FORESTS, CLIMATE RESILIENCE, AND VERMONT'S FOREST ECONOMY

House Committee on Agriculture, Food Resiliency, and Forestry

January 16, 2025

FOREST & CLIMATE RESILIENCE

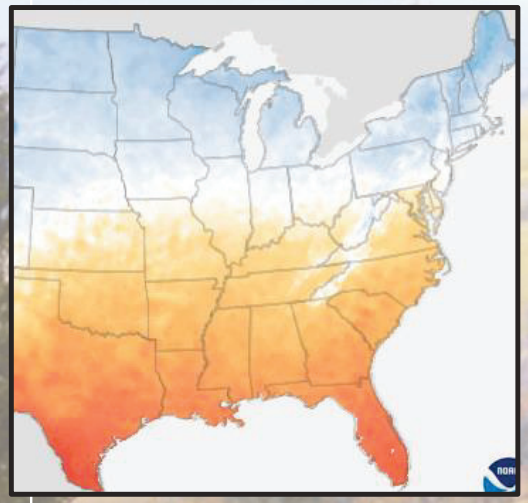
Al Freeman, Climate Forester
al.freeman@vermont.gov

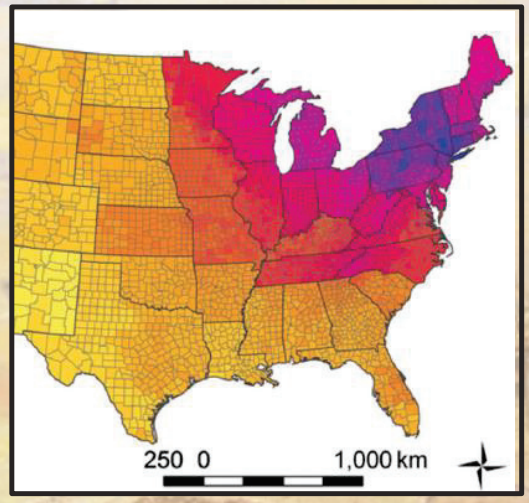
COMPLEX PROBLEMS FACING VT'S FORESTS

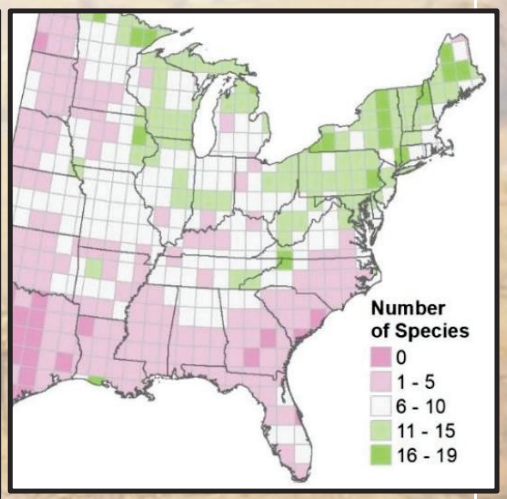
COMPLEX PROBLEMS FACING VT'S FORESTS

A resilient forest can withstand and recover from disturbances

Extreme Weather **Predation Dynamics** **Introduced Pests** **Habitat Shifts**

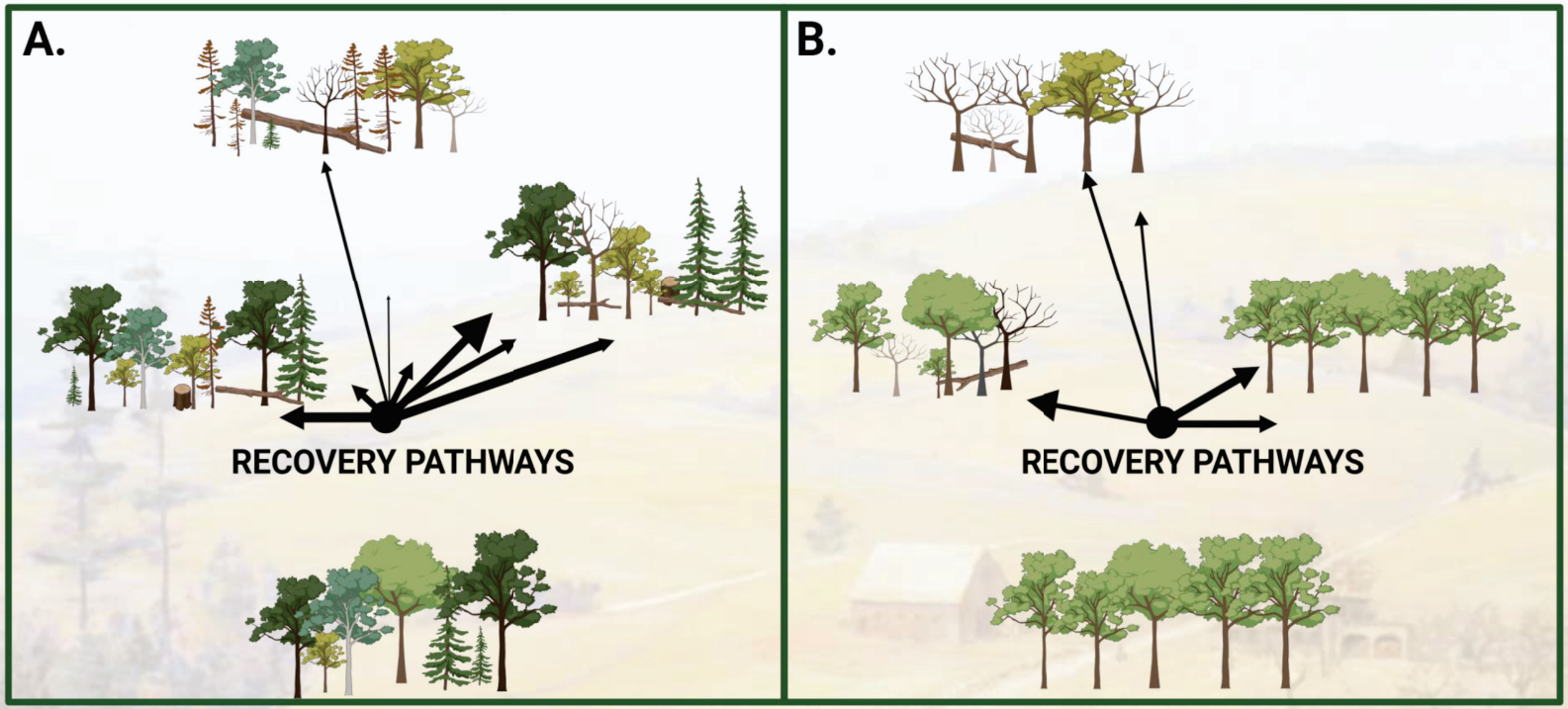






VERMONT

COMPLEX PROBLEMS FACING VT'S FORESTS



Complex Forest Structure

Simple Forest Structure

Adapted from Puettmann and Messier 2020

FOREST RESILIENCE

A resilient forest can withstand and recover from disturbances such as climate, pests, and pathogens.

FOREST RESILIENCE

A resilient forest can withstand and recover from disturbances such as climate, pests, and pathogens.

FOREST RESILIENCE

A resilient forest can withstand and recover from disturbances such as climate, pests, and pathogens.

FOREST RESILIENCE

A resilient forest can withstand and recover from disturbances such as climate, pests, and pathogens.

Structural complexity

FOREST RESILIENCE

A resilient forest can withstand and recover from disturbances such as climate, pests, and pathogens.

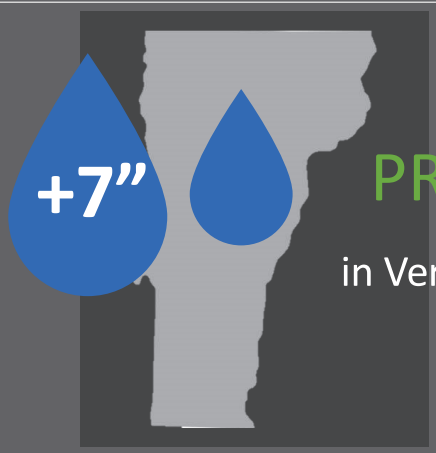
FOREST RESILIENCE

A resilient forest can withstand and recover from disturbances such as climate, pests, and pathogens.

FOREST RESILIENCE

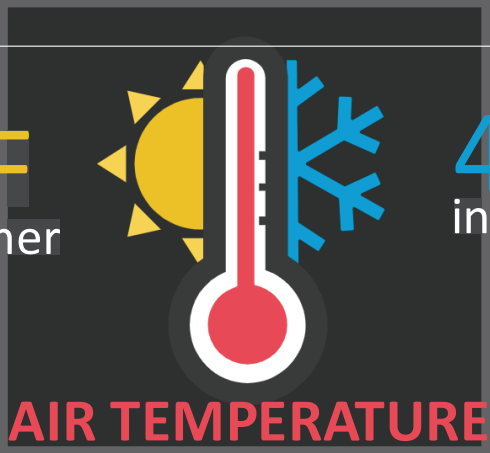
A resilient forest can withstand and recover from disturbances such as climate, pests, and pathogens.

CLIMATE CHANGE IS LEADING TO GREATER VARIABILITY



ANNUAL PRECIPITATION

in Vermont has increased by almost 7 inches



2°F in summer

4°F in winter

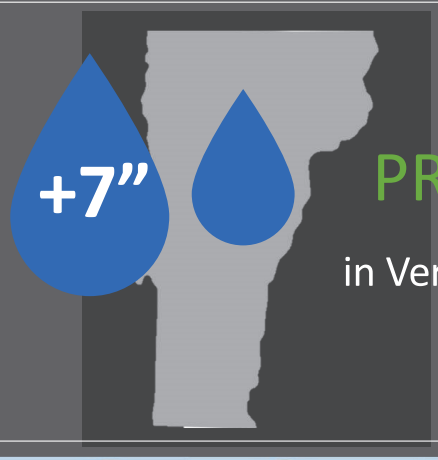
AIR TEMPERATURES

have increased

Data source: Northeast Regional Climate Center

CLIMATE CHANGE IS LEADING TO GREATER VARIABILITY

FORESTS, PARKS & RECREATION
VERMONT
AGENCY OF NATURAL RESOURCES

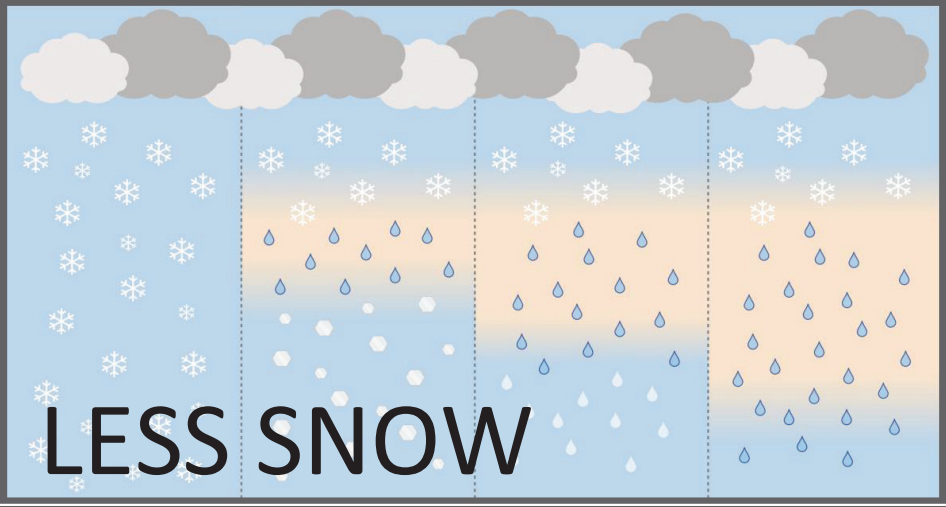


ANNUAL PRECIPITATION

in Vermont has increased by almost 7 inches

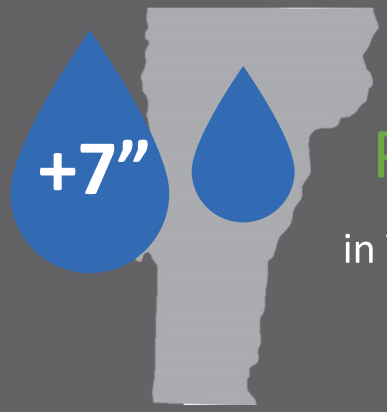
2°F
in summer

4°F
in winter



CLIMATE CHANGE IS LEADING TO GREATER VARIABILITY

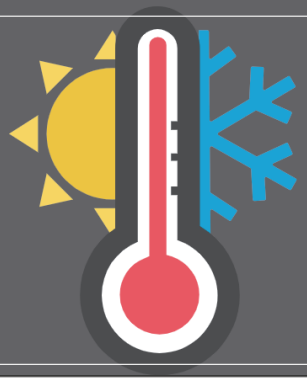
FORESTS, PARKS & RECREATION
VERMONT
AGENCY OF NATURAL RESOURCES



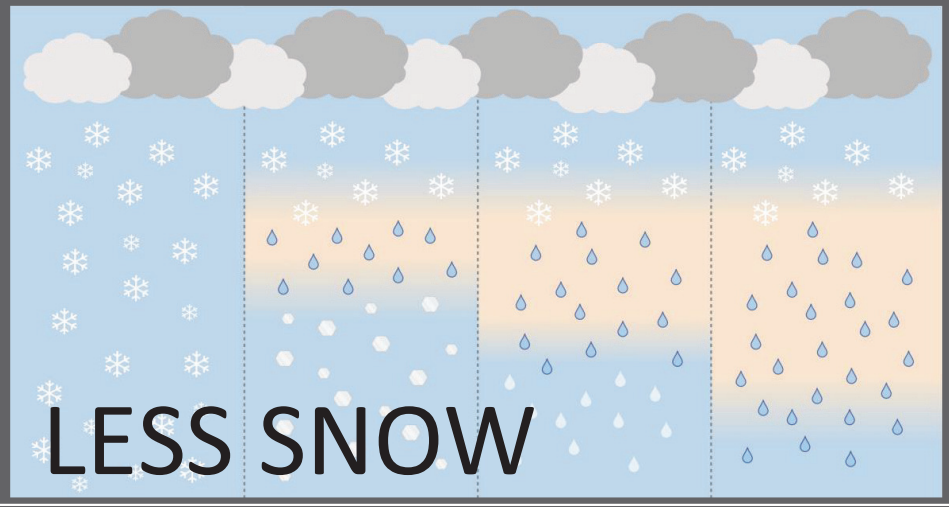
ANNUAL PRECIPITATION

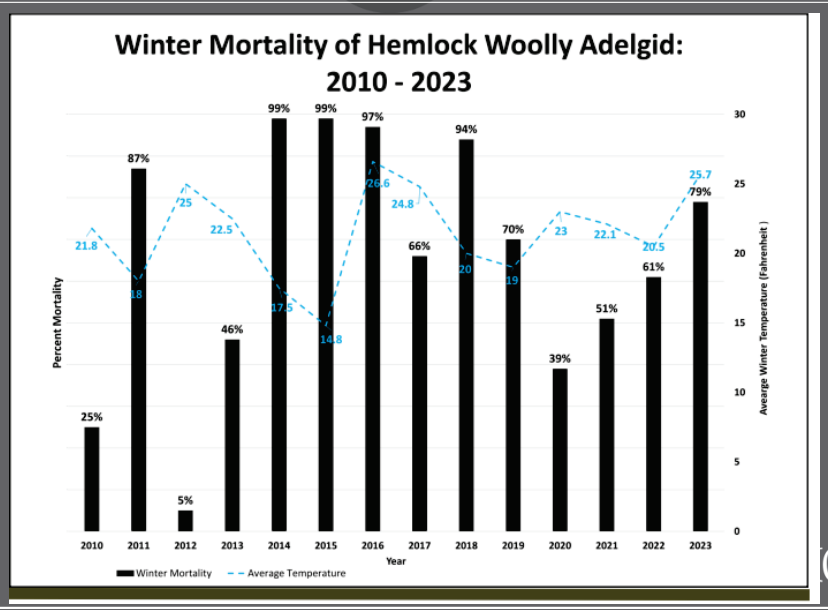
in Vermont has increased by almost 7 inches

2°F
in summer



4°F
in winter

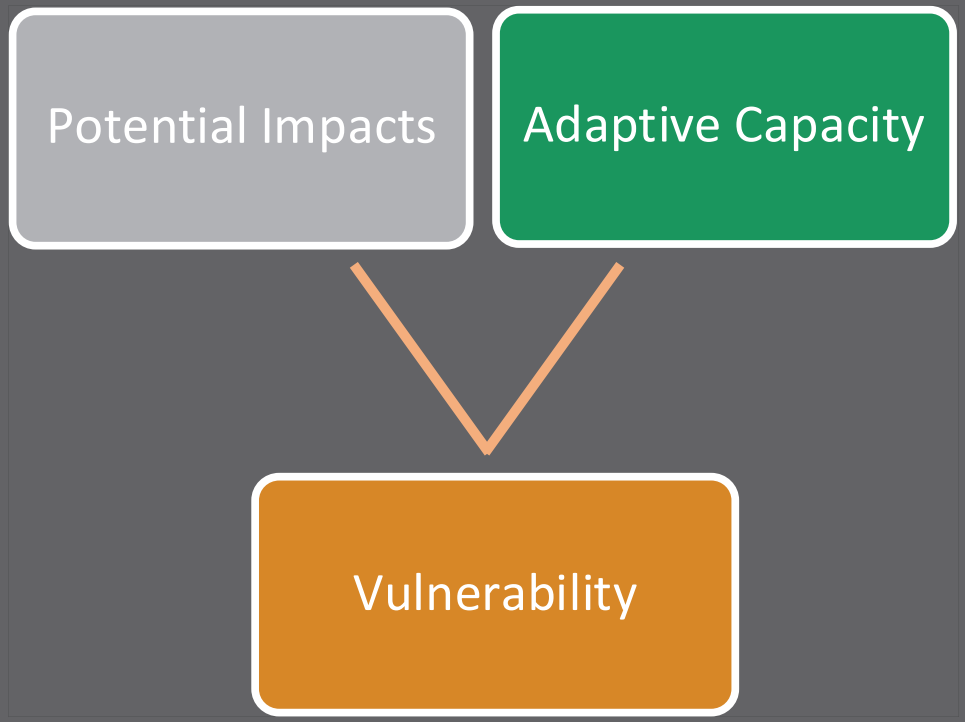




Data source: FPR

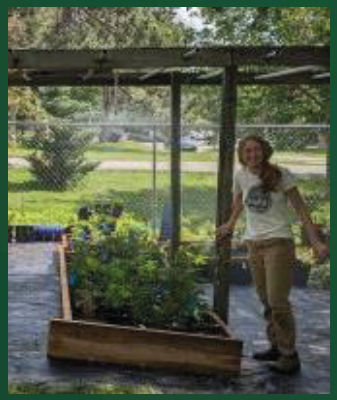
CLIMATE CHANGE IS LEADING TO GREATER VULNERABILITY

Two components:



Source: NIACS

RESEARCH IN THE REGION ADDRESSING THESE UNCERTAINTIES



HOW DO WE MAKE MANAGEMENT DECISIONS?

We want to **optimize** multiple objectives, not maximize a single objective

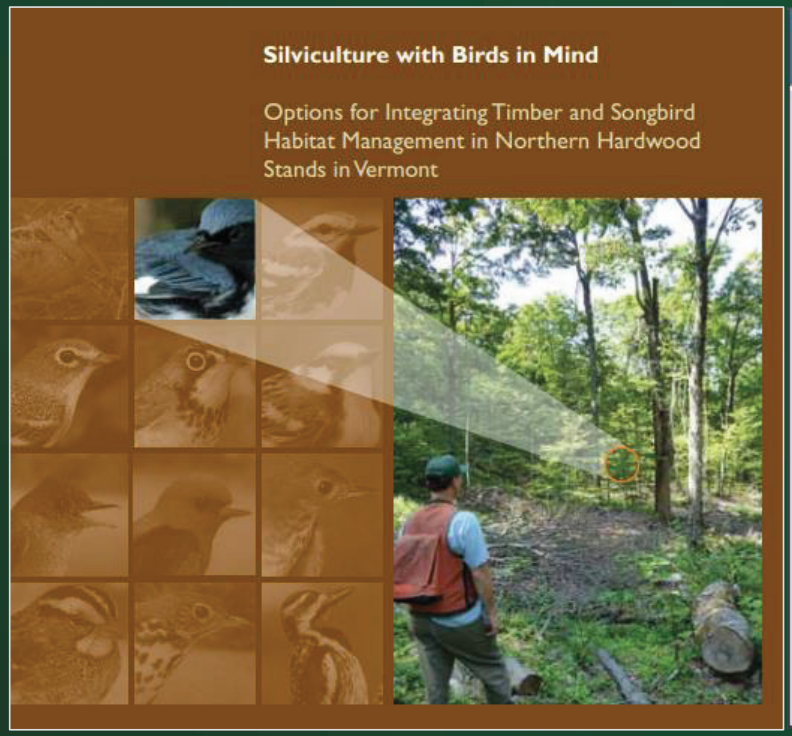
- Climate resilience
- Carbon storage and sequestration
- Biodiversity
- Recreation
- Forest products

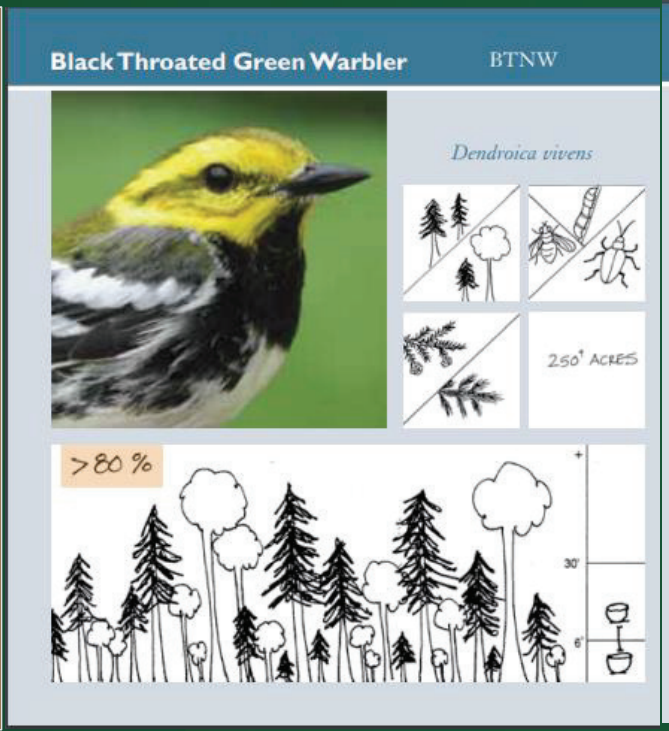
HOW DO WE MAKE MANAGEMENT DECISIONS?

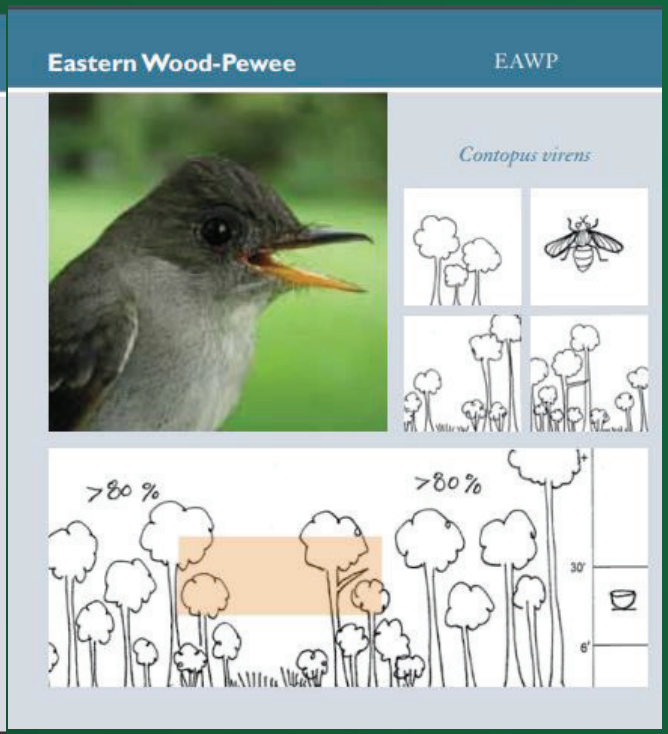
Through collaboration across programs and partnerships, we can address these objectives and keep forests as forests

FPR Projects and Partnerships

Audubon VT Partnership at Mt Mansfield State Forest

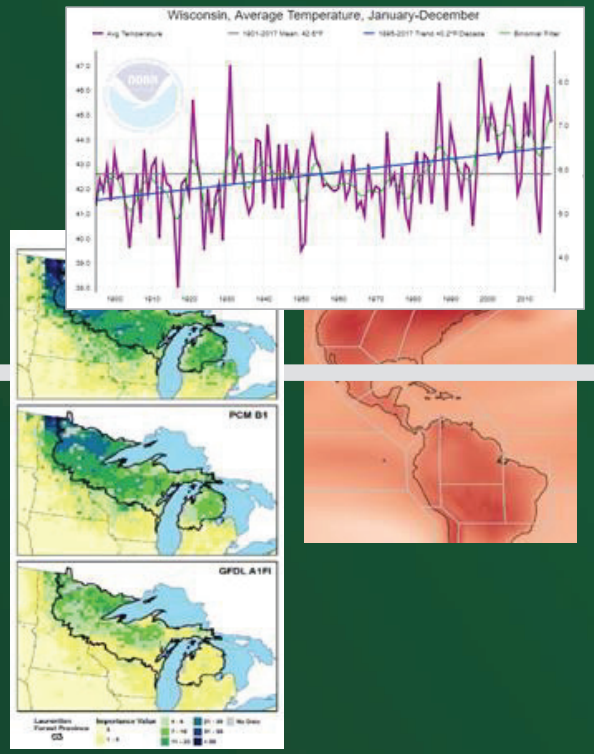






FPR Projects and Partnerships

Establishing research-grade climate adaptation management projects in partnership with NIACS and UVM to consider climate change risk and adaptation



FORESTS, PARKS & RECREATION
VERMONT
AGENCY OF NATURAL RESOURCES

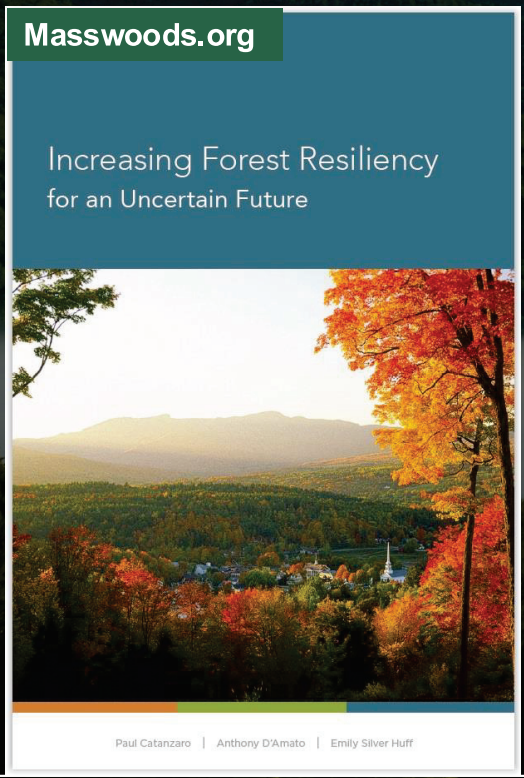
A changing climate puts our forests and the services they provide at risk.

VERMONT

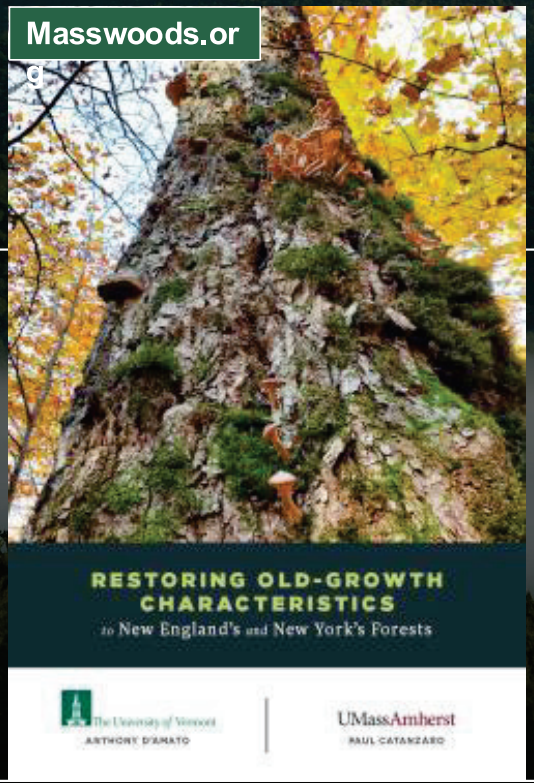
RESOURCES

ASCC
Adaptive Silviculture for Climate Change

Masswoods.org



Masswoods.or



fpr.vermont.gov/forest/climate-change

FORESTS, PARKS & RECREATION
VERMONT

adaptationworkbook.org

NIACS
Northern Institute of Applied Climate Science

https://www.uvm.edu/extension/forestry-climate-change

THE UNIVERSITY OF VERMONT
EXTENSION

VERMONT'S FOREST ECONOMY

Katharine Servidio, Forest Economy Program Manager

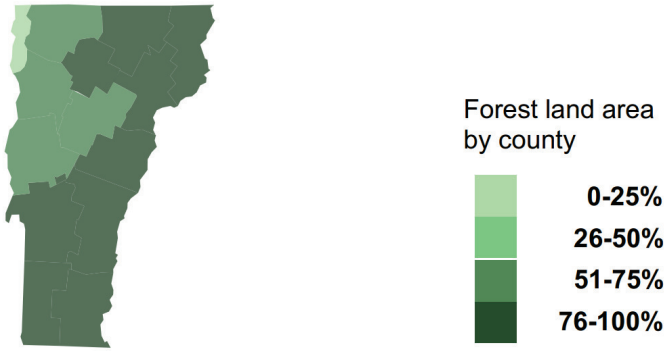
katharine.servidio@vermont.gov

VERMONT'S FOREST RESOURCES

Forest Area: Vermont, 2022

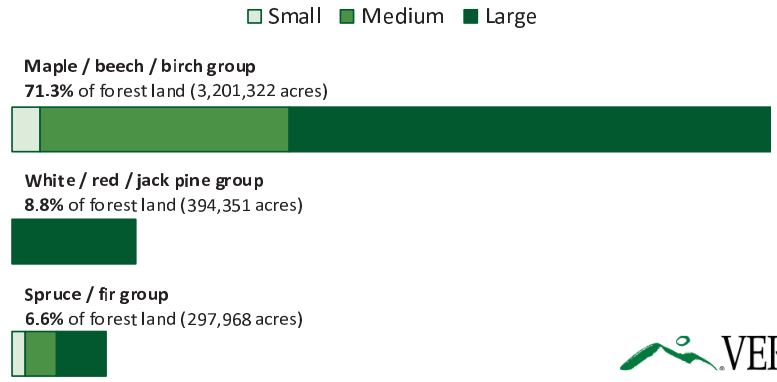
Forest land area: 4,487,566 acres (±0.97% SE)

Timberland area: 4,263,273 acres (±1.15% SE)



Forest Composition: Vermont, 2022

Most common forest-type groups by stand size class



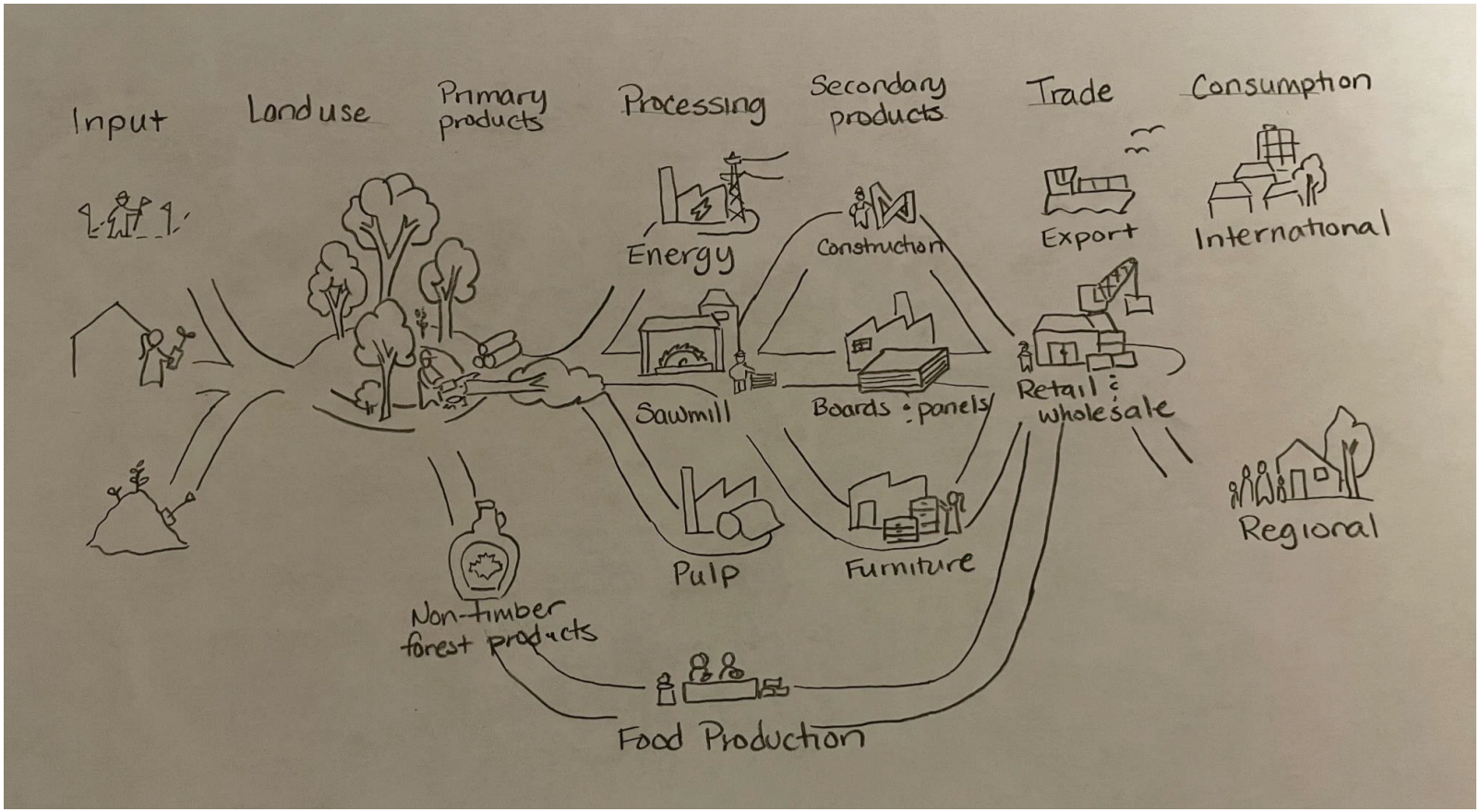
Data source: US Department of Agriculture, Forest Service. 2024. Forests of Vermont, 2022: FIA annual snapshot. Resource Update FS-697.

VERMONT'S FOREST ECONOMY

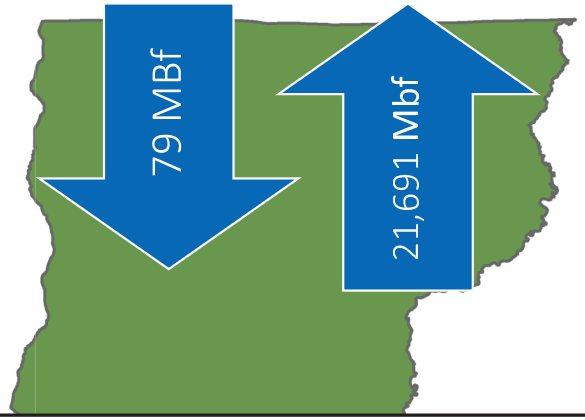
- 9,107 direct jobs
- $291.5 million in direct labor income
- $393.4 million in value-added
- **$1.4 billion in direct output**

Data source: Forest Products Industries' Economic Contributions: Vermont

A (SIMPLIFIED) FOREST PRODUCTS VALUE CHAIN



WOOD FLOWS 2022: SAWLOGS



- **Imported from QC:** **79** Mbf
- **Exported to QC:** **21, 691** Mbf
- **Exported Overseas :** **1,810** Mbf

VERMONT 2022

- Sawlog Harvest: 88,723 Mbf
- Processed in VT: 79,988 Mbf
- Exported: 41,726 Mbf
- Imported: 32,991 Mbf

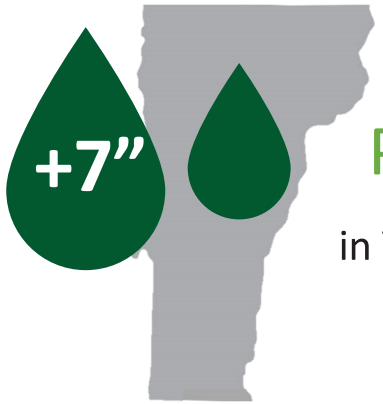
32,991

Imported from other states: 22,969 Mbf
Exported to other states: 34,757 Mbf

41,726

Data source: VT FPR, 2023. 2022 Annual Harvest Report

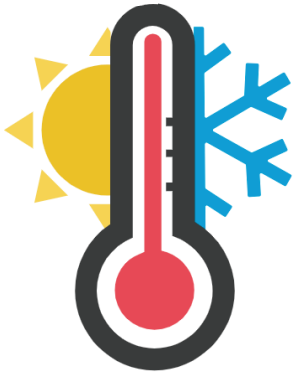
STATE OF THE FOREST ECONOMY



ANNUAL PRECIPITATION

in Vermont has increased by almost 7 inches

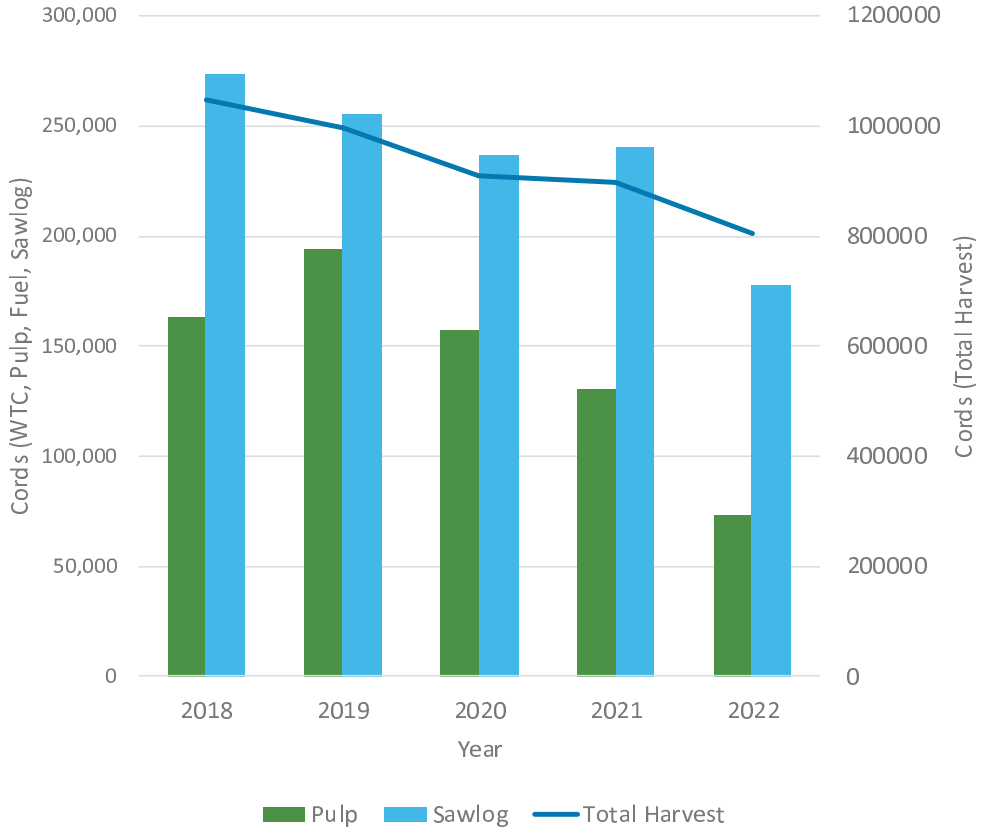
2°F



4°F

AIR TEMPERATURES

have increased



Data source: VT FPR, 2023. 2022 Annual Harvest Report

OUR WORK & LOOKING AHEAD