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Uniting Conservationists to Improve Wildlife Habitat and Forest Health.

Join THE MOVEMENT

photo by NatureExposure.com

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Our Mission

Uniting conservationists to improve wildlife habitat and forest health. Promoting forest stewardship for our forests, our wildlife and our future.

Our Vision

Landscapes of diverse, functioning forest ecosystems that provide homes for wildlife and opportunities for people to experience them. These same forests clean the air, filter water, and support local communities.

Pillars

Healthy Forests

Abundant Wildlife

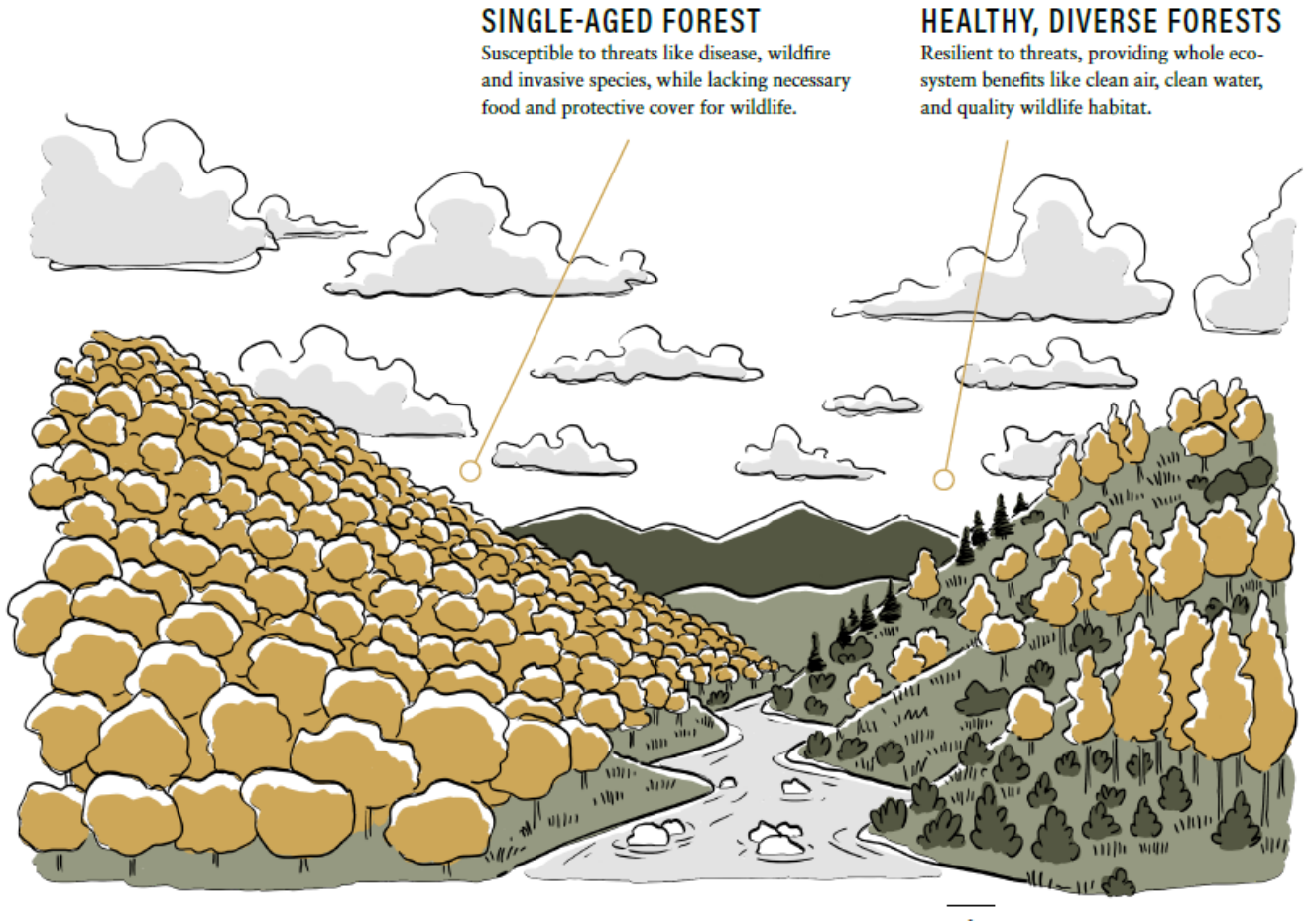
Conservation Ethic

The Bigger Picture

A healthy forest is a fully functioning ecosystem. It sequesters carbon, filters water, cleans the air and provides homes for wildlife.

Current research shows the link between loss of forest diversity and wildlife declines. Grouse and woodcock are bellwethers, and their decline mirror trends for dozens of forest wildlife.

* *See references on page 7.*



Ruffed Grouse Range

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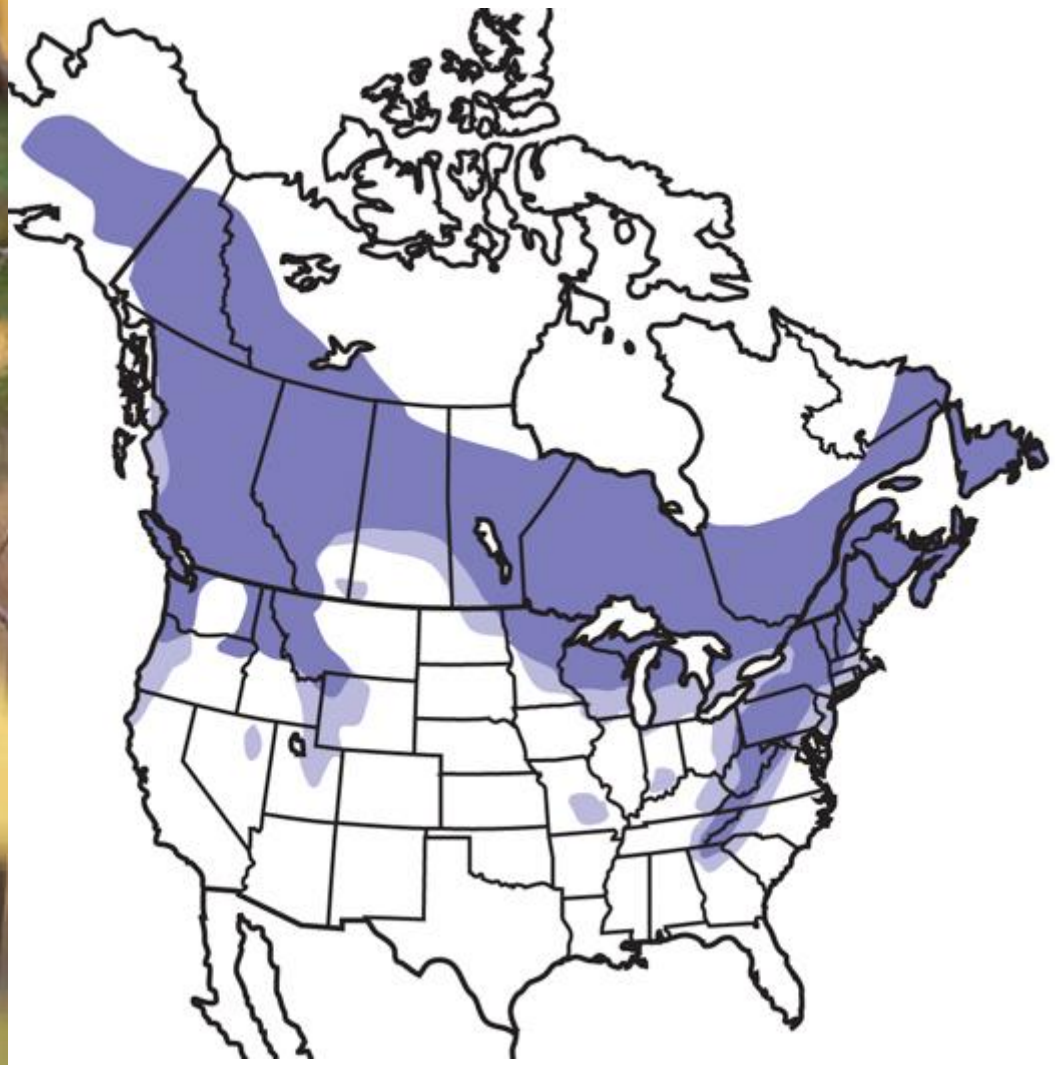

Ruffed Grouse Facts

- **Ruffed grouse** are one of the most widely distributed game birds in North America, but **populations are declining due to a loss of forest habitat diversity.**

- The name **“Ruffed”** was derived from the long, shiny, black or chocolate colored neck feathers that are most prominent on the male.

- Across most of their range Ruffed grouse have **two or more color phases**. Their body feathers may be either predominately grayish or a reddish brown, and their tails vary even more in color**.**

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Ruffed Grouse Facts

- **Ruffed grouse habitat** consists of a mosaic of forest age classes - young forest conditions, open forests, and mature softwoods (cover) and aspens/birches (winter feeding)
- Ruffed grouse are known as a **bellwether species** that is indicative of broader forest habitat and wildlife diversity.
- Ruffed grouse **populations have declined by 30-50%** over the past 2 decades across the eastern US
- They are now listed as a **Species of Greatest Conservation Need in 6 of 7 Northeast States.**

Grouse Brood Habitat

- Hens will spend two weeks laying and three weeks sitting on their nests.
- During this time, they will use their cryptic coloration to camouflage with their surroundings. Each hen will lay 8-14 eggs. Hens will renest if their first attempts fails.
- Distance to brood cover is paramount to chick survival
- Dense Young Trees: 5,000 + stems/ acre provide protection from avian and ground predators, abundant insects, berries, shoots and other food for growing grouse chicks.


barberries
huckleberries
buds
contents of ruffed grouse crop
leaves
twig

American Woodcock Facts

- **American woodcock is a migratory game bird** that spends its summer breeding season in the Northeast and its winters in the Southern US.
- Woodcock are also known as **timberdoodles** and **hokumpokes and bog-suckers.**
- **Woodcock habitat** includes a mix of brushy wood lands, old fields, wildlife openings and alders.
- Photo credit: Fyn Kynd, CC

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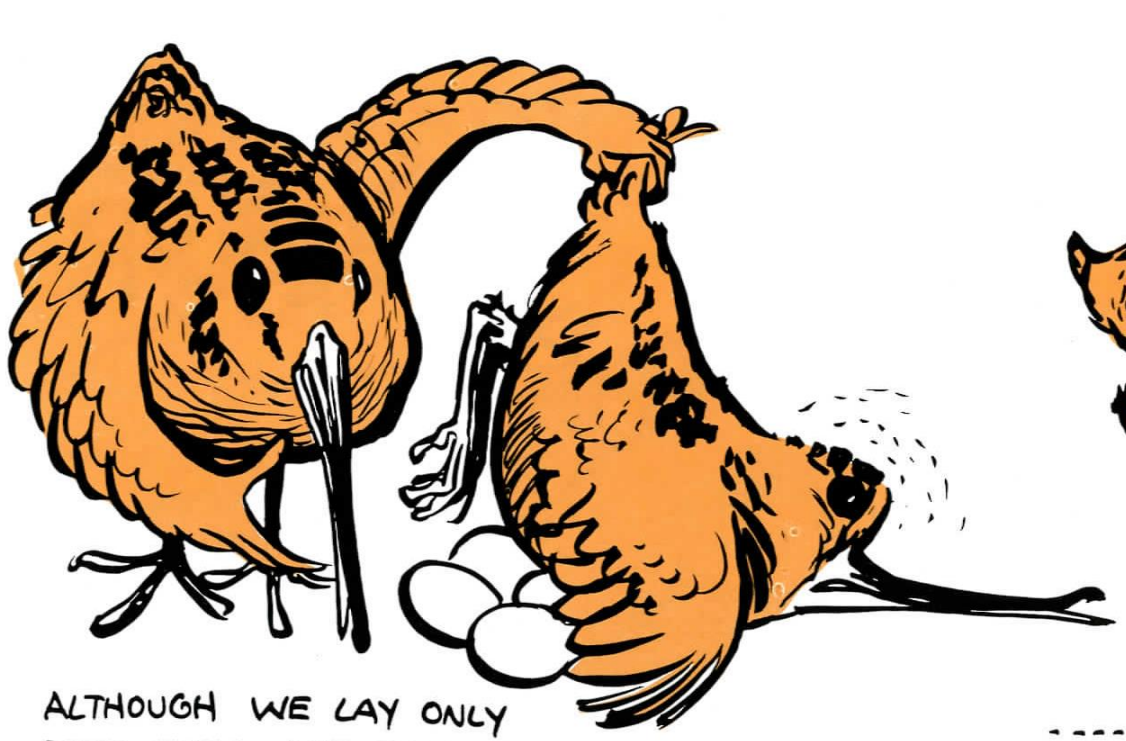
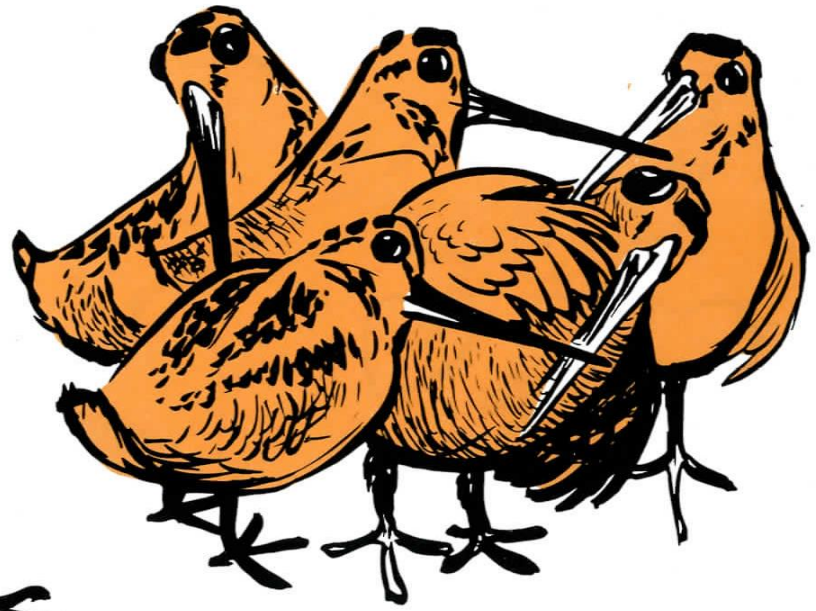
American Woodcock Facts

- **Woodcock diets** consist of a mix of invertebrates like earthworms, larvae and insects.
- Woodcock **populations have been declining** since the 1960s due to changing habitat conditions, forest maturation and development.
- Woodcock are listed as a **species of greatest conservation need (SGCN)** in all 7 Northeastern states including New York

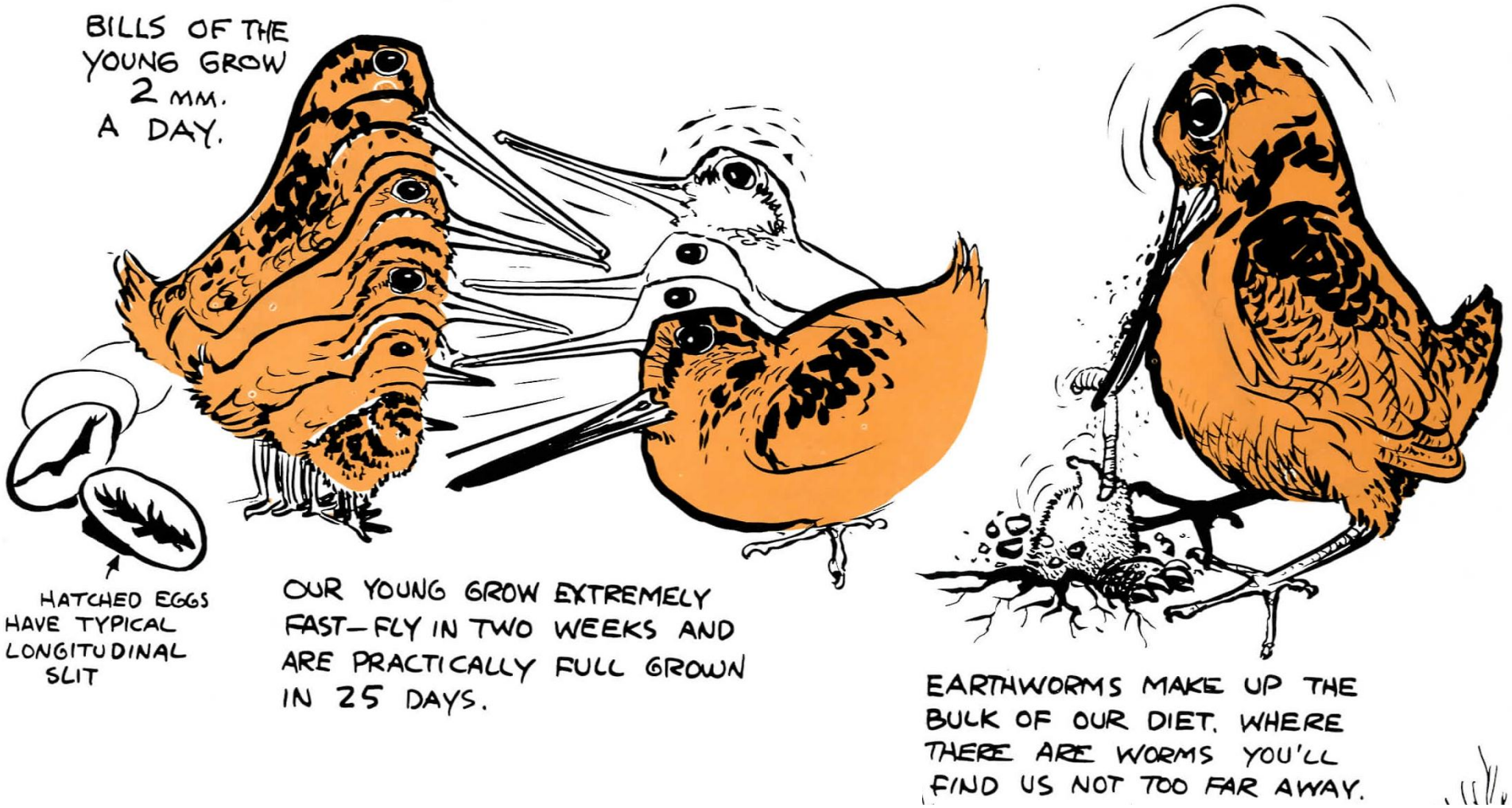
Photo credit: Fyn Kynd, CC



ALTHOUGH WE LAY ONLY FOUR EGGS AND RAISE ONLY ONE BROOD A YEAR --------



----- WE DO SUCH A GOOD JOB, OUR NEST AND YOUNG SURVIVAL RATE IS VERY HIGH—ABOUT THE HIGHEST AMONG GAME BIRDS.


BILLS OF THE YOUNG GROW 2 MM. A DAY.
HATCHED EGGS HAVE TYPICAL LONGITUDINAL SLIT
OUR YOUNG GROW EXTREMELY FAST—FLY IN TWO WEEKS AND ARE PRACTICALLY FULL GROWN IN 25 DAYS.
EARTHWORMS MAKE UP THE BULK OF OUR DIET. WHERE THERE ARE WORMS YOU'LL FIND US NOT TOO FAR AWAY.

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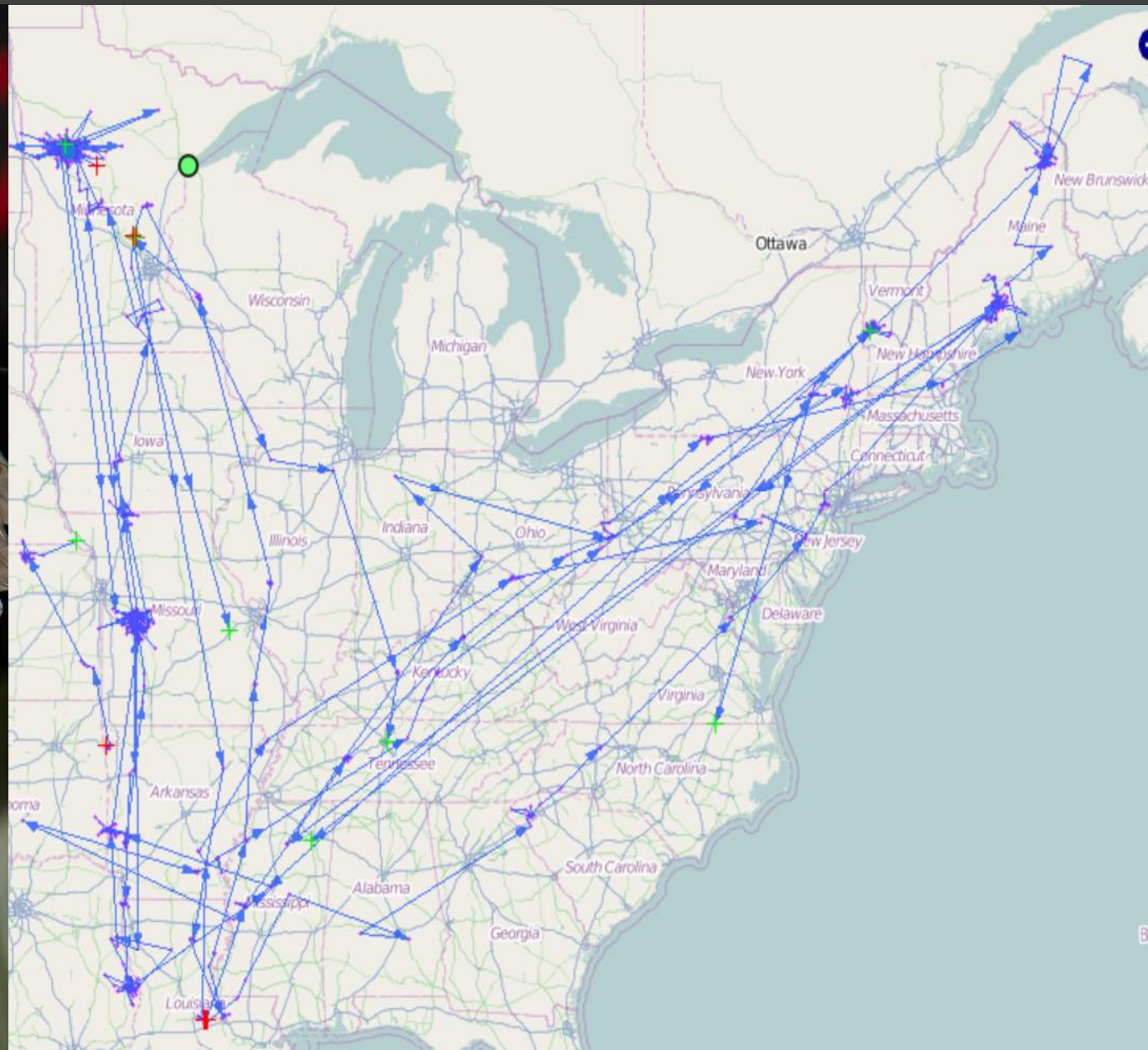

Birds have different habitat needs – so maintaining a variety of forest ages and conditions across landscapes is critical to biodiversity and forest resilience (Source – DeGraaf, 2006)

Regeneration

Common yellowthroat
Chestnut-sided warbler
Cedar waxwing
White-throated sparrow
American goldfinch
Willow flycatcher
Mourning warbler
Ruby-throated hummingbird
Philadelphia vireo
Gray catbird

Saplings

Rose-breasted grosbeak
Veery
White-throated sparrow
Black-and-white warbler
Red-eyed vireo
Ovenbird
Canada warbler
Blue jay
Black-capped chickadee
Common yellowthroat

Poletimber

Red-eyed vireo
Ovenbird
Black-throated green warbler
American redstart
Yellow-bellied sapsucker
Veery
Winter wren
Swainson's thrush
Scarlet tanager
Rose-breasted grosbeak

Birds have different habitat needs – so maintaining a variety of forest ages and conditions across landscapes is critical to biodiversity and forest resilience (Source – DeGraaf, 2006)

Sawtimber	All-aged	Old forest
Ovenbird	Red-eyed vireo	Red-eyed vireo
Red-eyed vireo	Ovenbird	Ovenbird
Least flycatcher	Black-and-white warbler	American redstart
Blackburnian warbler	Blue-headed vireo	Rose-breasted grosbeak
Black-throated blue warbler	Brown creeper	Hermit thrush
Wood thrush	White-breasted nuthatch	Yellow-bellied sapsucker
Eastern wood-pewee	Yellow-bellied sapsucker	Black-capped chickadee
Black-throated green warbler	Least flycatcher	Eastern wood-pewee
Blue-headed vireo	American robin	Black-throated green warbler
White-breasted nuthatch	Black-throated blue warbler	Scarlet tanager

Fig. 15. Breeding bird composition changes as an even-aged hardwood stand develops over time. Here, the 10 most

Forest landscapes look good on the surface, but they're facing some major stressors that can be devastating for many bird populations:

- Fragmentation from development
- Invasive species and declining forest diversity, health and rigor
- Not enough variety and openings in the forest ceiling to allow light on to the ground to stimulate food and vertical tree height diversity in many places
- Not enough landscape level diversity in forest age conditions including core natural blocks of old forests and connectivity corridors
- Increasing threat to long term forest adaptation to climate change
- Forest resilience threats

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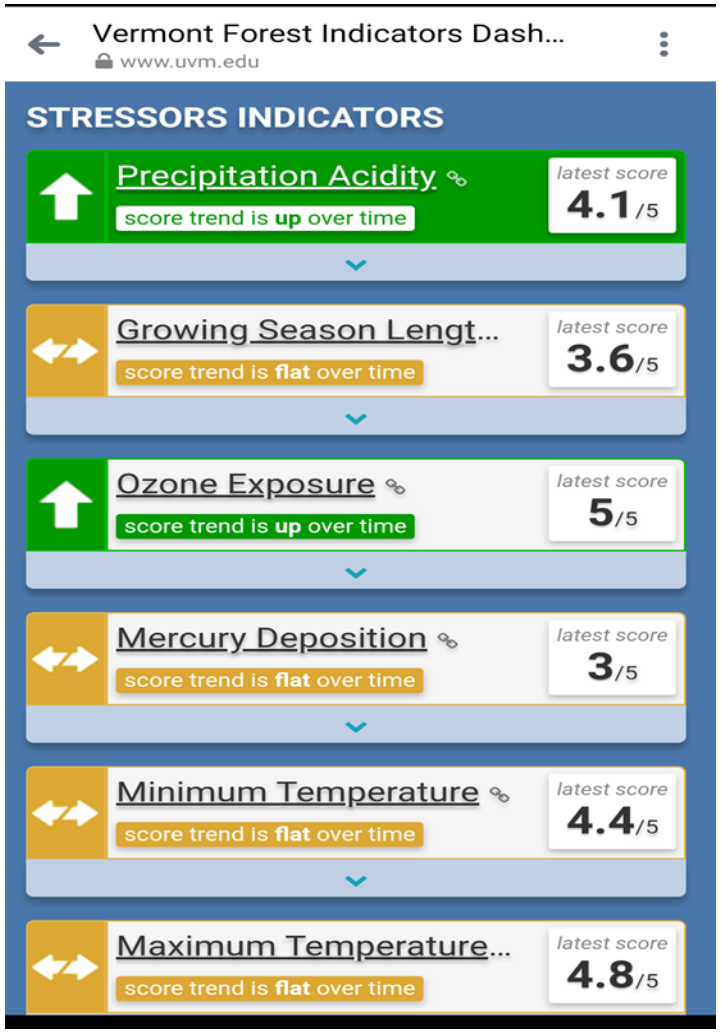
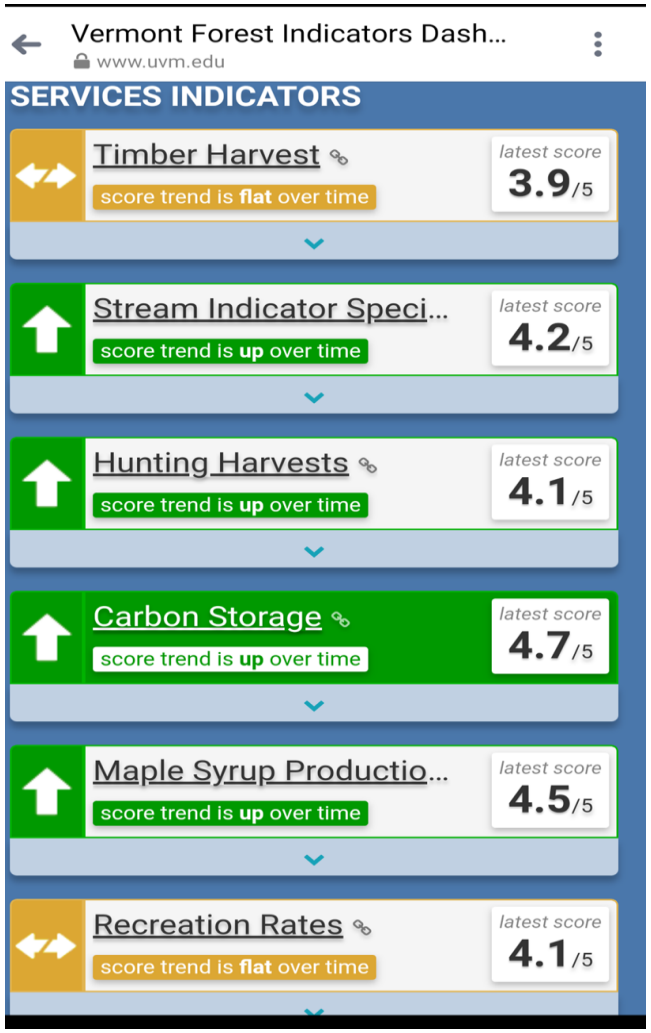
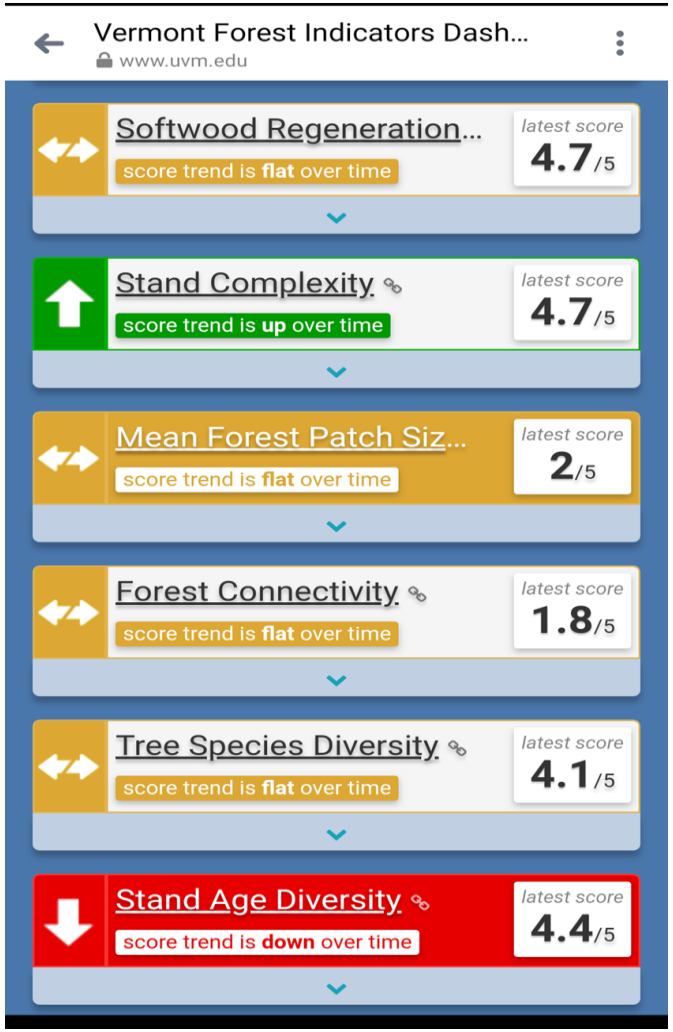
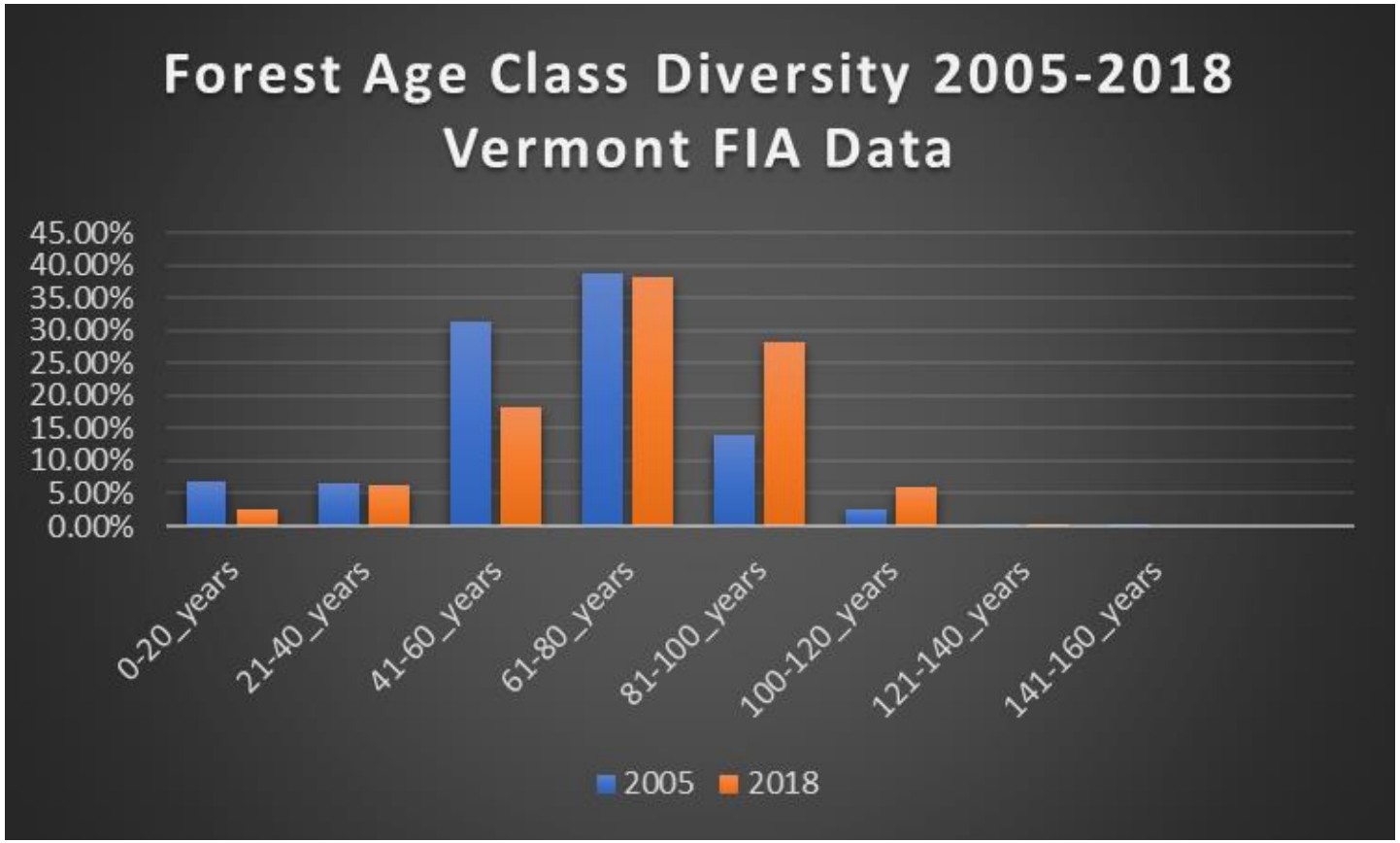
Monitoring and evaluating forest diversity and resilience





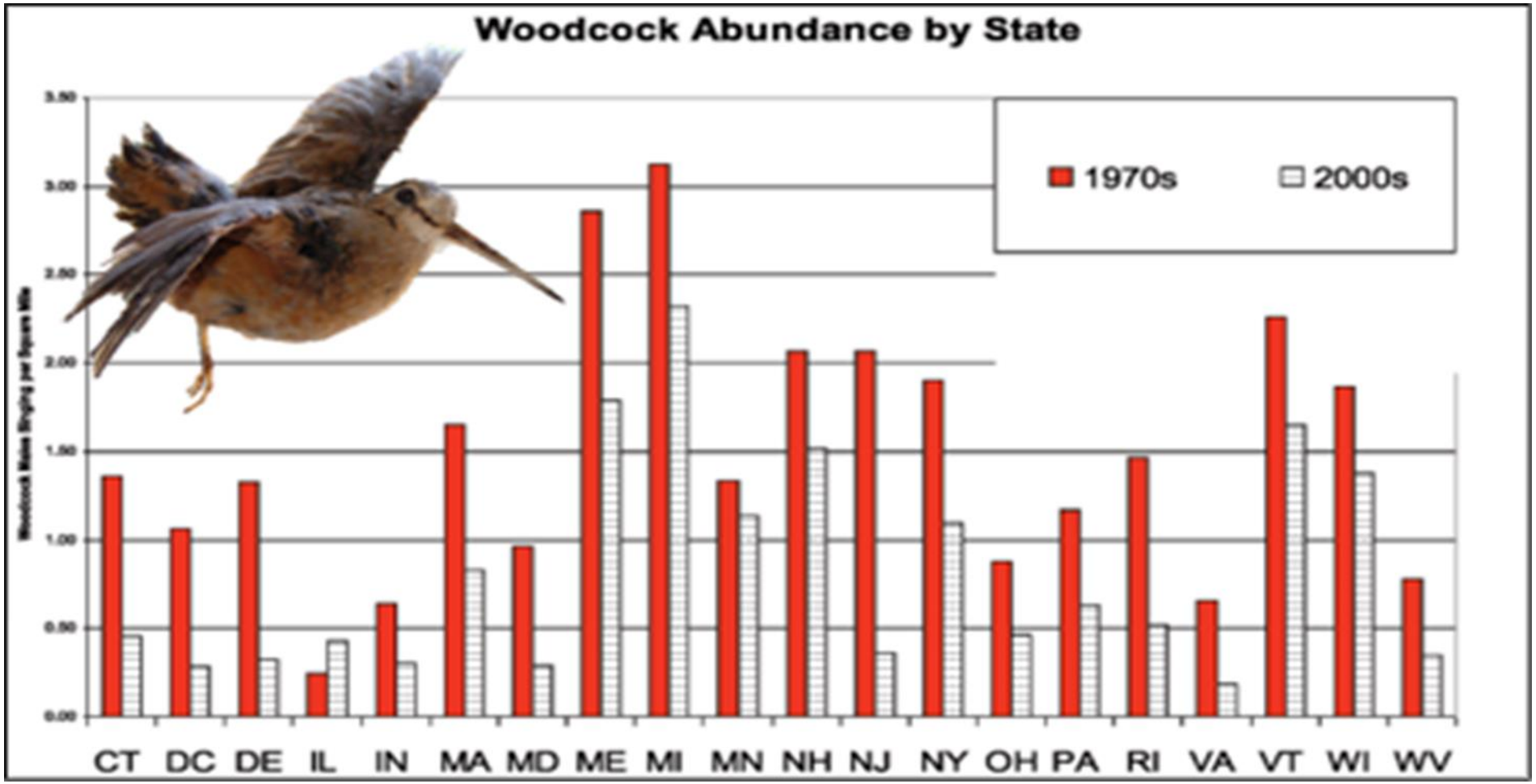


There are numerous ways to measure forest diversity, resiliency, services, structure (University of Vermont, FEMC , 2022)

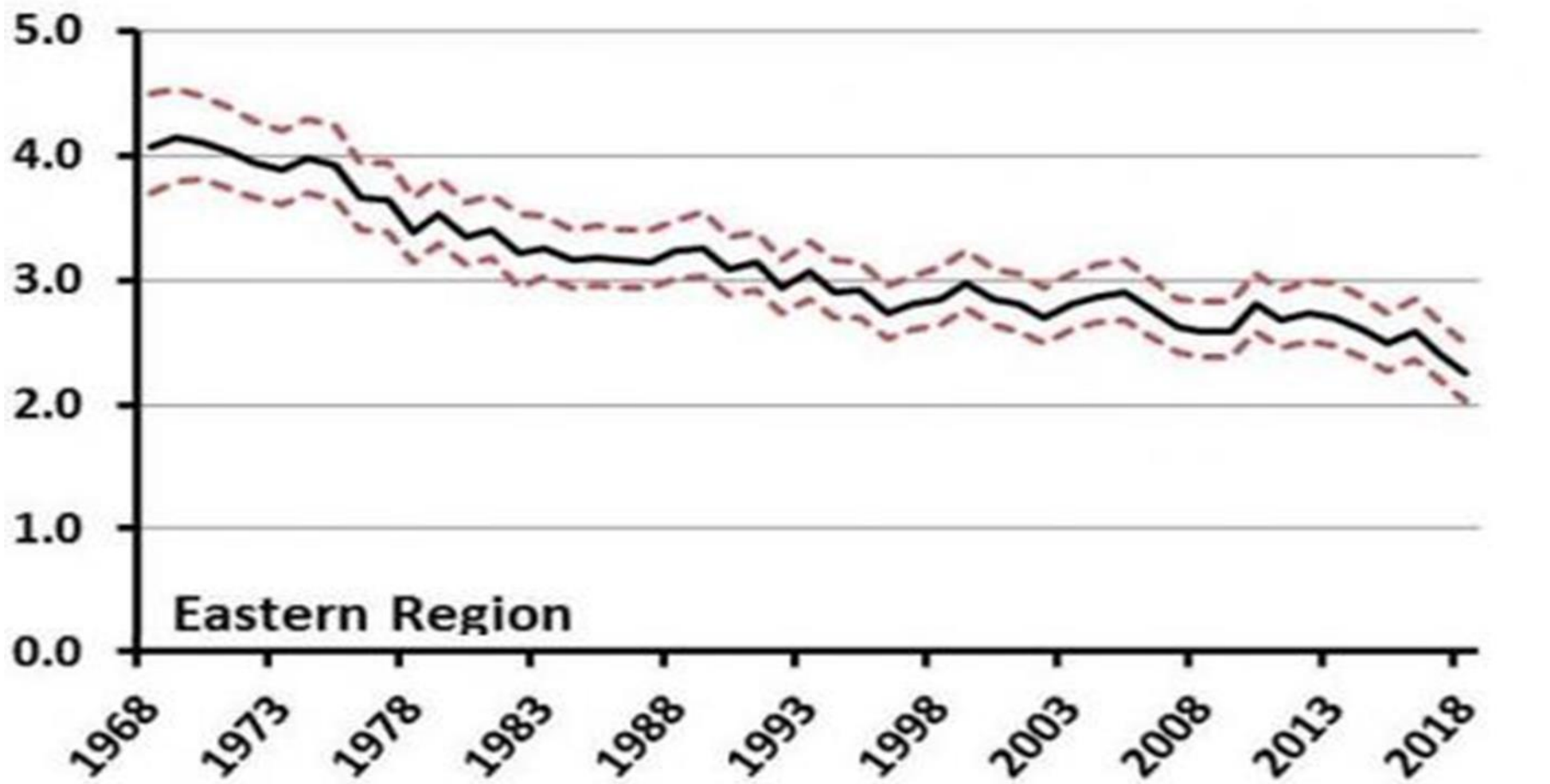


Age Class	0-20	21-40	41-60	61-80	81-100	100-120	121-140	141-160
2005	6.70%	6.50%	31.40%	38.70%	13.90%	2.50%	0.30%	0.10%
2018	2.70%	6.30%	18.20%	38.10%	28.20%	6.00%	0.40%	0.00%

Source: *Wildlife Encounters.* Wildlife Medical Clinic, College of Veterinary Medicine University of Illinois at Urbana-Champaign



Source: Seamans & Rau, 2018. Eastern Region Singing Ground Survey Results. 1968 to 2018



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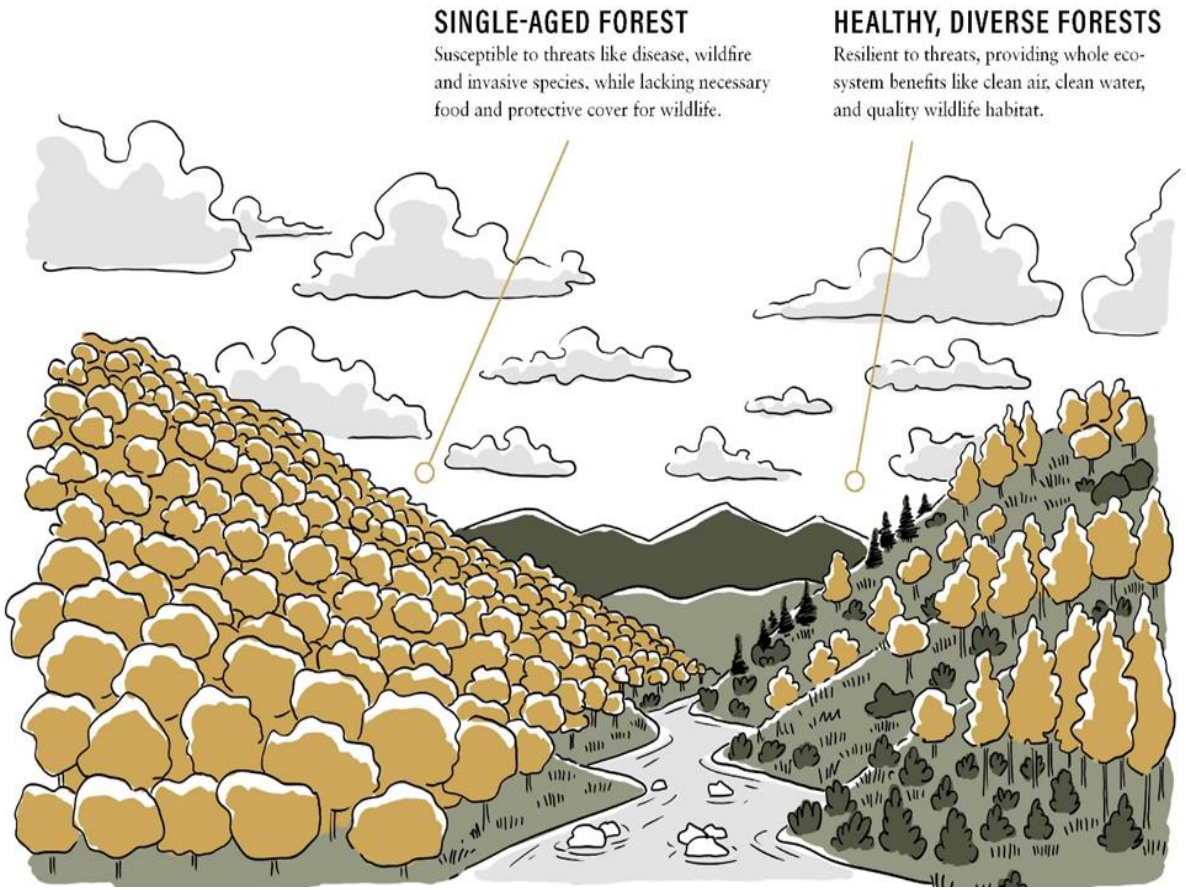
Why is Ruffed Grouse Society & American Woodcock Society and our partners working on forest landscape level initiatives in Vermont and New England?

Eastern Grouse Report, December 2020 Findings:

"Large scale strategic planning and prioritized implementation of management actions by a diverse cohort of conservation partners will be needed to accomplish the goal of sustaining ruffed grouse populations in the Eastern U.S."

RGS & AWS Priority: Work with forest conservation partners to address the Eastern Grouse Report recommendations and to work toward balanced forest conditions.



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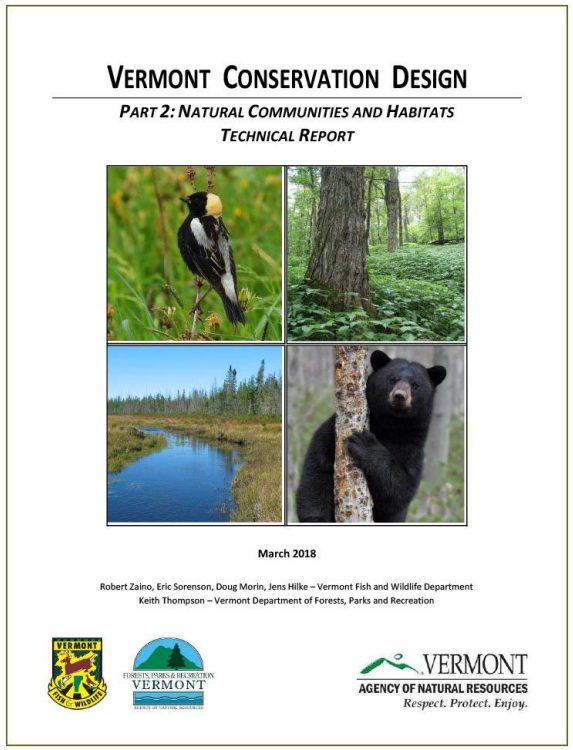
Vermont Conservation Design - Young Forest



Definition : Young forest is forest habitat that is regenerating from natural or human disturbance and dominated by seedlings and saplings, regardless of natural community type (King and Schlossberg, 2014**).**

- In general, young forest is comprised of trees less than 15-20 years old. It includes early successional stands of shade intolerant pioneer species, as well as regenerating forest of mature forest species, such as sugar maple, hemlock, or red spruce.

Ecological Function: Young forest habitat is recognized as essential to maintain viable, healthy populations of at least 65 species of wildlife in the northeast states (Gilbart 2012).

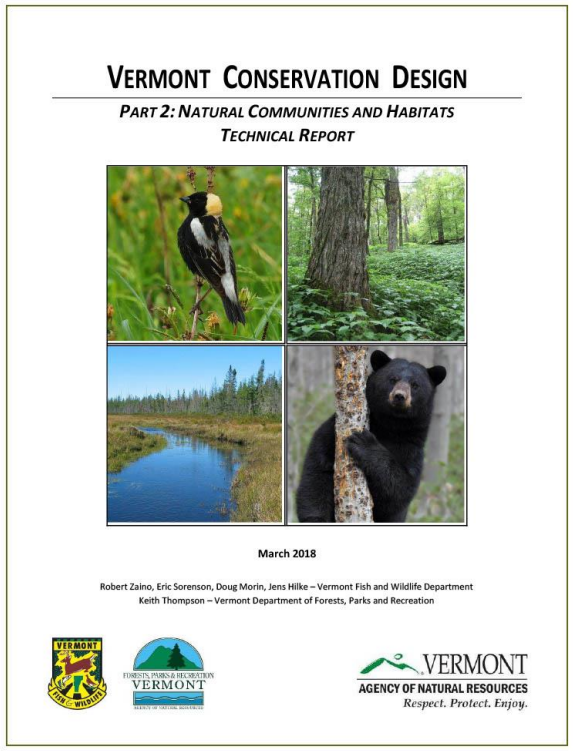
- 54 Vermont Species of Greatest Conservation Need (SGCN) and 4 categories of insects (bumble bees, butterflies, moths, Carabid beetles) require or depend heavily upon young forest or old field/shrub habitat to maintain healthy populations.

- Prior to European settlement in Vermont almost all young forest was created by natural disturbance. Currently, forest management creates most of the young forest cover in the state.

Priority Target for an Ecologically Functional Landscape

A percentage of the forest in each biophysical region should be young forest:

- 5% of the forest in young forest condition: Northeastern Highlands, Northern Vermont Piedmont, and Northern Green Mountains
- 3-4% of the forest in young forest conditions: All other biophysical regions



Vermont Conservation Design - Guidelines for Maintaining Ecological Function of Young Forests

- Provide young forest in discrete, contiguous blocks of at least **5 acres, with a minimum diameter of 375 feet, or in "Functional Equivalent Units."**

- When creating young forest through active management, locate young forest in common and widespread matrix natural communities.

- Design patches so they have a high interior to edge ratio.

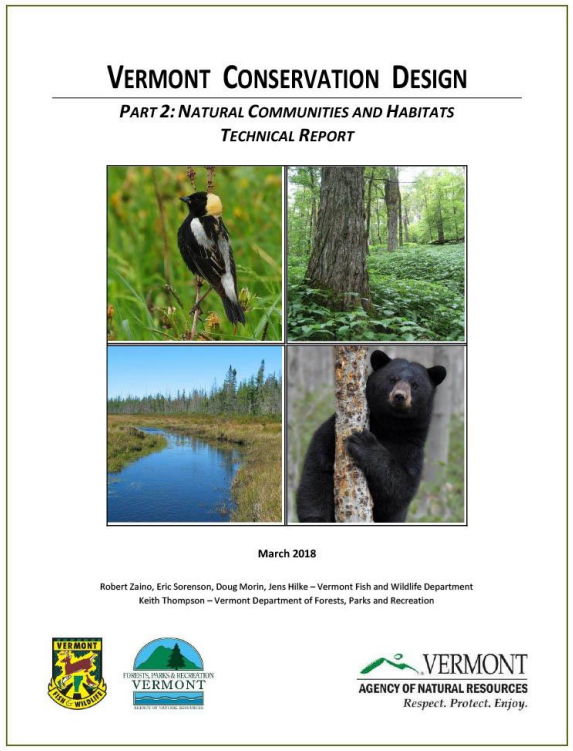
- Prevent or control the spread of invasive plant species in young forest patches.

- The creation of young forest has the potential to impact other conservation targets and should be planned to avoid conflicts with other targeted elements.

- Maintaining residual structures such as downed wood and root tip ups can provide important habitat diversity in these places.

Restoration Needs

- At present young forest is not adequately represented in all biophysical regions in Vermont. Creation of young forest through a combination of forest management and natural disturbance is needed to achieve these targets.



Vermont Conservation Design – Old Forests

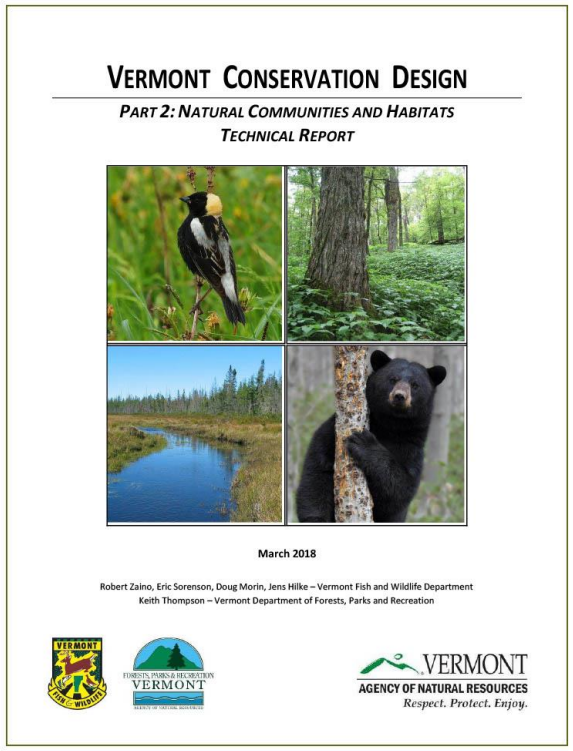
Definition: Old forests are biologically mature forests, often having escaped stand-replacing disturbance for more than 100 years and exhibiting minimal evidence of human-caused disturbance as well as continuity of process, senescence of trees, and regeneration response.

- In addition, these forests may exhibit many of the following associated characteristics: some trees exceeding 150 years in age for most forest types (100 years for balsam fir, 200 years for eastern hemlock);
- Native tree species characteristic of the forest type present in multiple ages;
- Complex stand structures that include a broad distribution of tree diameters, multiple

Ecological Function

- Historically, most of Vermont's landscape was old forest, and it is the original habitat condition for many species. The state's native flora and fauna that have been here prior to European settlement are adapted to this landscape of old, structurally complex forest punctuated by natural disturbance gaps and occasional natural openings such as wetlands or rock outcrops.

- The complex physical structure of old forests creates diverse habitats, many of which are absent or much less abundant in younger forests.



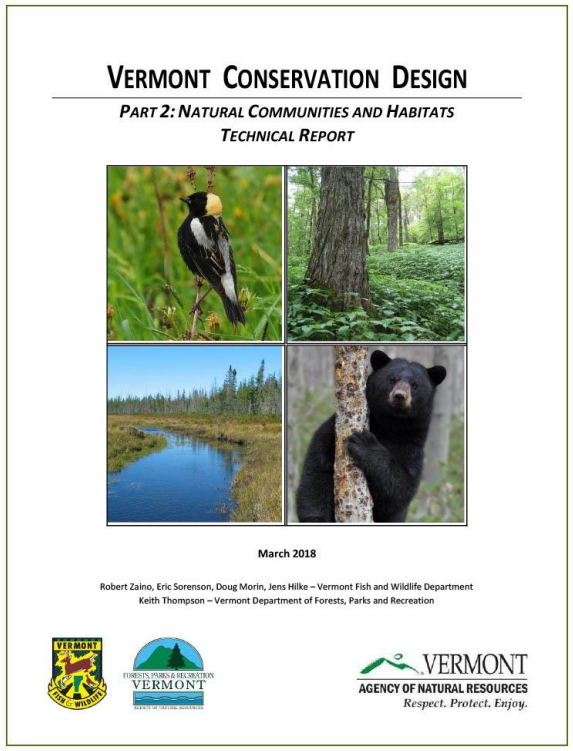
Vermont Conservation Design - Guidelines for Maintaining Ecological Function of Old Forests

Priority Target for an Ecologically Functional Landscape

- Within the matrix forest in the highest priority forest blocks in each biophysical region, 15% should be managed as, or for, an old forest condition. 4,000-acre minimum patch sizes are preferred as they are most likely to accommodate large-scale natural disturbance events.

- Smaller minimum patch sizes are offered for biophysical regions that are more fragmented and where only smaller forest blocks remain. Total Acres/minimum preferred patch sizes as follows:

- Champlain Hills - 13,000/1,000
- Champlain Valley - 15,000/500
- Northeastern Highlands - 59,000/4,000
- Northern Green Mountains - 95,000/4,000
- Northern Vermont Piedmont - 78,000/1,000
- Southern Green Mountains - 91,000/4,000
- Southern Vermont Piedmont - 31,000/1,000
- Taconic Mountains - 33,000/1,000
- Vermont Valley - 4,000/500



Vermont Conservation Design - Guidelines for Maintaining Ecological Function of Old Forests

Guidelines for Maintaining Ecological Function

- Old forests should operate under natural disturbance regimes and need to be maintained in patches large enough to accommodate natural disturbance regimes without compromising old forest characteristics dominating the patch.
- Species composition and structures should be appropriate to the natural community type. The forest and natural community condition should not be significantly impacted by non-native plant species.
- Management may be needed to control invasive species or remediate human impacts, but management should not interfere with normal natural process or alter native species composition.

Restoration Needs

- Although there are small patches of old forest scattered around the state, old forest is absent in Vermont as a functional component of the landscape. In most forests, passive restoration will result in old forest conditions. In some cases, active forest management may be beneficial to promote forest composition and structure suitable for subsequent passive restoration.

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Forest Carbon & Climate Change – the urgency of improving forest habitats while addressing climate change

- Compared to their historic range of variation, many forested landscapes have an overabundance of middle-aged, closed-canopy stands and a lack of critical habitats, esp. early-successional, young-, and open-forest habitats

- In many regions, a lack of these critical habitats is a primary driver behind the population declines of dozens of game and non-game wildlife, e.gs., ruffed grouse, American woodcock, New England cottontail, golden winged warbler, etc.

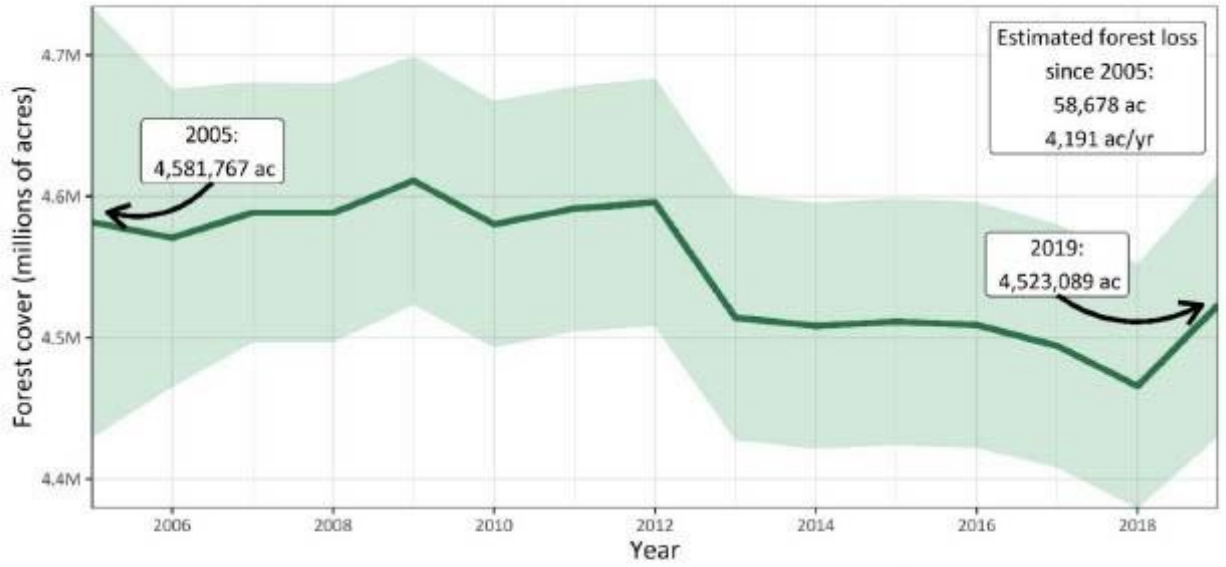
- While we manage forests to store more carbon, we also need to restore their habitat value, including by increasing the diversity of forest stand age classes that are representative of short- and long-term disturbance regimes*

*See the July 2020 Theodore Roosevelt Sportsmen and Sportswomen Climate Statement: https://nyscc.com/2020/07/29/theodore-roosevelt-conservation-partnership-sportsmen-sportswomen-climate-statement/

Vermont Forest Carbon Inventory – Kosiba, AM. 2021. Vermont Dept of Forests, Parks and Recreation

The amount of forestland is the most important factor in determining Vermont's forest carbon.

Based on data from multiple sources, Vermont has been losing forestland to other land uses since the early 1990s. Data from the USFS FIA Program[1] estimate the loss to be 4,191 acres per year (2005-2019) and NOAA's C-CAP[5] estimate the loss to be 2,051 acres per year (1996-2016). Despite uncertainty in the amount lost, as Vermont loses any amount of forestland, statewide carbon storage and sequestration decline.



Estimated Vermont forest cover (shown in millions of acres) between 2005 and 2019 according to the USDA Forest Inventory and Analysis program (solid green line). Data were derived from forest inventory plots sampled on a rotating basis and extrapolated to the state; a complete inventory of all plots occurs every 5-7 years. Green shading shows the upper and lower uncertainty around the estimated forest area (95% confidence that the actual amount of forestland is within the green area). Even with this high amount of uncertainty, these data strongly suggest that forest cover has declined statewide.

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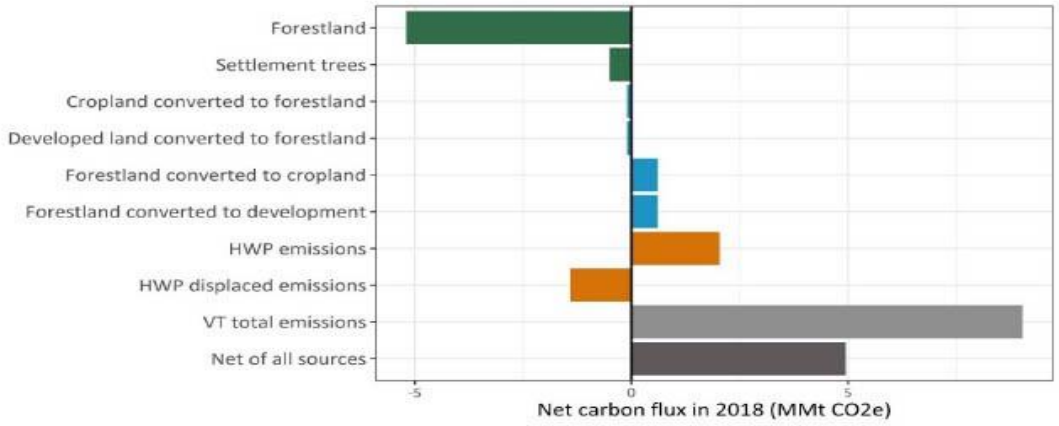
Vermont Forest Carbon Inventory – Kosiba, AM. 2021. Vermont Dept of Forests, Parks and Recreation

Vermont Forest Carbon Inventory

Across all carbon sinks and sources, Vermont's forest sector took in about 45% of state annual emissions in 2018[11].

Vermont's forest sector has both sinks and sources of CO_2. In 2018, forests sequestered -5.2 MMt CO_2e, with trees in towns and public areas contributing an additional -0.5 MMt CO_2e. There were both lands converted to forests (net sinks) and land converted from forests (net sources). Combined land-use changes resulted in net emissions of +1 MMt CO_2e. Importantly, land converted from forest not only emits stored carbon, but it also reduces the strength of Vermont's future forest carbon sequestration. Harvested wood products emitted +2.1 MMt CO_2e from the burning of bioenergy and decay of retired products but displaced -1.5 MMt CO_2e in emissions from the harvest and use of durable wood products and substitution of higher emissions products like steel, concrete, and fossil fuels. Comparing the total forest sector flux to the statewide total greenhouse gas emissions, estimated to be about +9 MMT CO_2e for 2018[12], the remainder is +4.9 MMt CO_2e. In other words, the forest sequestered about half of the state's annual emissions. Reducing Vermont's GHG emissions coupled with maintaining intact, healthy, and productive forests will help us preserve forests as a natural climate solution.

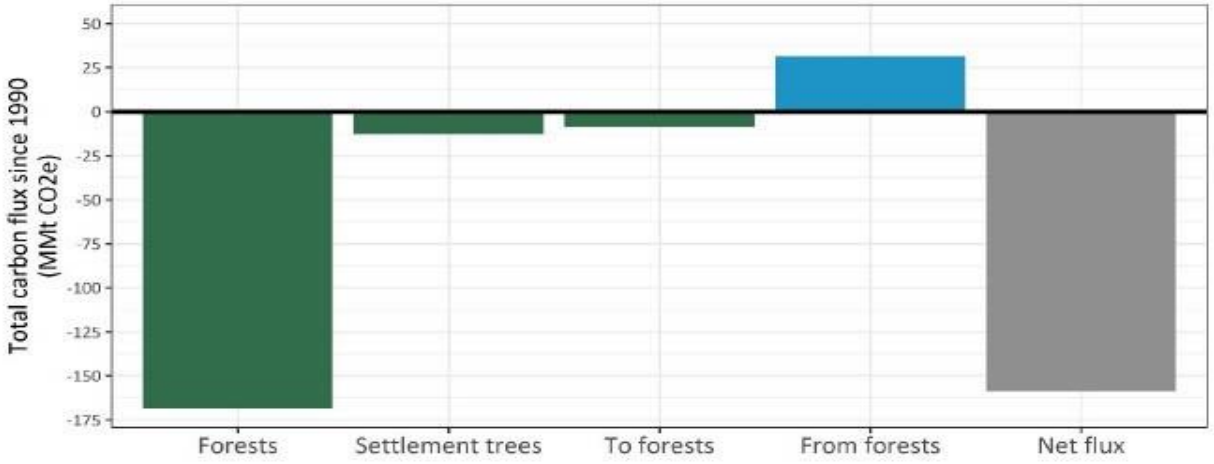


Vermont Forest Carbon Inventory – Kosiba, AM. 2021. Vermont Dept of Forests, Parks and Recreation

Vermont Forest Carbon Inventory

Loss of Vermont's forestland has resulted in carbon emissions, but overall forests remain a carbon sink.

Since 1990, Vermont's forests that have remained forests sequestered more CO_2 than they emitted through respiration, decomposition, and disturbance -- about -168.7[6] MMt CO_2e[78]. In this same period, trees in towns and public areas took in an additional -12.7 MMt CO_2e. The gain of forestland was a net sink (-8.7 MMt CO_2e since 1990), but the loss of forestland to other land uses was a net source of CO_2 to the atmosphere (+31.3 MMt CO_2e since 1990). When combined across all land uses, the net carbon flux of forests remains negative, totaling over -159 MMt CO_2e taken in since 1990, or about -5.5 MMt CO_2e per year. Reducing the amount of forest land converted to other uses will help preserve this carbon sink. Note that this analysis does not include carbon sequestration by other land types, like wetlands or agriculture.

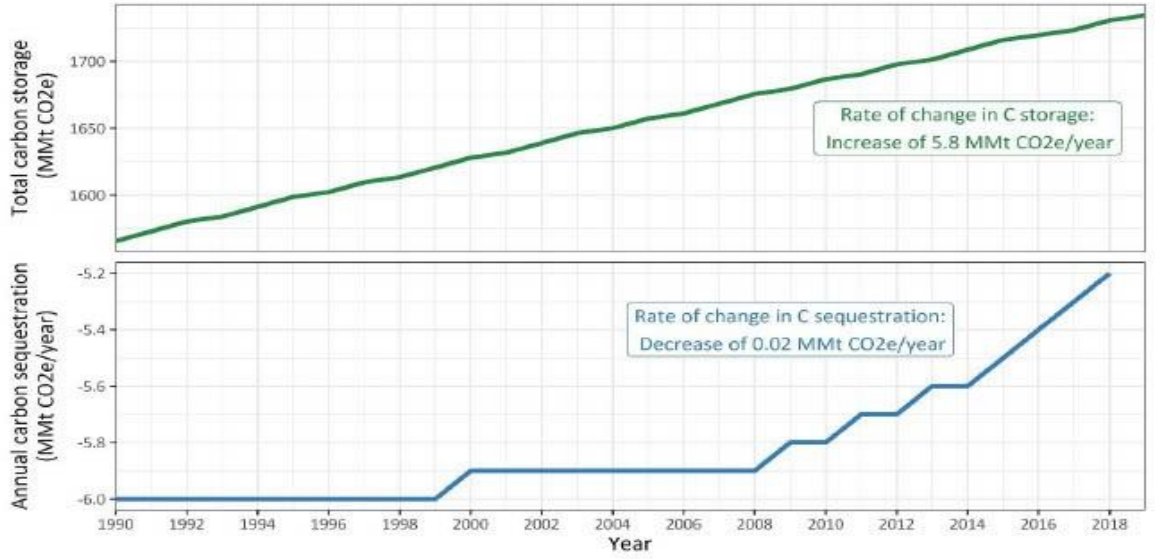


Vermont Forest Carbon Inventory – Kosiba, AM. 2021. Vermont Dept of Forests, Parks and Recreation

Vermont Forest Carbon Inventory

For forests that have remained forests, the amount of carbon storage has increased over time, but the annual rate of carbon sequestration has decreased.

In 2019, Vermont's forests stored an estimated 1,734 MMt CO_2e[13]. Since 1990, storage has increased by 168.7 MMt CO_2e, but the rate of carbon uptake by forests has slowed over time. In the early 1990s, forests sequestered -6.0 MMt CO_2e per year, but in 2019, the rate declined to -5.2 MMt CO_2e, meaning that Vermont's forests are storing carbon at a slower rate than they did two decades ago. This decline is likely because of our similarly aged and aging trees. While older forests store much more carbon than younger trees, they sequester carbon at a slower rate. Another factor may be due to climate change: higher air temperatures can speed up the rate of nutrient cycling in a forest.

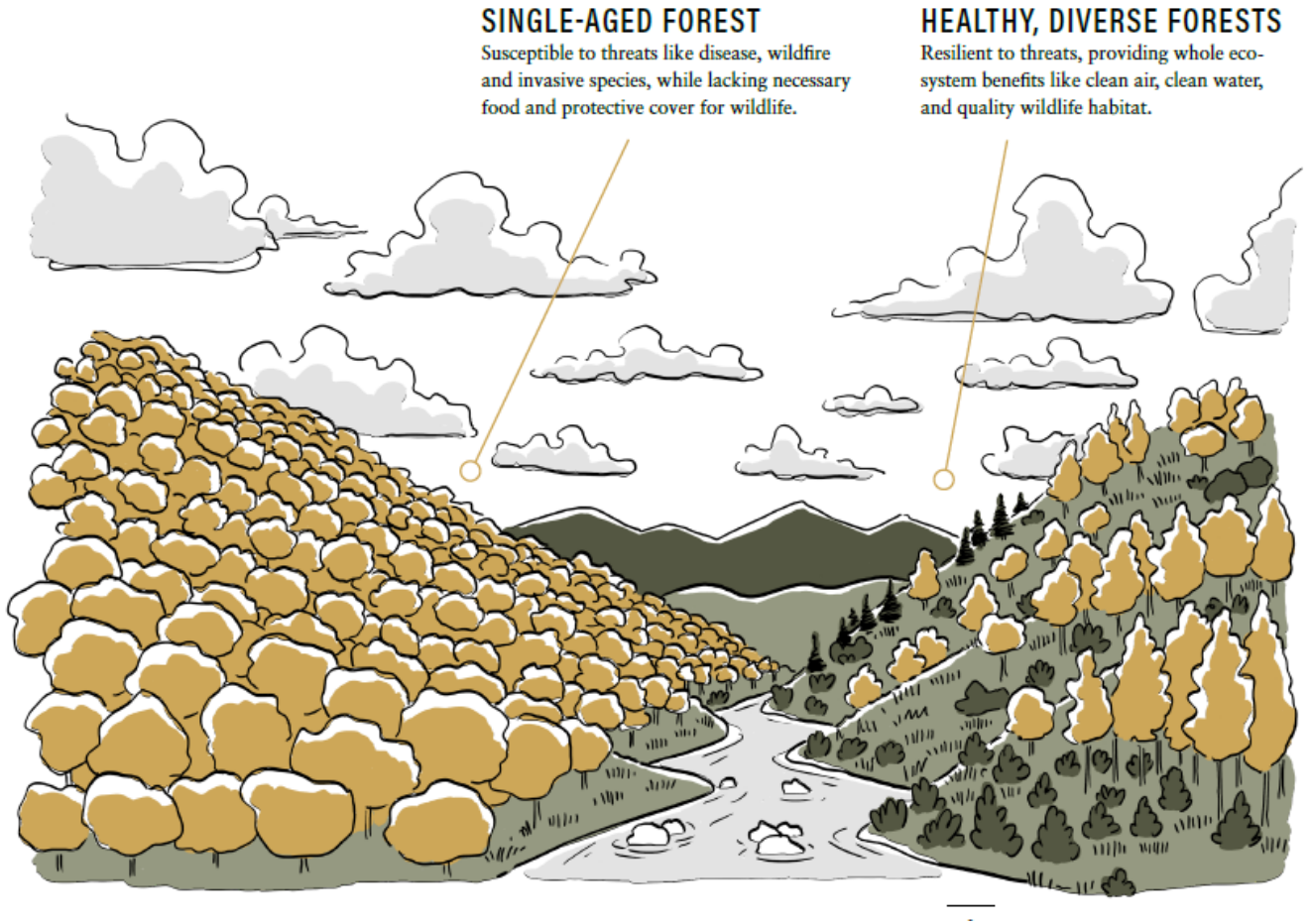


The Bigger Picture

A healthy forest is a fully functioning ecosystem. It sequesters carbon, filters water, cleans the air and provides homes for wildlife.

Current research shows the link between loss of forest diversity and wildlife declines. Grouse and woodcock are bellwethers, and their decline mirror trends for dozens of forest wildlife.

* *See references on page 7.*



RGS & AWS Northeast Conservation Plan
A 5-step roadmap to achieving our goal of bringing grouse and woodcock back from the brink:

1. Work with RGS|AWS chapters and members to develop effective public engagement networks that can help us bridge the gap between public perceptions and the current habitat problems we face. We can't achieve our habitat goals without this effort.

2. Develop partnerships with state and federal agencies related to habitat improvement and remove barriers to their active management of public lands.

3. Support family forest owners, land trusts, and conservation partners.

4. Establish partnerships with numerous segments of the forest product industry that improve the habitat outcomes of their ongoing harvesting and that can be cultivated into donations, contracts, and other forms of program revenue

5. Implement 10-12 landscape scale projects over the next 5 years across the Northeast using replicable models that can be used in other regions (dynamic forest restoration blocks)

2022 RGS & AGS Northeast Region Highlights

Conservation Delivery: **New York & Vermont**
Working Lands for Wildlife Private Lands
Jesse Rock and Luke McNally – IUP/ABC
200 acres/per year/position

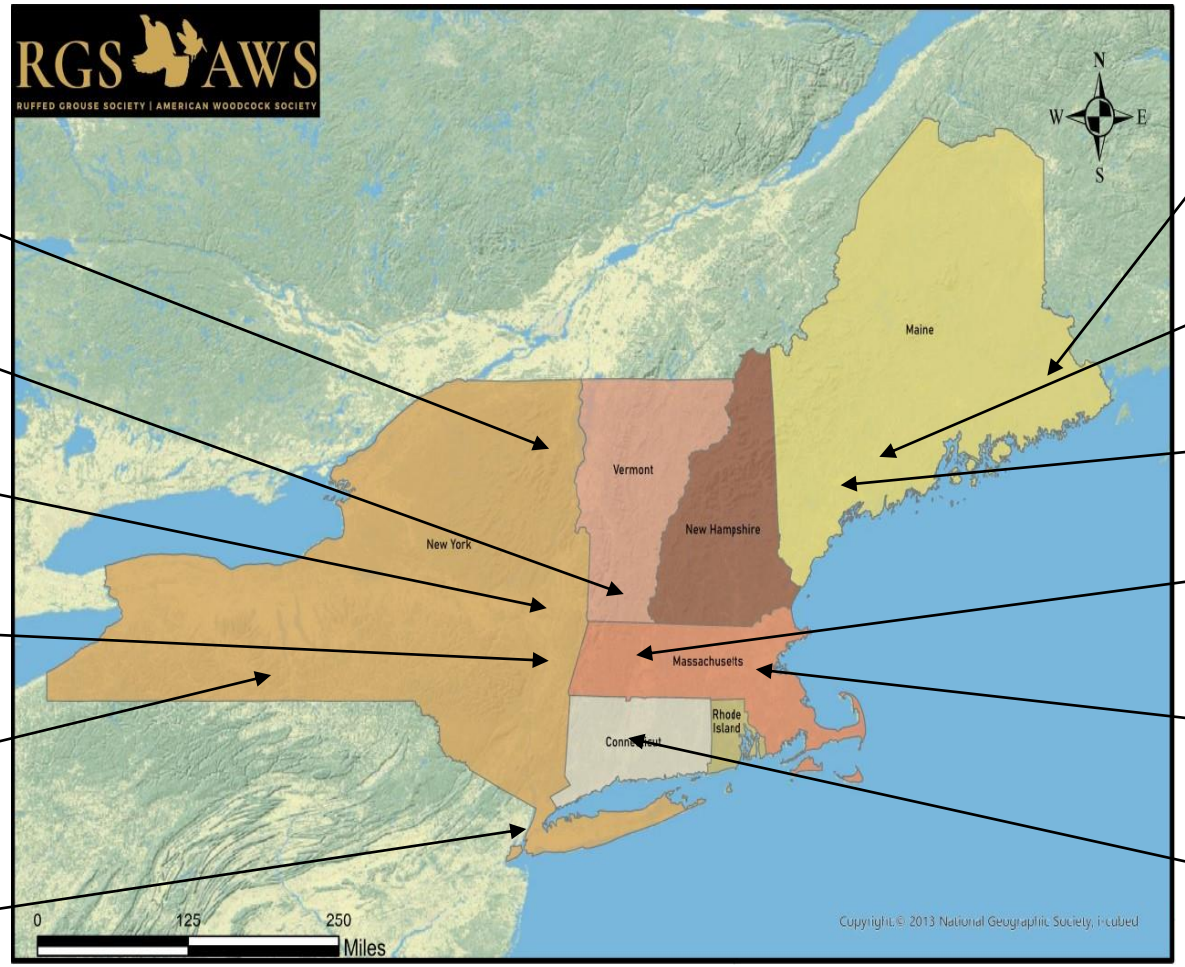
Science: **Vermont**
Forest Ecosystem Monitoring
Cooperative (FEMC) ARU Project
GMNF ESHCP – 14,000 acres

Communication: **New York**
New York Outdoor News
Great Northeast Podcast

Advocacy & Engagement: New York
Empire State Forest
Products Association
Forestry Awareness Days

Conservation Delivery: **New York**
Finger Lakes National Forest
Woodcock Habitat Project – NFF – 7 blocks

Finance: **New York**
NYC RGS & AWS
Leadership Team
Development & Engagement Staff



Conservation Delivery: **Maine**
Down East Lakes Land Trust
Woodcock Habitat Project
MOHC – 17 blocks

Communication: **Maine**
Maine Outdoor Radio
with V. Paul Reynolds

Science: **Maine**
Eastern Woodcock
Migration Research Cooperative
PhD Research Position Support

Conservation Delivery: **Massachusetts**
Dynamic Forest Restoration Initiative
USFS LSR – 1,600 acres

Advocacy & Engagement: **Massachusetts**
Forest Wildlife Partnership
DFG Commissioner Ron Amidon

Communication: **Connecticut**
Yankee Society of American
Foresters' Communication Lead Team

RGS AWS
RUFFED GROUSE SOCIETY | AMERICAN WOODCOCK SOCIETY

Conservation Delivery Spotlight - Northeast RGS & AWS Private Lands – New York and Vermont

TODD WALDRON
Forest Conservation Director
toddw@ruffedgrousesociety.org
(412) 874-8702

LUKE McNALLY
Champlain Region Forester
lukem@ruffedgrousesociety.org
(802) 309-3177

JESSE ROCK
Wildlife Forester
jesser@ruffedgrousesociety.org
(412) 852-8715

LOOKING FOR MORE INFORMATION? CHECK OUT THESE WEBSITES:

nrcs.usda.gov

- Working Lands For Wildlife
- Golden Winged Warbler Initiative
- Environmental Quality Incentive Program

ruffedgrousesociety.org

- Northeast Regional Page

USDA United States Department of Agriculture

WORKING LANDS FOR WILDLIFE

IWP RESEARCH INSTITUTE

OUR GOALS:

Provide technical support to improve private forest conservation efforts and establish connections to financial support and cost share programs offered by the Natural Resource Conservation Service and Working Lands for Wildlife fund that aleviates costs of conservation practices on private lands.

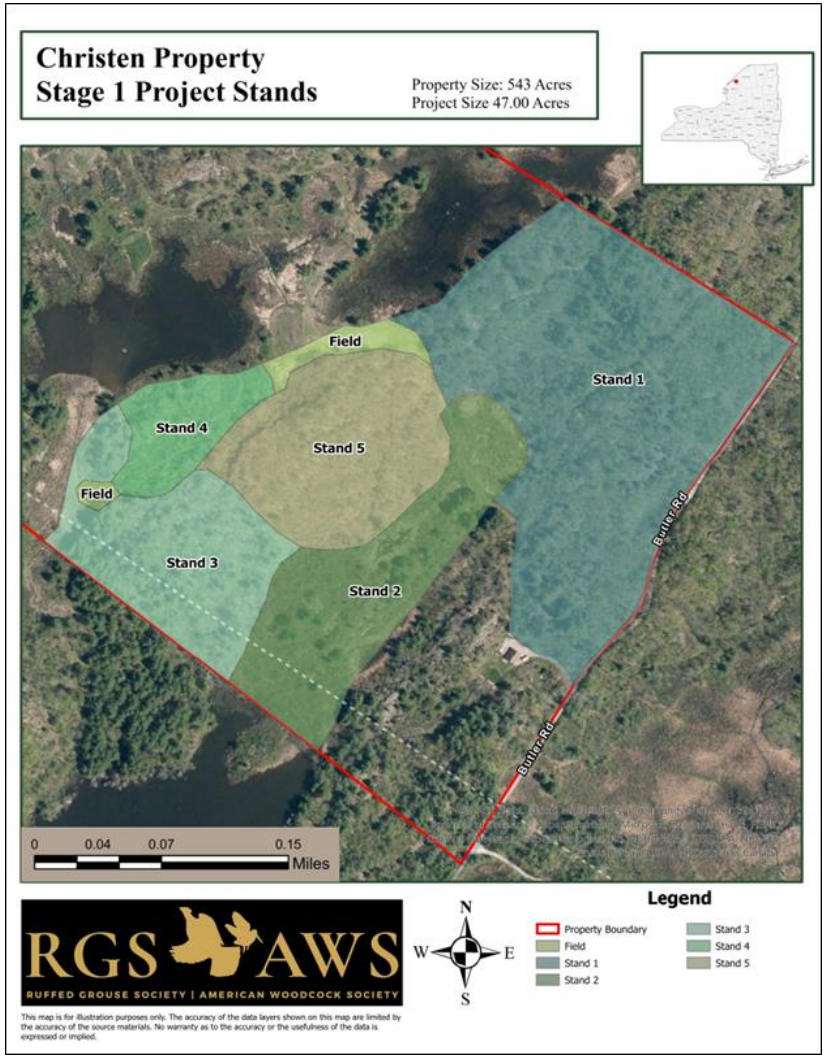
WHO IS ELIGIBLE FOR **WORKING LANDS FOR WILDLIFE** FUNDS?

Non-industrial private forest landowners or Tribes who own or rent agricultural land that is facing an environmental threat.

New York landowners of forested lands in regions of Jefferson, Lewis, St. Lawrence, Franklin, Clinton, Sullivan, Dutchess, Orange, Putnum, Weschester, Rockland, and Essex Counties.

Vermont landowners of forested lands within Franklin, Chittenden, Addison, Grand Isle, Rutland and western Lamoille Counties.

Case Study: How the Northeast Team is Delivering Conservation Value for Landowners in Vermont and New York



Landowner: J. Christen

- Location; St. Lawrence County, NY
- Property Size: 543 acres
- WLWF Project Size: 47 acres

Landowner Objectives:

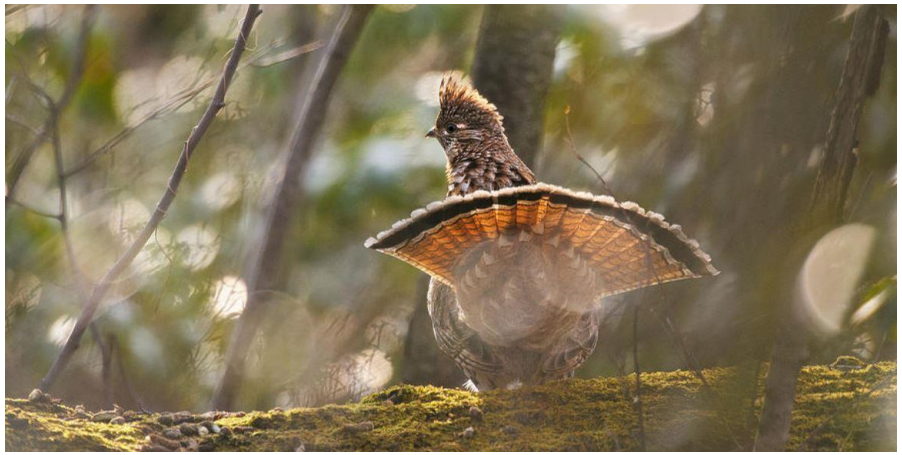
- To Do What's Right for the Birds
- Long-Term Sustainable Forestry
- Enhance Recreational Access

Landowner Challenge:

- Until RGS recently added staff capacity, the landowner hadn't been able to connect the dots with the right conservation funding, planning resources, and implementation team.

RGS & AWS Working Lands for Wildlife Conservation Delivery:

- NY Wildlife Forester Jesse Rock met with landowner in August 2022 to clarify his ownership objectives and assess project scope.
- Forest inventory completed in September 2022 by Jesse Rock and Luke McNally.
- Follow up on-site meeting with NRCS staff in October 2022 to verify interest in moving ahead.
- Will be included in WLFW pipeline for next funding cycle .



Vermont Woodlands Association –
Concluding Thoughts:

Partnerships Matter and Vermont's Private Landowners Play a Critical Role in Forest Landscape Conservation!

Contact information:

Todd Waldron
Northeast Forest Conservation Director
Ruffed Grouse Society & American Woodcock Society

Email: toddw@ruffedgrousesociety.org

Website: www.ruffedgrousesociety.org