerless permits be issued (12 percent more than the 19,400 approved for distribution in 2022). An increase in antlerless permits is recommended in six WMUs, while all other WMUs would have the same number of permits as allocated in 2022 (**Figure 10**). These recommendations are intended to move populations toward WMU-specific deer density and physical condition objectives established in the *2020-2030 Big Game Management Plan* (see Appendix A for additional detail). This permit allocation is expected to result in the harvest of an additional 3,257 antlerless deer above those harvested during the archery and youth/novice seasons. Harvesting this number of antlerless deer should yield approximately 2,769 adult female deer (85 percent of muzzleloader antlerless deer are adult does).

The total recommended antlerless harvest is slightly higher than the average antlerless harvest during 2020–2022, with most of the increase occurring in WMUs where deer populations remain above objectives. This recommendation continues to take advantage of new hunting regulations to achieve the higher antlerless harvests that are necessary to achieve WMU-specific deer density and physical condition objectives. Harvests are intended to maintain populations near their current level, or to reduce populations toward density objectives over several years, not all at once. Relatively high antlerless harvests will continue to be necessary in the future to maintain populations at desired densities, particularly when winters are mild and as deer condition and fawn recruitment rates improve.

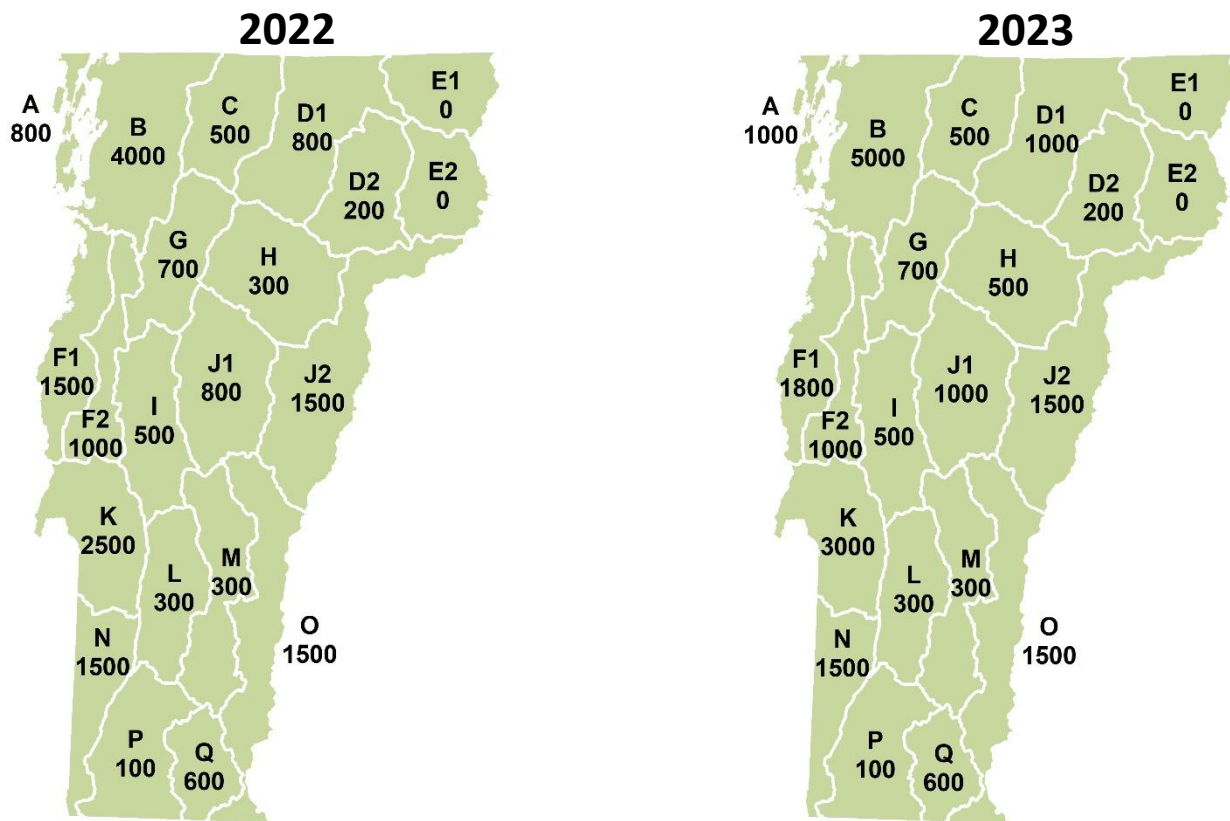


Figure 10. Antlerless permit allocations by wildlife management unit for 2022 and 2023 (proposed).

Table 1. Estimated deer densities and predicted antlerless deer harvests during the 2023 archery, youth/novice, and muzzleloader seasons, by wildlife management unit.

WMU	Deer per mi ²			Muzzleloader Antlerless			Other Antlerless		2023 Total Antlerless	% of Doe Population Harvested	Doe Harvest per Mi ²	Doe Harvest per 100 Bucks ^a
	Objective	2022	2023	Permits	Fill Rate	Harvest	Archery	Youth/Novice				
A	18	37	38	1000	14%	137	164	23	324	22%	3.84	124
B	18	23	23	5000	15%	766	717	148	1630	20%	2.21	115
C	15	17	19	500	20%	100	232	53	385	9%	0.83	58
D1	15	19	19	1000	21%	211	397	117	724	11%	1.05	68
D2	12	13	13	200	19%	38	160	36	234	8%	0.50	50
E1	<10	7	7	0		0	27	5	32	2%	0.09	18
E2	<10	7	8	0		0	21	3	23	2%	0.06	17
F1	15	20	22	1800	14%	245	175	30	450	11%	1.20	99
F2	18	17	18	1000	13%	127	161	30	318	11%	0.99	75
G	12	15	15	700	14%	97	156	13	266	8%	0.58	61
H	15	16	16	500	18%	92	305	43	440	9%	0.71	81
I	12	11	11	500	15%	73	108	15	195	7%	0.39	49
J1	15	17	17	1000	17%	171	322	44	537	10%	0.85	90
J2	15	17	15	1500	18%	267	392	71	730	11%	0.86	84
K	18	22	24	3000	13%	394	215	55	664	11%	1.27	81
L	12	11	12	300	13%	40	65	9	115	4%	0.26	36
M	12	12	13	300	15%	45	61	12	118	3%	0.22	32
N	18	20	20	1500	12%	173	130	36	340	9%	0.88	65
O	15	15	16	1500	14%	204	235	31	470	9%	0.72	72
P	12	10	10	100	15%	15	88	11	113	4%	0.21	33
Q	12	15	16	600	11%	63	88	3	155	7%	0.56	54
STATE				22000	15%	3257	4217	787	8262			

^a In WMUs with an antler restriction, which reduces buck harvest, this number will be higher than a comparable area with no antler restriction.

Table 2. Muzzleloader antlerless permit history by WMU, 2015–2022, and recommended permit allocation for 2023. Numbers in parentheses are the number of permits actually distributed.

WMU	2015	2016	2017	2018	2019	2020	2021	2022	2023
A	900	1100	1100 (843)	1100 (720)	1100 (939)	1000	500	800	1000
B	3350	5500	5500	5500	5500	4500	3500	4000	5000
C	100	350	700	800	300	500	500	500	500
D1	100	300	500	1200	500	1000	800	800	1000
D2	0	100	300	800	300	500	300	200	200
E1	0	0	0	0	0	0	0	0	0
E2	0	0	0	0	0	0	0	0	0
F1	0	200	1200 (917)	1000 (900)	1000	1000	1300	1500 (1453)	1800
F2	0	700	1500 (1297)	1300	1300	1300	1000	1000	1000
G	100	300	300	300	300	700	700	700	700
H	100	750	900	1100	400	300	300	300	500
I	0	0	300	300	300	500	500	500	500
J1	0	300	750	1200	800	1500	1200	800	1000
J2	400	1500	1750	2500	2000	2000	1800	1500	1500
K	2250	4100 (3569)	4100 (2505)	4000 (2446)	4000 (2440)	3000	3000 (2795)	2500	3000
L	0	0	300	300	300	300	300	300	300
M	0	200	300	300	300	300	300	300	300
N	1850	2100 (1835)	2100 (1588)	2000 (1487)	2000 (1462)	2000	1800 (1642)	1500	1500
O	500	1200	2000	2600 (2300)	2000	2000	1500	1500	1500
P	0	0	0	0	0	100	100	100	100
Q	0	250	900 (692)	700 (604)	600	500	600	600	600
STATE	9650	18950 (18254)	24500 (21442)	27000 (24057)	23000 (20741)	23000	20000 (19637)	19400 (19353)	22000

Table 3. Muzzleloader antlerless permit fill rate by WMU, 2015–2022.

WMU	2015	2016	2017	2018	2019	2020	2021	2022
A	9%	10%	12%	19%	13%	17%	14%	11%
B	12%	15%	13%	19%	14%	18%	15%	14%
C	20%	29%	19%	33%	24%	23%	20%	20%
D1	10%	25%	28%	29%	24%	23%	19%	18%
D2		18%	18%	21%	21%	20%	17%	18%
E1								
E2								
F1		15%	11%	16%	13%	17%	13%	12%
F2		14%	11%	19%	12%	17%	11%	10%
G	7%	20%	16%	28%	14%	17%	12%	12%
H	12%	16%	17%	20%	18%	21%	18%	16%
I			11%	24%	15%	19%	14%	10%
J1		23%	19%	26%	19%	18%	14%	17%
J2	16%	20%	16%	23%	17%	21%	16%	18%
K	10%	13%	12%	18%	14%	16%	11%	12%
L			14%	31%	15%	17%	13%	9%
M		18%	15%	24%	13%	17%	13%	17%
N	9%	13%	12%	18%	11%	13%	11%	11%
O	15%	15%	15%	20%	11%	13%	13%	16%
P						17%	13%	14%
Q		11%	12%	18%	10%	13%	9%	11%
STATE	11%	15%	14%	21%	14%	17%	14%	14%

Public Comments

Three public hearings were held March 20, 23, and 24, 2023 to gather comments on the deer herd. Approximately 94 members of the public participated in these hearings. Two additional public hearings will be held May 9 and 11, 2023.

Appendix A: Population Status and Management Recommendations by WMU

Deer densities, habitat conditions, and winter severity can vary substantially from one part of Vermont to another. Additionally, these factors and the effects of historical deer densities have resulted in deer in some regions being in better physical condition than others. This results in variable deer population dynamics across the state; therefore, deer management prescriptions are made at the WMU level rather than statewide.

The Department is aware that deer densities (and other factors) vary within each WMU, sometimes substantially. Unfortunately, managing deer at a smaller scale than a WMU is not currently feasible given the structure of hunting regulations and the Department's ability to collect enough data. However, hunters generally do a good job of targeting areas of higher deer density within a WMU if they have sufficient access.

Description of data provided for each WMU

Area of deer habitat: Deer habitat is all land that is not developed.

Management Objective: The desired change in the deer population (Increase, Decrease, Stabilize)

Recommended Antlerless Harvest: The recommended antlerless harvest for 2023 during the archery, youth/novice, and muzzleloader seasons. Archery and youth/novice antlerless harvests are based on the previous 3-year averages and adjusted for the expected change in deer numbers from 2022 to 2023. The number of permits required to achieve the recommended muzzleloader antlerless harvest is also shown.

Deer Density: Estimated pre-hunt deer density over the past 10 years based on retrospective population modelling and the projected density in fall 2023. The density objective established in the *2020-2030 Big Game Management Plan* is represented by a red line in the figure. The shaded green area shows ± 2 deer per square mile – the range in which the management objective will be to stabilize.

Harvest: The total buck and antlerless deer harvests during all seasons during the past 10 years. The proposed antlerless harvest for 2023 is shown by the dotted red line.

Yearling Antler Beam Diameter/Yearling Male Weight/Fawn Weight: These physical condition metrics are from deer examined by biologists at check stations. The average for the most recent three years of data is provided. Sample size is shown in parentheses. Minimum acceptable levels for each metric, established in the *2020-2030 Big Game Management Plan*, are also shown.

Adult Birth Rate: The average adult birth rate (fetuses per doe) over the past five years based on examinations of incidentally killed deer during February-May. Sample size is shown in parentheses. The minimum acceptable level established in the *2020-2030 Big Game Management Plan* is also shown.

Winter Severity: The median winter severity index in that WMU over the past 30 years and the expected adult doe mortality outside of the hunting seasons based on that winter severity.

Red Numbers: Numbers are red when a metric does not meet the objectives established in the *2020-2030 Big Game Management Plan*.

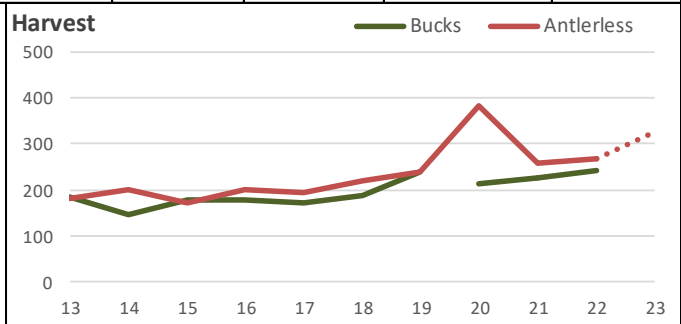
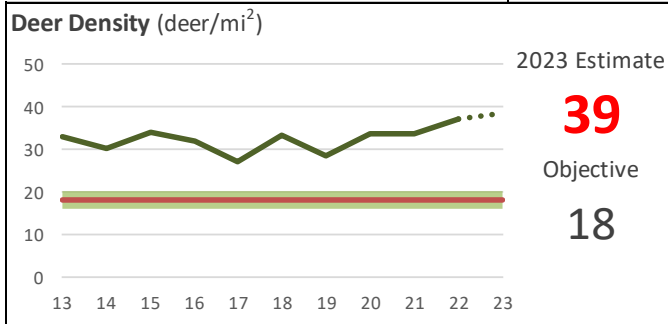
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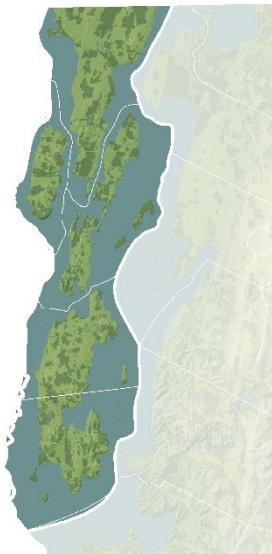
mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Decrease	164	23	137 <small>1000 permits</small>	324



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 17.4 (5)	3-Year Avg. 128.8 (6)	3-Year Avg. 55.3 (3)	5-Year Avg. 2.20 (5)	Median WSI 20
Minimum 17	Minimum 118	Minimum 60	Minimum 1.60	expected non-hunt mortality 9%



Wildlife Management Unit A encompasses the Champlain Islands (Grand Isle County). Winters here are among the least severe anywhere in Vermont and the habitat is relatively productive due to an abundance of agriculture. Despite high population density, physical condition of deer in this region remains good, presumably due to the abundance of agricultural habitat.

The abundant agriculture and other open land results in only 46% of the habitat being forested. This means the estimated density of 39 deer per square mile of habitat equates to 84 deer per square mile of forest. This density of deer is having significant impacts on forest ecosystems. The health of these ecosystems is the primary management concern in this region.

The archery antlerless harvest has increased in this WMU under the new regulations. However, it has not been sufficient to reduce deer numbers. The 2023 antlerless harvest recommendation is higher than recent years and should be sufficient to reduce deer numbers over time.

Limited hunter access to private land is a significant management challenge in this WMU.

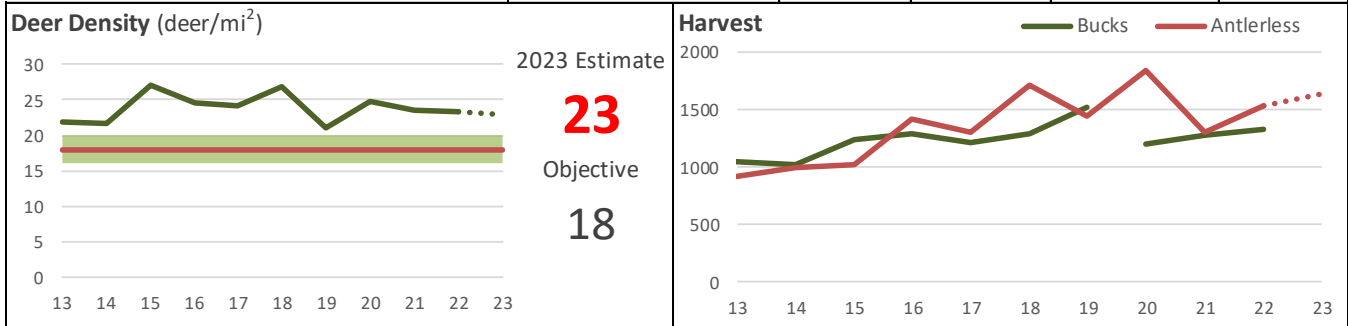
B

616

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Decrease	717	148	766 <small>5000 permits</small>	1630



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg.	3-Year Avg.	3-Year Avg.	5-Year Avg.	Median WSI
16.0 (90)	117.3 (92)	59.0 (44)	1.90 (20)	32
Minimum	Minimum	Minimum	Minimum	expected non-hunt mortality
17	118	60	1.60	11%



Wildlife Management Unit B encompasses the Champlain Valley north of the Winooski River. Severe winters are rare in this region and the habitat is relatively productive, with an ideal mix of forest and fields.

Physical condition of deer in this region is mediocre considering the quality of the habitat, indicating that deer densities have exceeded the level that the habitat can support long-term. This is further supported by widespread and often substantial evidence of deer impacts to forest ecosystems. It appears that recent increases in antlerless harvest may have stopped physical condition from declining, but have been insufficient to allow for improvement.

Deer density in this WMU has been above management objective for many years, but antlerless harvests achieved in 2018 and 2020 appear to have begun reducing the population. The recommended antlerless harvest in 2023 is higher than the 2021 and 2022 harvests in an attempt to reduce deer numbers more quickly.

Limited hunter access to private land is a significant management challenge in this WMU.

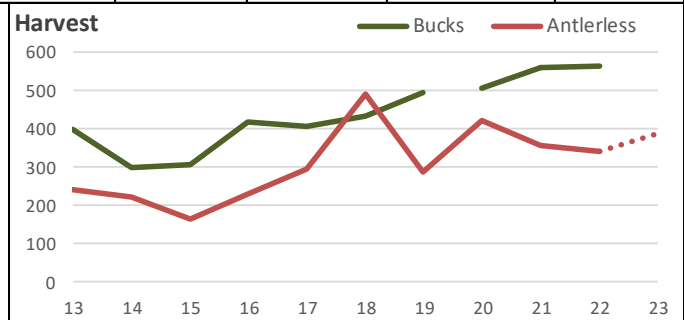
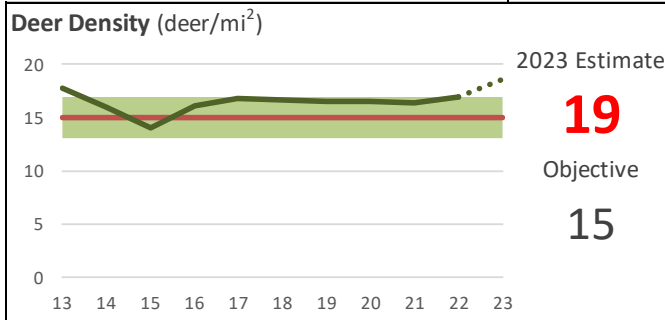
C

386

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Decrease	232	53	100 <small>500 permits</small>	385



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 16.8 (16)	3-Year Avg. 117.4 (16)	3-Year Avg. 57.8 (19)	5-Year Avg. 1.64 (11)	Median WSI 38
Minimum 17	Minimum 118	Minimum 60	Minimum 1.60	expected non-hunt mortality 12%



Wildlife Management Unit C encompasses the northernmost portion of the Green Mountains, from Johnson to the Canadian border. The westernmost portion of the WMU consists of lower elevation farmland similar to WMU B and has notably higher deer densities than higher elevation portions of the WMU.

Physical condition of deer in this WMU is mediocre and suggests that density has been near or slightly above the level the habitat can support for many years. This is presumably driven primarily by higher density in the western portion of the WMU and/or declining habitat quality in the more heavily forested, mountainous areas.

Deer density has remained relatively stable in this WMU over the past 10 years, and importantly has been above the current objective of 15 deer/mi² (albeit only slightly) since 2016. The projected increase in deer numbers in 2023 may not be accurate given the stability of the population over the previous 6 years. Due to uncertainty in that estimate, the 2023 recommended antlerless harvest is similar to the harvest achieved in recent years. Future antlerless harvests may need to be higher in order to reduce deer numbers and improve physical condition.

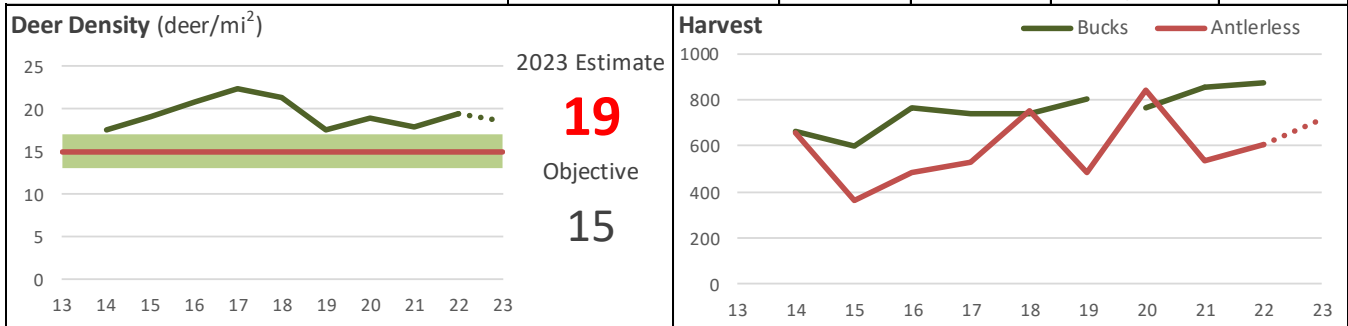
D1

570

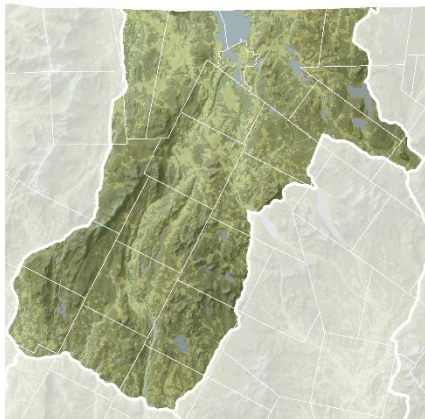
mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Decrease	390	115	211 <small>1000 permits</small>	716



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 16.6 (40)	3-Year Avg. 118.4 (41)	3-Year Avg. 59.2 (22)	5-Year Avg. 1.87 (30)	Median WSI 56
Minimum 17	Minimum 118	Minimum 60	Minimum 1.60	expected non-hunt mortality 15%



Wildlife Management Unit D1 is in the northern Vermont piedmont biophysical region. Deer habitat in this WMU is fairly productive, with a mix of forest and fields. Winters in this region tend to be more severe than much of the rest of the state, which limits the density of deer that can be supported long term.

Physical condition of deer in this WMU has been stable near the minimum acceptable levels. This is concerning, particularly given the amount of agriculture and general quality of habitat and suggests the population has been overabundant for many years.

Recent higher antlerless harvests appear to have stabilized deer density in this WMU, but have been insufficient to reduce deer numbers when winters are easy or moderate. A slightly higher antlerless harvest is recommended in 2023, and will likely be necessary going forward to effectively reduce deer numbers and improve physical condition.

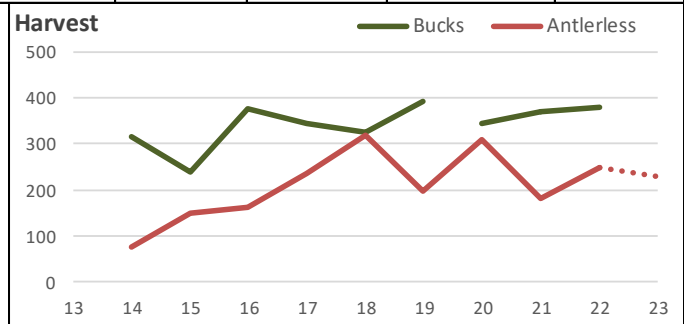
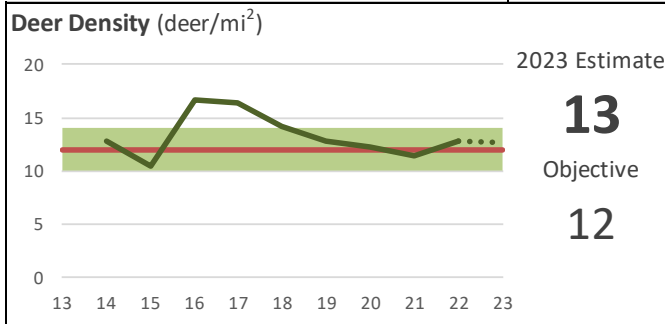
D2

387

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	155	35	38 200 permits	228



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 17.9 (7)	3-Year Avg. 119.3 (8)	3-Year Avg. 60.9 (10)	5-Year Avg. 1.94 (17)	Median WSI 63
Minimum 17	Minimum 118	Minimum 60	Minimum 1.60	expected non-hunt mortality 16%



Wildlife Management Unit D2 is located in the Northeast Kingdom. Higher elevation portions of the unit are heavily forested while lower elevations, particularly along the Passumpsic river valley, include more open land and agriculture. As a result, deer density is higher in lower elevation areas in the southeastern part of the unit.

Winters in this WMU are often severe, which limits deer density, particularly in the higher elevation areas, and helps keep deer in good physical condition. However, several of the lower elevation towns (e.g., Burke, Lyndon, St. Johnsbury) have seen record or near-record harvests in recent years, suggesting the deer population in this part of the WMU is growing.

The antlerless harvest recommendation is intended to maintain the population at 12 deer/mi². Most antlerless harvest, particularly during the archery season, tends to be concentrated in the lower elevation, higher density parts of the WMU. The Department will also be considering an expanded archery zone around St. Johnsbury to further increase antlerless harvests in this area where complaints about deer damage to gardens and landscaping are common.

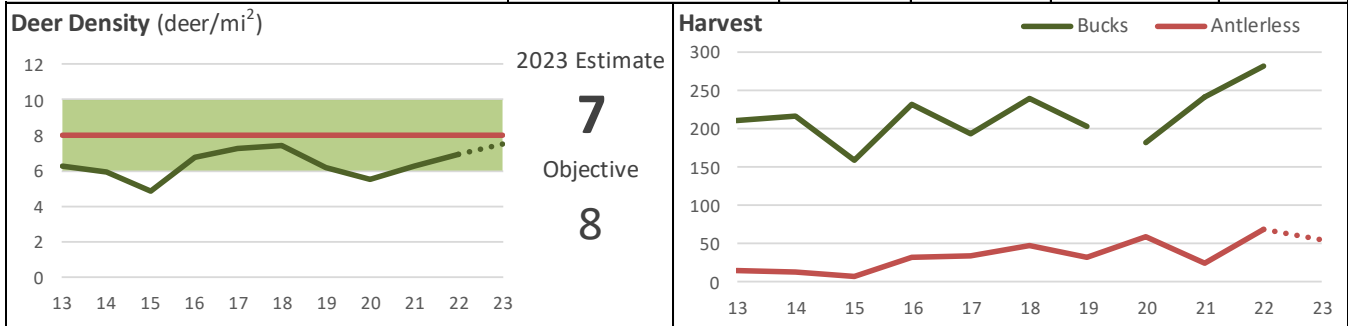
E

648

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	47	8	0 0 permits	55



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg.	3-Year Avg.	3-Year Avg.	5-Year Avg.	Median WSI
19.9 (8)	125.5 (8)	71.5 (2)	2.14 (7)	70
Minimum	Minimum	Minimum	Minimum	expected non-hunt mortality
17	118	60	1.60	17%



Wildlife Management Units E1 and E2 are located in the northeast corner of Vermont in the northeast highlands biophysical region. This region regularly experiences severe winters which limit deer density.

These WMUs are heavily forested, but young forest is abundant due to widespread commercial timber harvesting. As a result, summer deer habitat is relatively high quality. It is the quantity and quality of winter habitat, specifically mature softwood cover, that limits deer abundance in this region.

Additionally, deer in this region must coexist with a relatively abundant moose population. Because they largely compete for the same resources at certain times of year, the densities of both species must be considered in management decisions. The current density objective in these WMUs considers both the relationship between deer and moose and the limited quantity and quality of current deer winter habitat. Maintaining deer density below 10/mi² helps minimize the risk of brainworm infection in moose and allows deer winter habitats to improve.

Deer density remains well below the 10/mi² threshold and has been relatively stable over the past 10 years. The current antlerless recommendation provides additional harvest opportunity to archery and youth/novice hunters and will have no effect on the population.

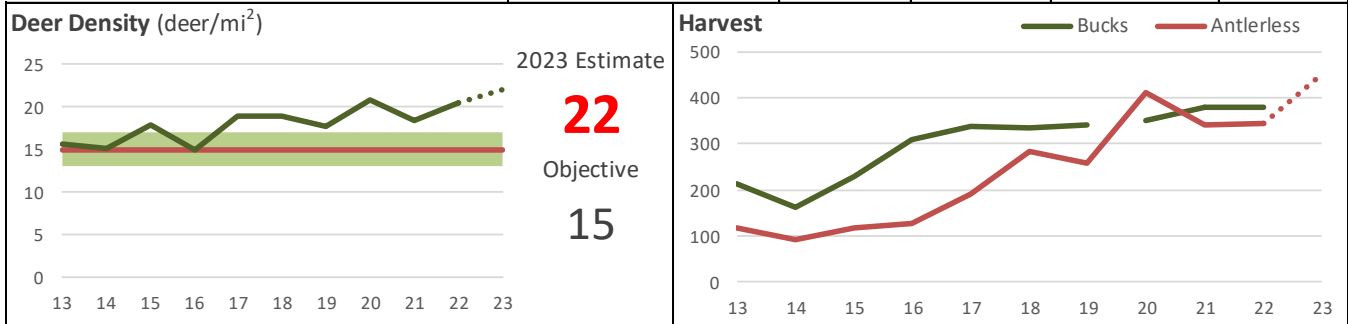
F1

316

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Decrease	175	30	245 <small>1800 permits</small>	450



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 16.3 (22)	3-Year Avg. 119.6 (23)	3-Year Avg. 62.6 (9)	5-Year Avg. 2.08 (12)	Median WSI 20
Minimum 17	Minimum 118	Minimum 60	Minimum 1.60	expected non-hunt mortality 9%



Wildlife Management Unit F1 is in the southern Champlain Valley, from Burlington south through the heavily agricultural regions of Addison County. Winters are relatively easy for deer in this part of Vermont and the abundance of agriculture results in excellent deer habitat. This is reflected in the physical condition of the deer, which is consistently among the best in the state.

The abundance of agriculture and otherwise open land results in only 33% of this WMU being forested. The current density of 22 deer/mi² of habitat therefore equates to 68 deer/mi² of forest. These high densities have caused widespread and significant impacts to forest ecosystems, including many of the uncommon natural communities that are found in this region.

Deer density has increased steadily over the past decade, with many towns having record or near-record harvests each year. The recent increases in antlerless harvest may have helped to slow this increase, and possibly stabilize the population, but harvests have been insufficient to reduce deer density toward the objective. The recommended antlerless harvest represents an increase over the harvest achieved in recent years. Consistently higher antlerless harvests will be necessary to reduce the population and maintain it at the objective level.

Limited hunter access to private land is a significant management challenge in this WMU.

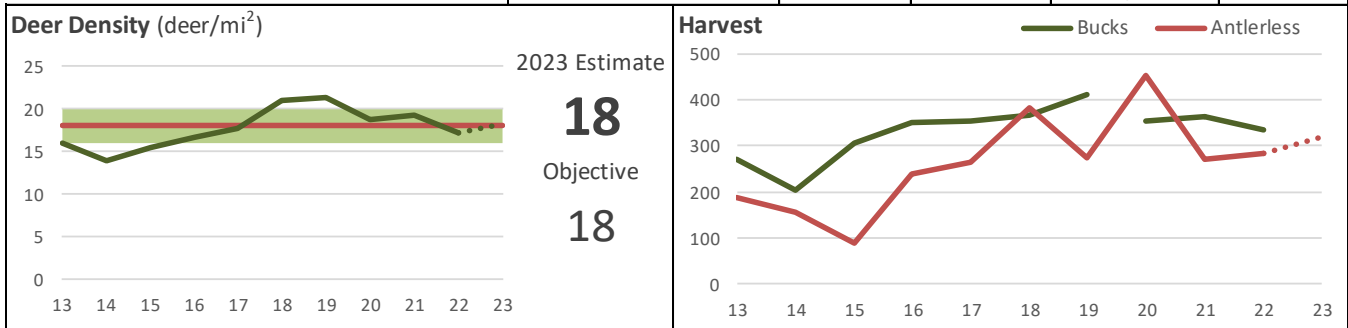
F2

268

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	161	30	127 <small>1000 permits</small>	318



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 15.6 (13)	3-Year Avg. 122.4 (13)	3-Year Avg. 60.8 (13)	5-Year Avg. 1.71 (7)	Median WSI 21
Minimum 17	Minimum 118	Minimum 60	Minimum 1.60	expected non-hunt mortality 10%



Wildlife Management Unit F2 is located in the southern Champlain Valley in the foothills of the Green Mountains. Winters here are relatively easy for deer and the habitat is generally good with a mix of forest and field.

Considering the prevalence of agriculture and mild winters, the mediocre condition of yearling bucks is concerning. This suggests that deer density has exceeded the level the habitat can support. Indeed, deer impacts to forest ecosystems are common in this WMU.

Many towns in this WMU have experienced record or near record harvests in the past few years. However, recent increases in the antlerless harvest appear to have stabilized the population near the objective.

The current antlerless harvest recommendation is similar to the harvest achieved in recent years, and will be necessary to maintain the population near the objective level.

Limited hunter access to private land is a significant management challenge in this WMU.

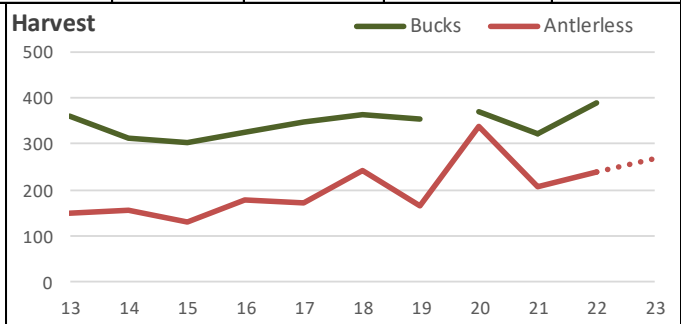
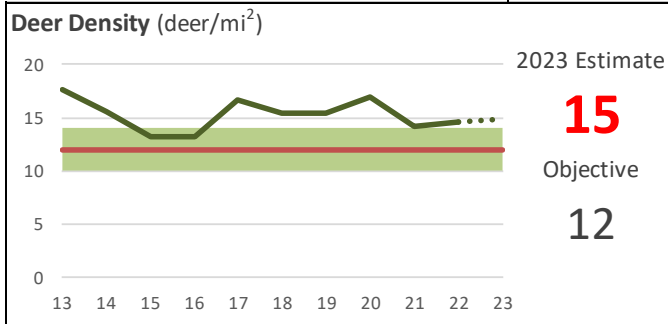
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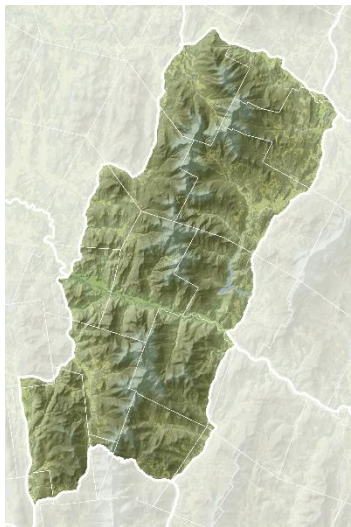
mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Decrease	156	13	97 700 permits	266



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg.	3-Year Avg.	3-Year Avg.	5-Year Avg.	Median WSI
18.0 (9)	117.3 (9)	67.0 (2)	1.62 (13)	27
Minimum	Minimum	Minimum	Minimum	expected non-hunt mortality
16.5	115	60	1.60	10%



Wildlife Management Unit G is in the northern Green Mountains from the Appalachian Gap (Rte 17) north to Johnson. This area is heavily forested and mountainous, and includes both Camel’s Hump and Mount Mansfield. Deer habitat is poor due to the unproductive mountain terrain and very limited young forest habitat. Winters here can occasionally be severe, but are often more moderate at lower elevations where deer typically spend the winter.

Deer density in this unit is low at higher elevations, but moderate to high at lower elevations, particularly on the western edge of the unit. Physical condition of deer was below optimal levels for many years, although it has improved recently. This indicates that density had exceeded what the habitat can support, likely for many years, and was the primary basis for setting the current population objective in this unit at 12 deer/mi².

Past antlerless harvests have had no clear effect on deer numbers in this WMU, although they may be slowly declining. The recommended antlerless harvest in 2023 is similar to recent years. This should reduce deer numbers if winter severity is normal, which will help to maintain the improved physical condition.

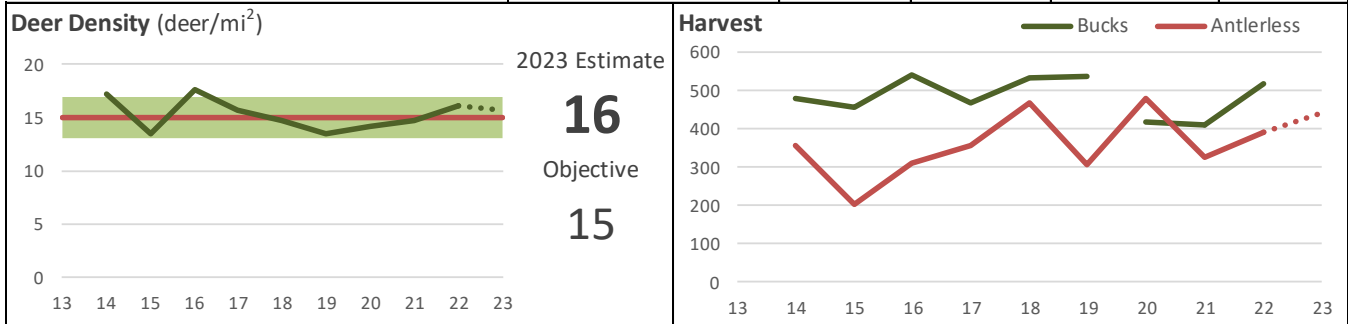
H

518

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	305	43	92 500 permits	440



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg.	3-Year Avg.	3-Year Avg.	5-Year Avg.	Median WSI
16.2 (15)	118.3 (16)	58.0 (12)	1.55 (22)	49
Minimum	Minimum	Minimum	Minimum	expected non-hunt mortality
16	115	60	1.60	14%



Wildlife Management Unit H is located in north-central Vermont, from Stowe east to Groton and Barre-Montpelier north to Hardwick. Habitat quality for deer varies considerably in this unit, and that is reflected in local deer densities. Lower elevation areas closer to Montpelier and Barre have more agriculture and open land and easier winters, resulting in relatively high deer density. The remainder of the WMU is higher elevation (including the Worcester and Groton ranges) and heavily forested. Winters are more severe in these areas and habitat quality is generally poor. As a result, deer density is lower.

Physical condition of deer in this WMU is generally mediocre, although trends in yearling antler beam diameter and weight are encouraging. The current overall density of deer in this WMU should be sustainable;

however, it will be important to achieve and maintain higher antlerless harvests in the Barre-Montpelier area where deer are overabundant. The Department will be considering an expanded archery zone to address this concern.

Most of the antlerless harvest in this WMU occurs during archery season and is heavily concentrated closer to Barre and Montpelier. The recommendation for 2023 allows additional antlerless harvest opportunity in the muzzleloader seasons and should help to stabilize deer numbers near the objective.

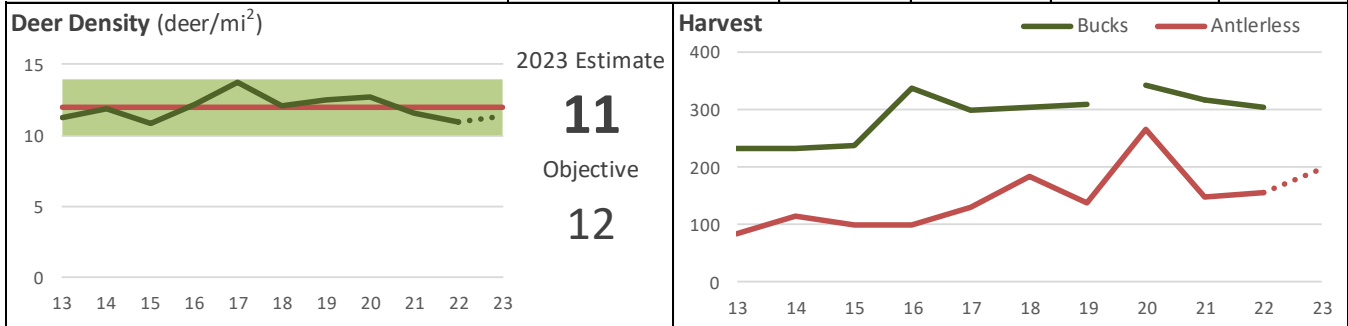


424

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	108	15	73 500 permits	195



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 15.8 (5)	3-Year Avg. 118.4 (5)	3-Year Avg. 50.0 (2)	5-Year Avg. 1.38 (8)	Median WSI 24
Minimum 16.5	Minimum 115	Minimum 60	Minimum 1.60	expected non-hunt mortality 10%



Wildlife Management Unit I is located in the central Green Mountains, from Route 4 in Killington north to the Appalachian Gap (Rte. 17). Deer habitat is generally poor due to the unproductive mountain terrain and very limited young forest habitat. Winters here can occasionally be severe but are often more moderate at lower elevations where deer typically spend the winter.

Deer density in this unit is low at higher elevations, but can be moderate to high at lower elevations, particularly on the western edge of the unit. The birth rate and fawn weights are concerning, but sample sizes are limited. It appears that higher antlerless harvests since 2017 have helped to stabilize the population at the objective of 12 deer/mi².

The recommendation for 2023 is to continue with that harvest level to maintain current deer numbers and provide additional harvest opportunity.

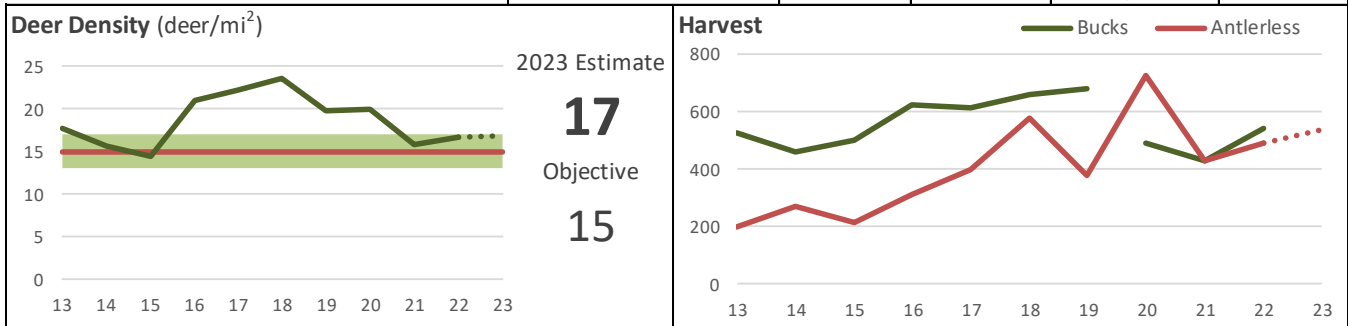
J1

528

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	322	44	171 <small>1000 permits</small>	537



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 15.4 (7)	3-Year Avg. 117.8 (8)	3-Year Avg. 60.3 (9)	5-Year Avg. 1.79 (24)	Median WSI 33
Minimum 16	Minimum 115	Minimum 60	Minimum 1.60	expected non-hunt mortality 11%



Wildlife Management Unit J1 is located in central Vermont. It encompasses the area from route 100 east to route 110 in Tunbridge and Chelsea, and from route 2 south to Bethel. Habitat quality for deer varies considerably in this unit, and that is reflected in local deer densities. Eastern parts of the WMU are hilly with an almost ideal mix of forest and field resulting in relatively high deer density. Conversely, the western half of the WMU is more mountainous and heavily forested. Habitat quality is poorer and, as a result, deer density is lower.

Physical condition of deer in this WMU has been poor for many years, but appears to be improving. Poor condition is presumably related to declining habitat quality and historical overabundance of deer. Clearly, deer density in this unit had exceeded the level the habitat can support long-term. Recent population reductions appear to be having the desired effect of improving physical condition.

Recent higher antlerless harvests and the moderately severe winter of 2019 have reduced the population in this WMU. The recommended antlerless harvest in 2023 is similar to the harvests achieved in recent years. This level of harvest will be necessary to maintain the population near the objective level, particularly when winters are mild.

It will also be important to increase antlerless harvest in the Barre-Montpelier area where deer are overabundant and conflicts are more likely. The Department will be considering an expanded archery zone to address this concern.

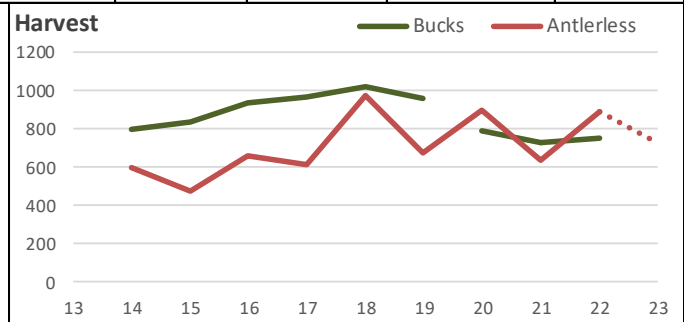
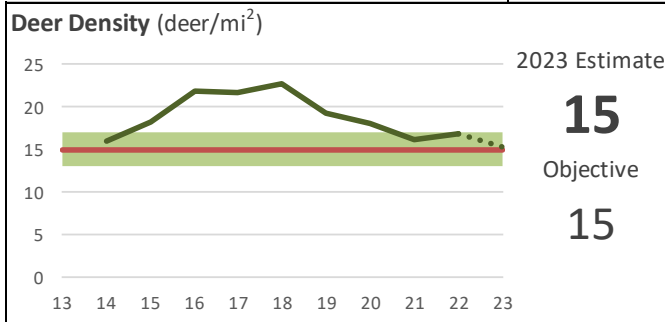
J2

705

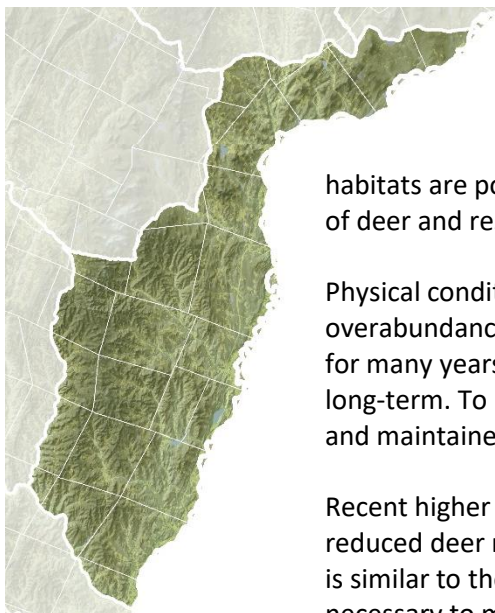
mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	392	71	267 1500 permits	730



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 15.6 (21)	3-Year Avg. 106.0 (21)	3-Year Avg. 57.1 (26)	5-Year Avg. 1.64 (28)	Median WSI 42
Minimum 16	Minimum 115	Minimum 60	Minimum 1.60	expected non-hunt mortality 13%



Wildlife Management Unit J2 encompasses the Connecticut River Valley from Lunenburg to White River Junction. Winters can occasionally be severe but are typically moderate to easy. The habitat contains a desirable mix of forest and field but forest habitats are poor quality due to a lack of young forest and historical overabundance of deer and resultant chronic overbrowsing.

Physical condition of deer in this WMU is poor. This is presumably related to historical overabundance of deer and declining habitat quality, as these metrics have been low for many years. Clearly, deer density has exceeded the level the habitat can support long-term. To improve the health of deer in this WMU, deer density must be reduced and maintained at the objective level.

Recent higher antlerless harvests and the moderately severe winter of 2019 have reduced deer numbers in recent years. The recommended antlerless harvest in 2023 is similar to the harvest achieved in recent years. This level of harvest will be necessary to maintain the population near the objective level, particularly when

winters are mild.

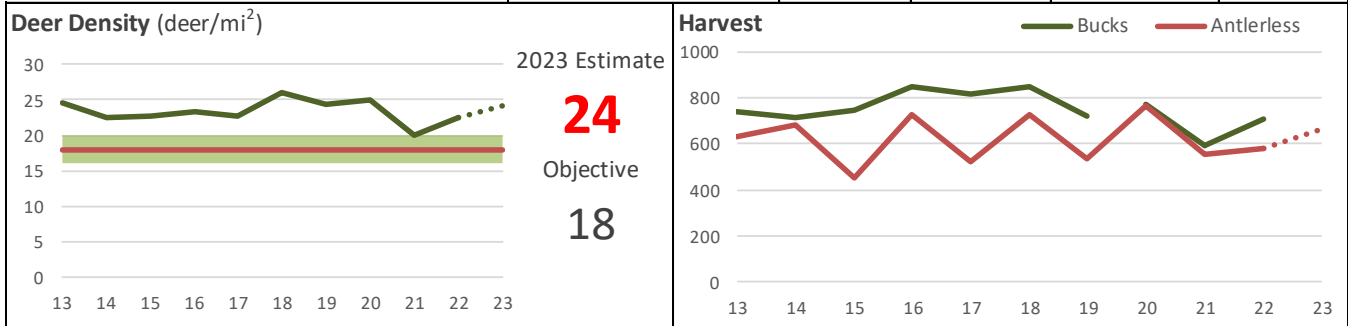
K

438

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Decrease	215	55	394 <small>3000 permits</small>	664



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg.	3-Year Avg.	3-Year Avg.	5-Year Avg.	Median WSI
17.2 (18)	114.3 (22)	64.3 (14)	1.54 (24)	17
Minimum	Minimum	Minimum	Minimum	expected non-hunt mortality
16.5	115	60	1.60	9%



Wildlife Management Unit K is located in the Western Foothills biophysical region, encompassing areas west of US Route 7 from Brandon south through Rutland to Danby. This region has relatively easy winters and habitat with a good mix of forest and field. Importantly, oak is abundant and widespread and is an important factor in maintaining mediocre physical condition of deer despite chronic overabundance.

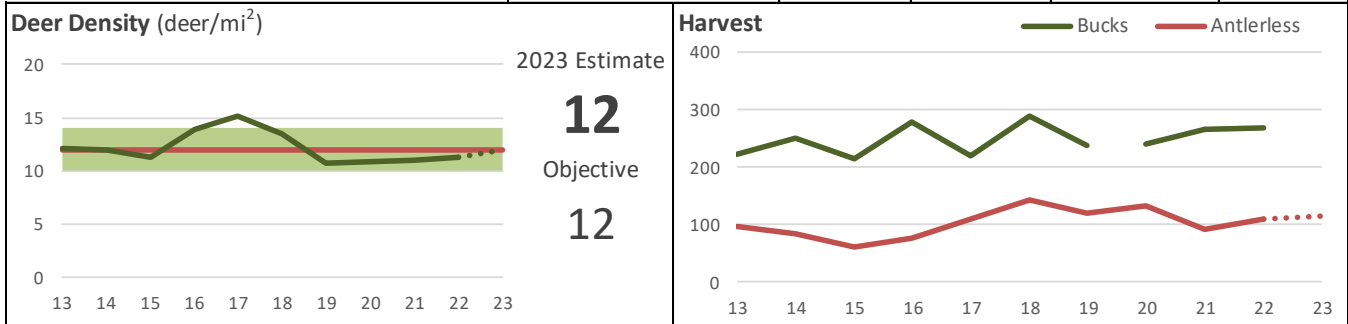
Deer browse damage to forest regeneration is ubiquitous throughout the WMU and has been occurring for decades in many areas. Chronic overabundance of deer has significantly impacted forest ecosystems and contributed to the proliferation of invasive species.

Following an apparent population decline in 2021 that was likely related to reduced hunting effort following a local EHD outbreak, the density estimate in 2022 returned to levels typical of this WMU over the past decade. The recommended antlerless harvest in 2023 is similar to the harvest achieved in recent years and likely represents the maximum harvest achievable under current regulations. A higher antlerless harvest will be necessary to achieve deer density objectives and bring the deer population into balance with what the habitat can support long-term.

Limited hunter access to private land is a significant management challenge in this WMU.

L**365**mi² deer habitat

Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	65	9	40 300 permits	115



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 14.6 (2)	3-Year Avg. 107.0 (2)	3-Year Avg. 54.0 (1)	5-Year Avg. 1.75 (20)	Median WSI 34
Minimum 16.5	Minimum 110	Minimum 60	Minimum 1.60	expected non-hunt mortality 12%



Wildlife Management Unit L is located in the southern Green Mountains, from US Route 4 in Killington south to route 30 in Winhall. Deer habitat is generally poor due to the unproductive mountain terrain and very limited young forest habitat. Winters here can occasionally be severe but are often more moderate at lower elevations where deer typically spend the winter.

Deer density in this unit is low at higher elevations, but can be moderate to high at lower elevations on the western edge of the unit, particularly closer to Rutland.

Physical condition metrics are below desired levels, but sample sizes have been limited. Importantly, the population has not grown over the past 10 years despite very limited antlerless harvests. This suggests that habitat quality is the primary factor limiting deer density in this WMU.

The recommended antlerless harvest is intended to maintain the population at its current level. It is similar to recent antlerless harvests and will provide reasonable antlerless harvest opportunities and help address higher deer densities along the western edge of the unit without impacting overall deer numbers.

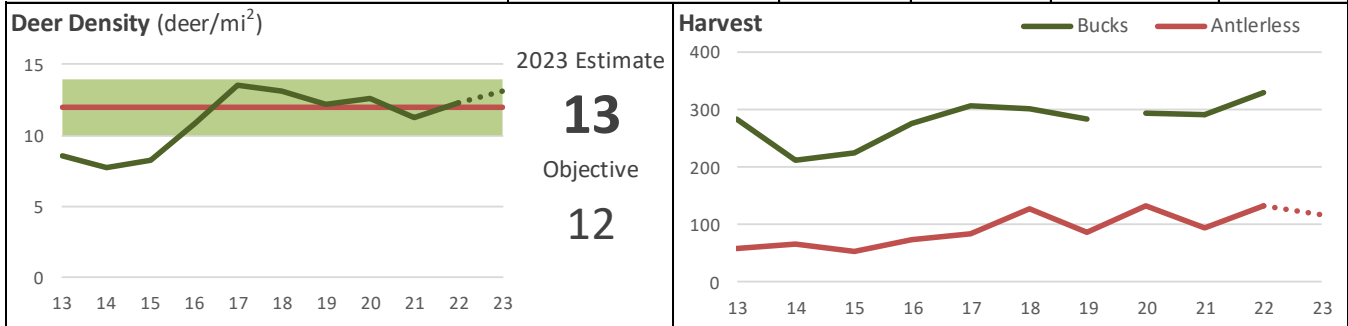
M

451

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	61	12	45 <small>300 permits</small>	118



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg.	3-Year Avg.	3-Year Avg.	5-Year Avg.	Median WSI
16.9 (4)	112.8 (4)	57.0 (2)	1.56 (18)	48
Minimum	Minimum	Minimum	Minimum	expected non-hunt mortality
16.5	110	60	1.60	14%



Wildlife Management Unit M is located in the eastern foothills biophysical region from Stockbridge south to Townshend. Deer habitat is generally poor due to the heavily forested, unproductive mountain terrain and limited young forest. Winters here can occasionally be severe but are often more moderate at lower elevations where deer typically spend the winter.

Deer density in this unit is variable, but generally low.

Physical condition metrics are near minimum levels, but sample sizes have been low. Physical condition of deer is not currently concerning, and the current density of deer should be sustainable. The population increased in 2016 and 2017 following exceptionally easy winters but has otherwise been stable for many years despite very minimal antlerless harvests. This, and the current physical condition of the deer, suggests that habitat is the primary factor limiting deer density.

The recommended antlerless harvest is intended to maintain the population at its current level. It is similar to recent antlerless harvests and will provide additional antlerless harvest opportunities with little or no effect on the population.

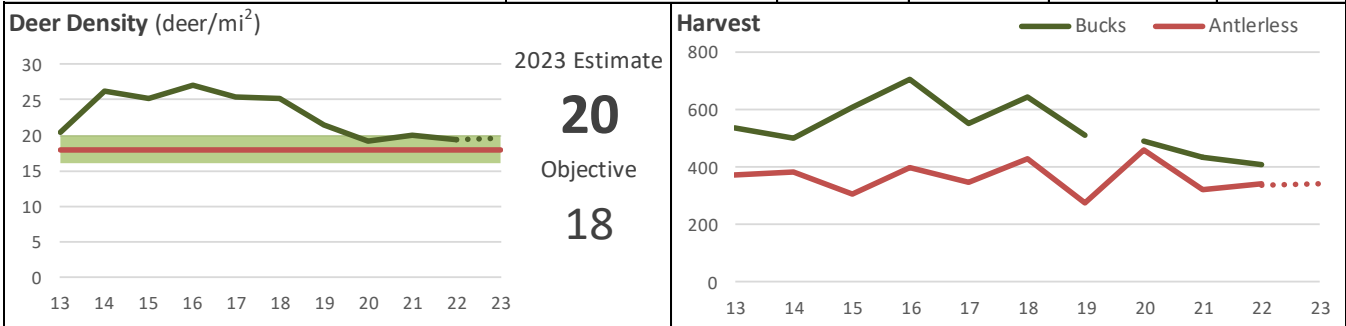
N

323

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	130	36	173 <small>1500 permits</small>	340



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg.	3-Year Avg.	3-Year Avg.	5-Year Avg.	Median WSI
16.9 (20)	117.1 (20)	59.3 (15)	1.83 (35)	16
Minimum	Minimum	Minimum	Minimum	expected non-hunt mortality
16.5	110	60	1.60	9%



Wildlife Management Unit N is in the southwest corner of Vermont, including parts of the Taconic Mountains and Vermont Valley biophysical regions. This region has easy winters, productive soils, and habitat with a good mix of forest and field.

Deer browse damage to forest regeneration is ubiquitous and has been occurring for decades in most areas. Chronic overabundance of deer has significantly impacted forest ecosystems and contributed to the proliferation of invasive species. Importantly, oak is abundant and widespread and is likely an important factor in maintaining physical condition at mediocre levels.

Physical condition of deer is concerning, particularly given the productivity of the soils, mild winters, and abundance of oak. Presumably, this is related to chronic overabundance and declining amounts of young forest. Deer densities must be maintained at lower levels to improve the health of the deer and the forest ecosystems.

The deer population in this region appears to have declined from 2017 to 2020 and is now stable slightly above the target density. The decline appears to have been caused by poor fawn recruitment during those years. Antlerless harvests have been consistent for many years (despite Department efforts to increase them), and likely represent the maximum harvest achievable under current regulations. The recommended harvest is similar to that achieved in recent years and will be necessary to maintain the population close to the objective.

Limited hunter access to private land is a significant management challenge in this WMU.

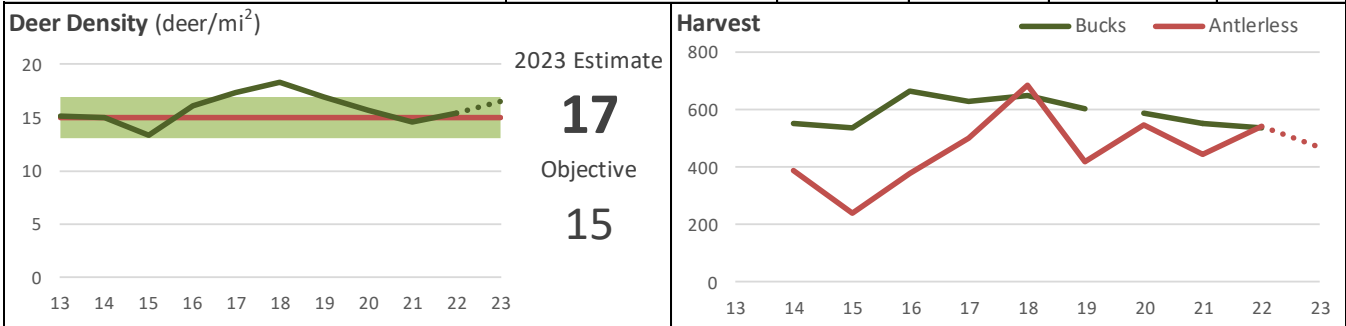
O

548

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	235	31	204 <small>1500 permits</small>	470



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 175 (7)	3-Year Avg. 117.6 (7)	3-Year Avg. 51.4 (8)	5-Year Avg. 1.83 (24)	Median WSI 26
Minimum 16	Minimum 110	Minimum 60	Minimum 1.60	expected non-hunt mortality 10%



Wildlife Management Unit O encompasses the Connecticut River Valley from White River Junction south to Massachusetts. Winters here are relatively easy for deer and the habitat contains a good mix of forest and field.

Deer browse damage to forest regeneration is common throughout the WMU and has been occurring for decades in many areas. Chronic overabundance of deer has significantly impacted forest ecosystems and contributed to the proliferation of invasive species. This, combined with declining amounts of young forest, has contributed to the generally poor quality of forest habitats. Physical condition of deer is mediocre, but appears to be improving. This provides additional evidence that past deer numbers were at or above the level the habitat could support for many years.

Recent antlerless harvests have helped stabilize deer numbers near the objective level, and will need to continue. The recommended antlerless harvest is similar to that achieved in recent years.

Deer density does vary within this unit due to both habitat quality and hunter access to private land. Limited hunter access to private land is a substantial management challenge.

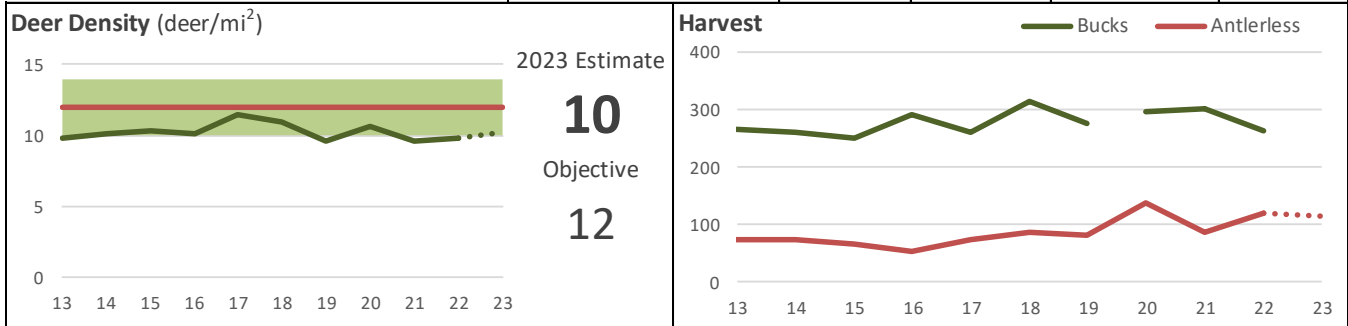
P

455

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Stabilize	88	11	15 <small>100 permits</small>	113



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg.	3-Year Avg.	3-Year Avg.	5-Year Avg.	Median WSI
15.2 (3)	93.7 (3)	59.5 (2)	2.08 (13)	41
Minimum	Minimum	Minimum	Minimum	expected non-hunt mortality
16.5	110	60	1.60	13%



Wildlife Management Unit P is in the southern Green Mountains, from the Massachusetts border north to Winhall. This high elevation, mountainous, heavily forested unit contains some of the poorest quality deer habitat in the state. Winters are often severe, particularly at higher elevations. However, many deer can migrate to lower elevation areas along the southern and western edge of the unit where winters are much more moderate.

Physical condition of deer in this unit is concerning, but small sample sizes limit inference from these data. However, deer density has remained around 10 deer/mi² over the past 10 years despite very minimal antlerless harvest, suggesting that deer numbers are limited by habitat quality.

A lower density objective may be appropriate in this WMU, but deer impacts to forest ecosystems are uncommon and the Department is hopeful that increased timber harvesting on National Forest lands will improve habitat quality and allow for some population growth.

Deer harvests have been steadily increasing near Bennington and in towns along the Massachusetts border. Some of these towns have had near-record harvests in recent years. Given this trend, the Department would like to continue issuing a small number of antlerless permits in this WMU. Most antlerless permits are likely to go to landowners, which will increase the likelihood that deer are harvested from areas of higher deer density.

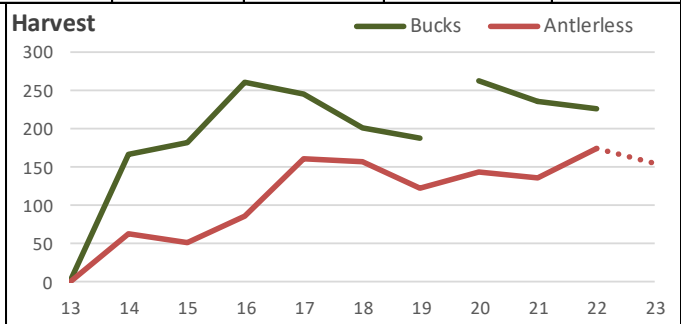
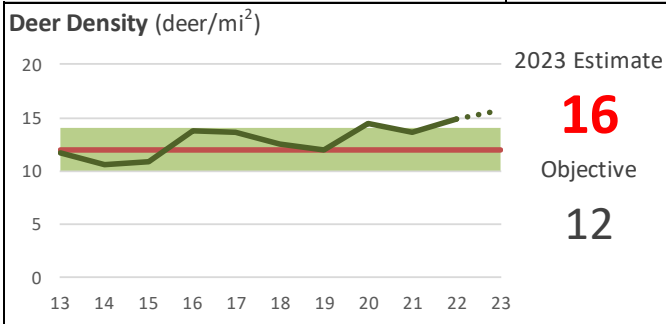
Q

233

mi² deer habitat



Management Objective	Recommended Antlerless Harvest			
	Archery	Youth/Nov	Muzzleloader	Total
Decrease	88	3	63 <small>600 permits</small>	155



Yearling Male		Fawn Weight	Adult Birth Rate	Winter Severity
Beam Diameter	Weight			
3-Year Avg. 15.0 (1)	3-Year Avg. 112.0 (1)	3-Year Avg. <i>no data</i>	5-Year Avg. 1.50 (10)	Median WSI 23
Minimum 16.5	Minimum 110	Minimum 60	Minimum 1.60	expected non-hunt mortality 10%



Wildlife Management Unit Q is located in the eastern foothills biophysical region from Massachusetts north to Townshend. Habitat quality is relatively poor in this small, heavily forested WMU, primarily due to a lack of young forest habitat. Winters here are relatively easy for deer. Generally, deer density is highest near Brattleboro and lower to the north and west as elevation increases.

Physical condition metrics are currently below minimum acceptable levels, but samples sizes have been very low which limits inference from these data.

The deer population appears to be slowly increasing. The recommended antlerless harvest maintains the higher harvest levels achieved in recent years and is intended to reduce, or at least stabilize, the deer population.

Evidence of deer damage to forest ecosystems is common near Brattleboro. Unfortunately, deer harvest is limited by the town’s firearm discharge ordinance. As a result, the Department will be considering an expanded archery zone to reduce deer impacts in this area.