Vermont's Forests in the Present

Vermont Monitoring Cooperative 2007 Meeting
October 29, 2007 University of Vermont

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USDA Forest Service
Forest Inventory and Analysis
Northern Research Station

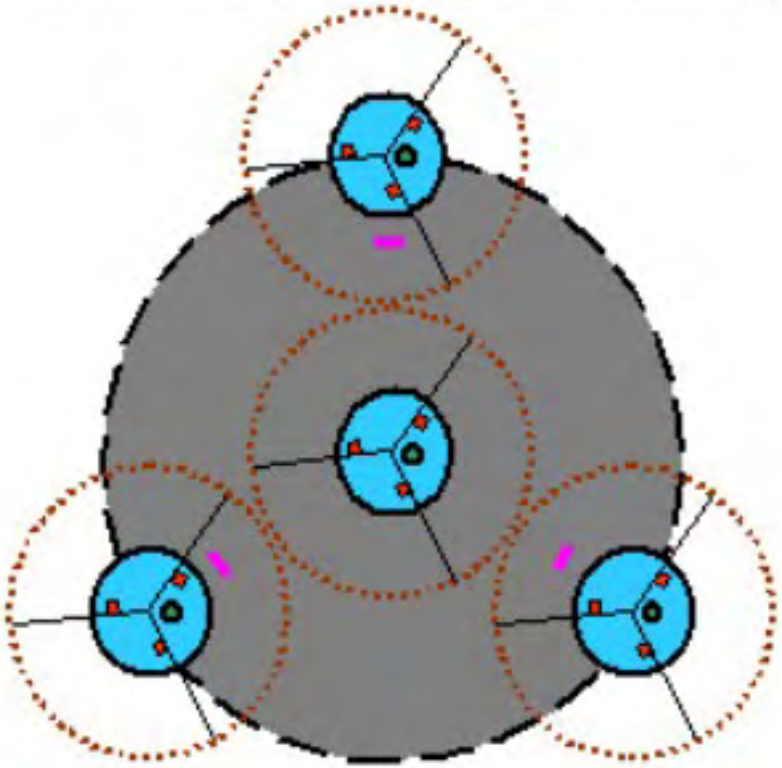
Outline

- (very) Brief FIA overview
- Historical FIA results
- FIA inventory results
- National Woodland Owner Survey Results
- National context
- FIA tools on the web
- NIMAC

Forest Inventory and Analysis: Three Phase Sample

- Phase 1 – Remote sensing for stratification into forest and nonforest.
- Phase 2 - Nationwide system of sample plots, 1 every 3 mi (6,000 ac).
- Phase 3 – 1 of 16 Phase 2 plots measured for extended suite of ecosystem data (96,000 ac).

Phase 2/Phase 3 Plot Design



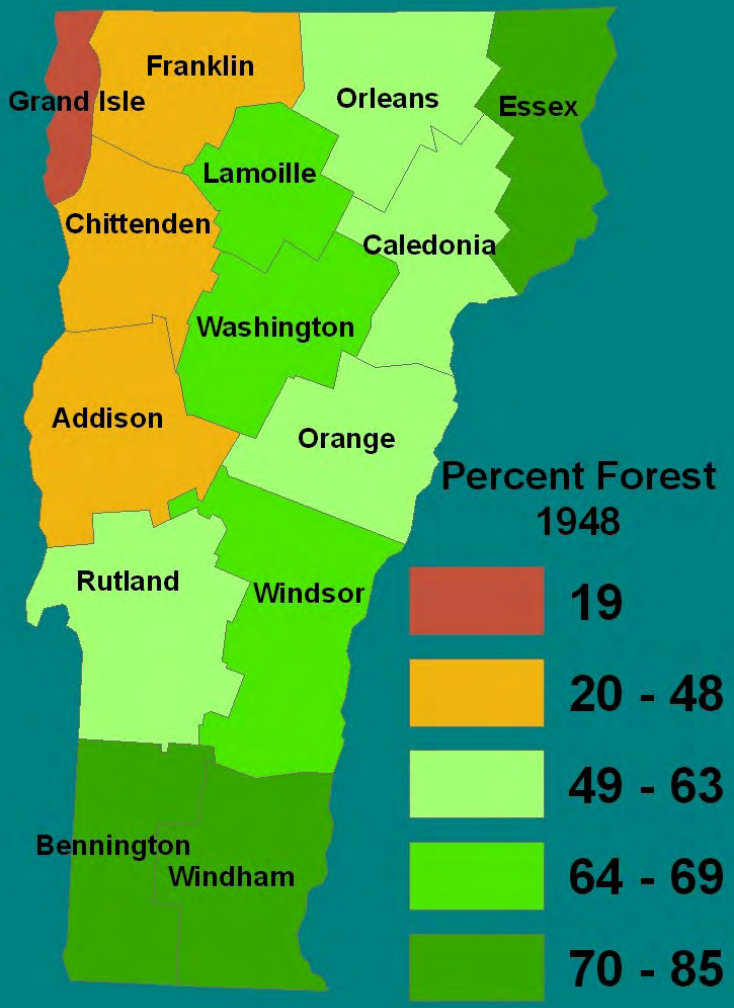
Subplot	24.0 ft (7.32 m)	radius
Microplot	6.8 ft (2.07 m)	radius
Annular plot	58.9 ft (17.95 m)	radius
Lichens plot	120.0 ft (36.60 m)	radius
Vegetation plot	1.0 m^2	area
Soil Sampling Area		
Down Woody Debris Transect	60.0 ft (18.30 m)	

Historical Summary: 1700 - 1940

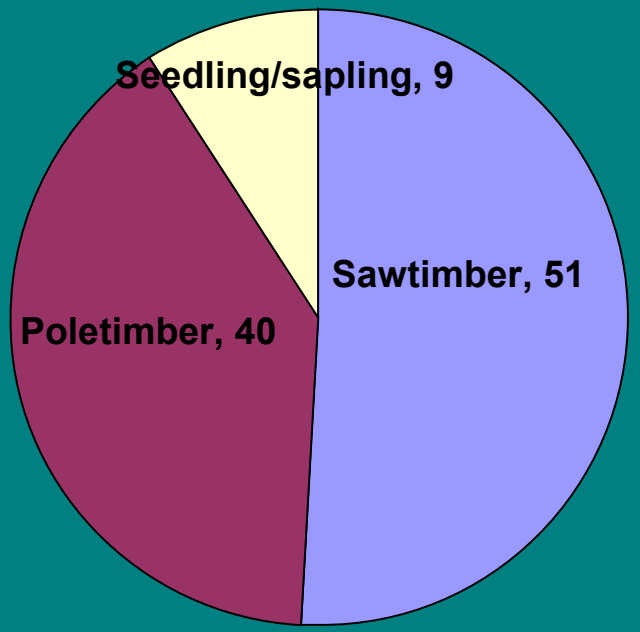
- 1763 – Large numbers of Europeans arrive
- 1791 – Vermont becomes first new state
- 1800 – Forests cleared for lumber, farmland, fuel, and potash
- 1880 – Forest cover reduced to about 37% of total land area
- 1890 – Lumber production reaches its peak
- 1920s – Lumber production fell below 100 million board-feet
- 1940 – 3.6 million acres were tapped for maple sugaring

Forest Conditions: 1948

By 1948 forests were beginning to dominate the landscape of Vermont (63%)



Distribution of Commercial Forest-Land by Stand-Size Class 1948



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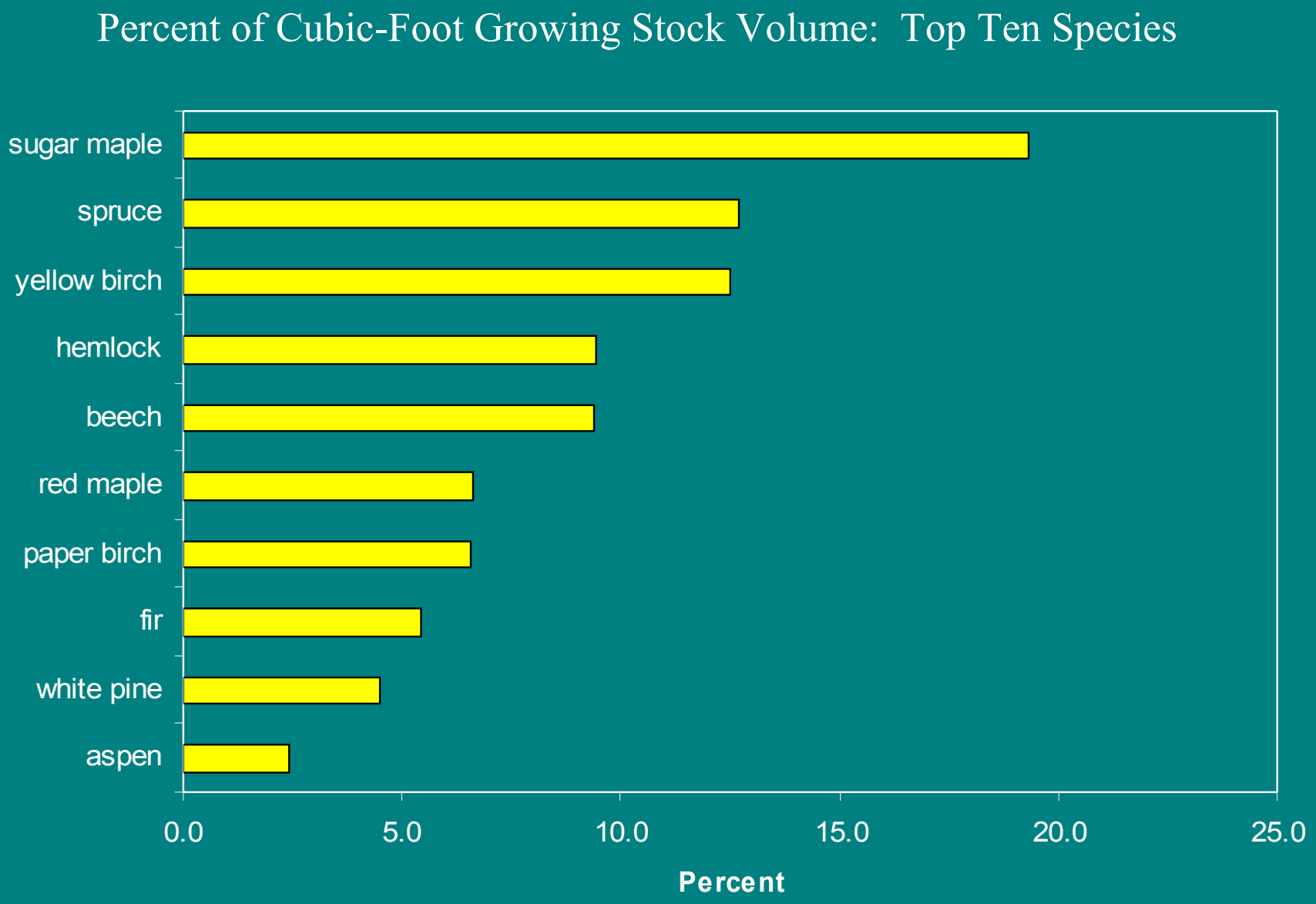
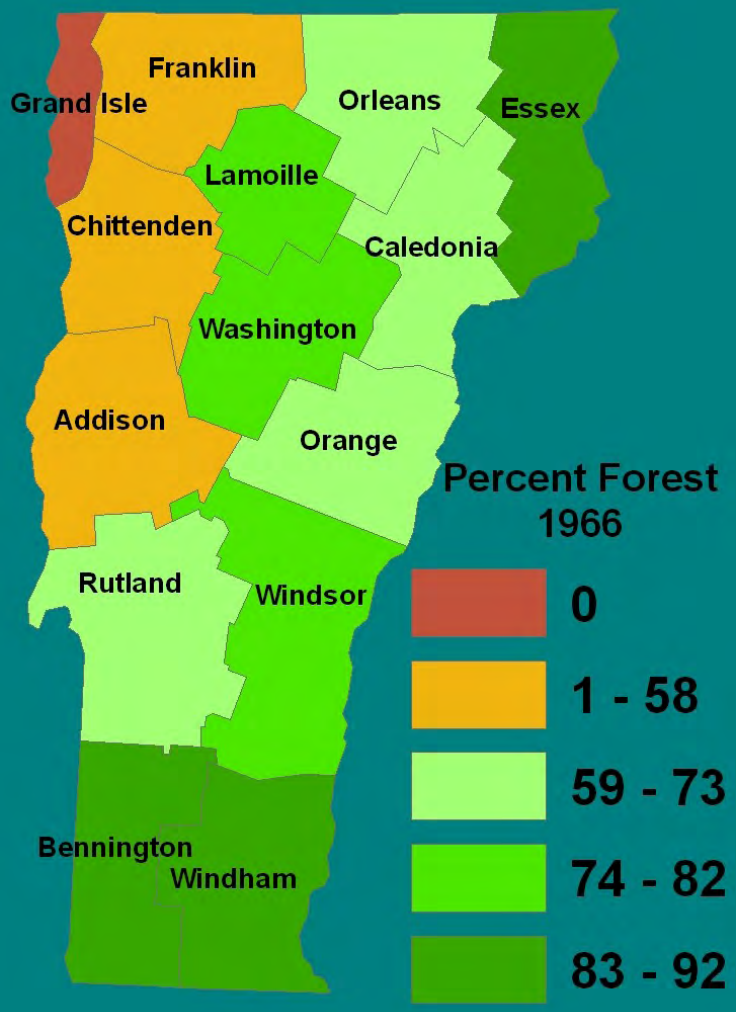


Forest Conditions: 1966

- Forest area for Vermont increases by nearly 10 percent (72%)
- Seedling/sapling forests were increasing in area



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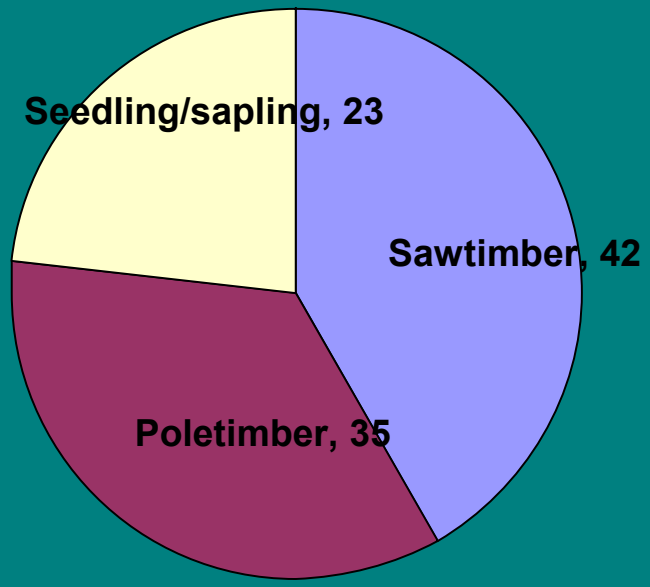
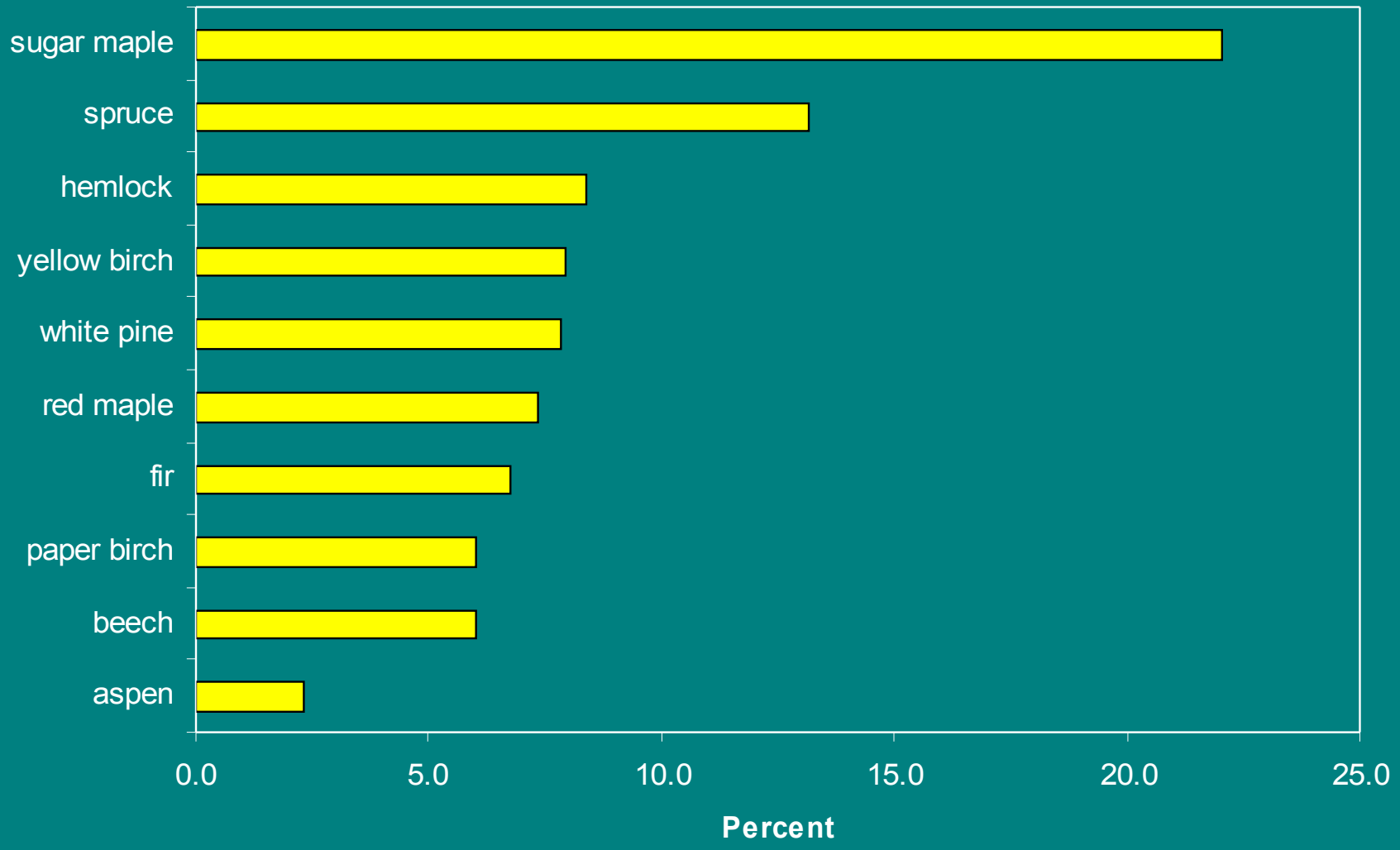


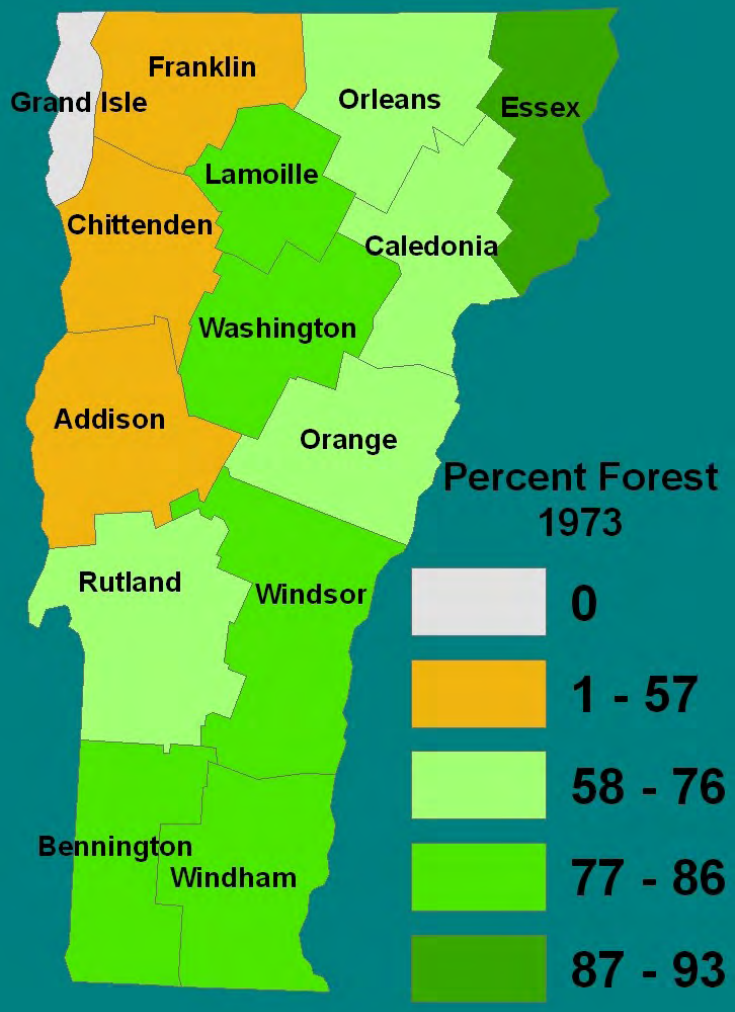
Forest Conditions: 1966

Percent of Cubic-Foot Growing Stock Volume: Top Ten Species



Forest Conditions: 1973

- Forest area for Vermont increases by 1 percent (75%)
- Seedling/sapling and poletimber forests were growing into the next size-class



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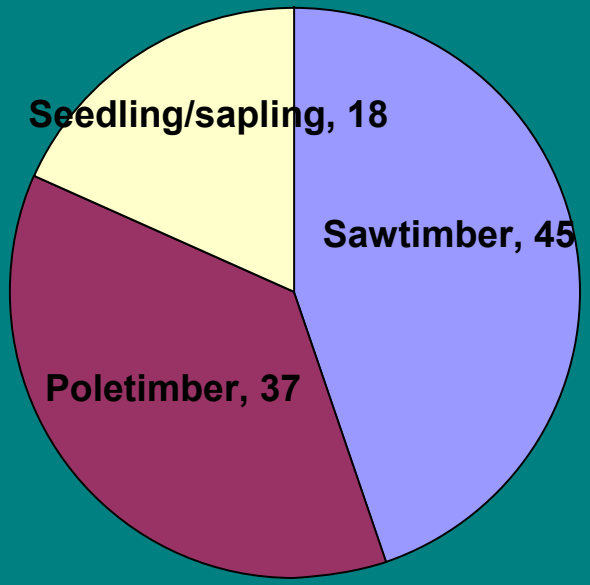

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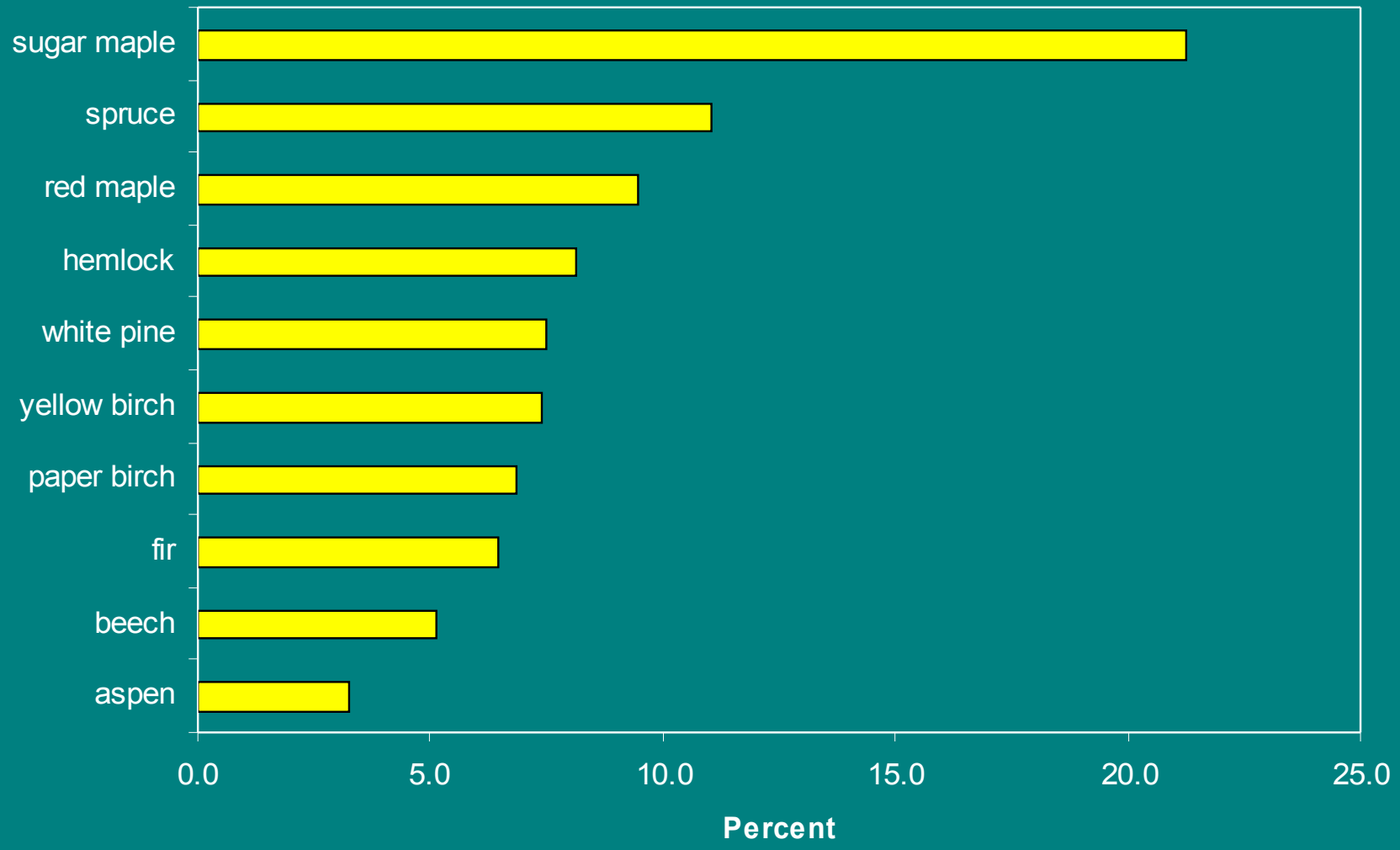
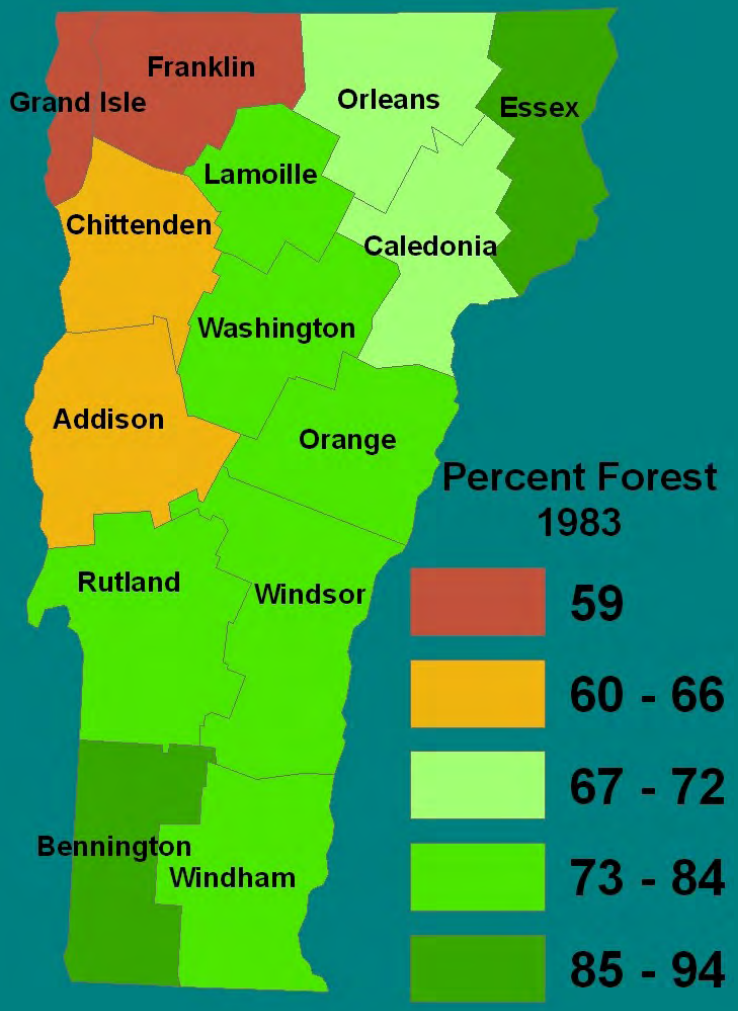


Forest Conditions: 1983

- Forest area for Vermont increases by 2 percent (77%)
- Forests con



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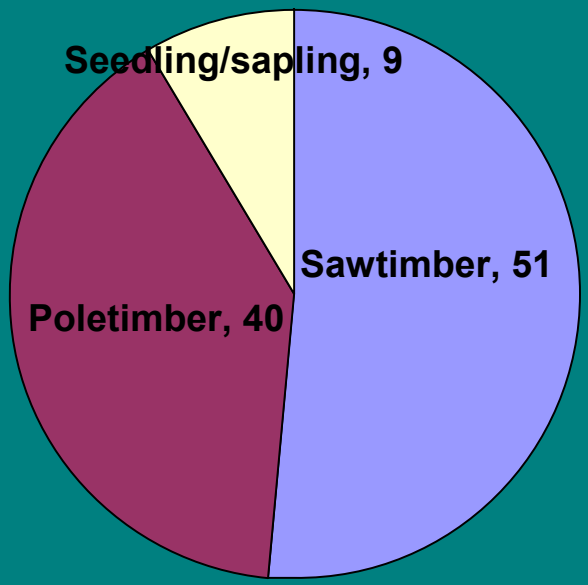

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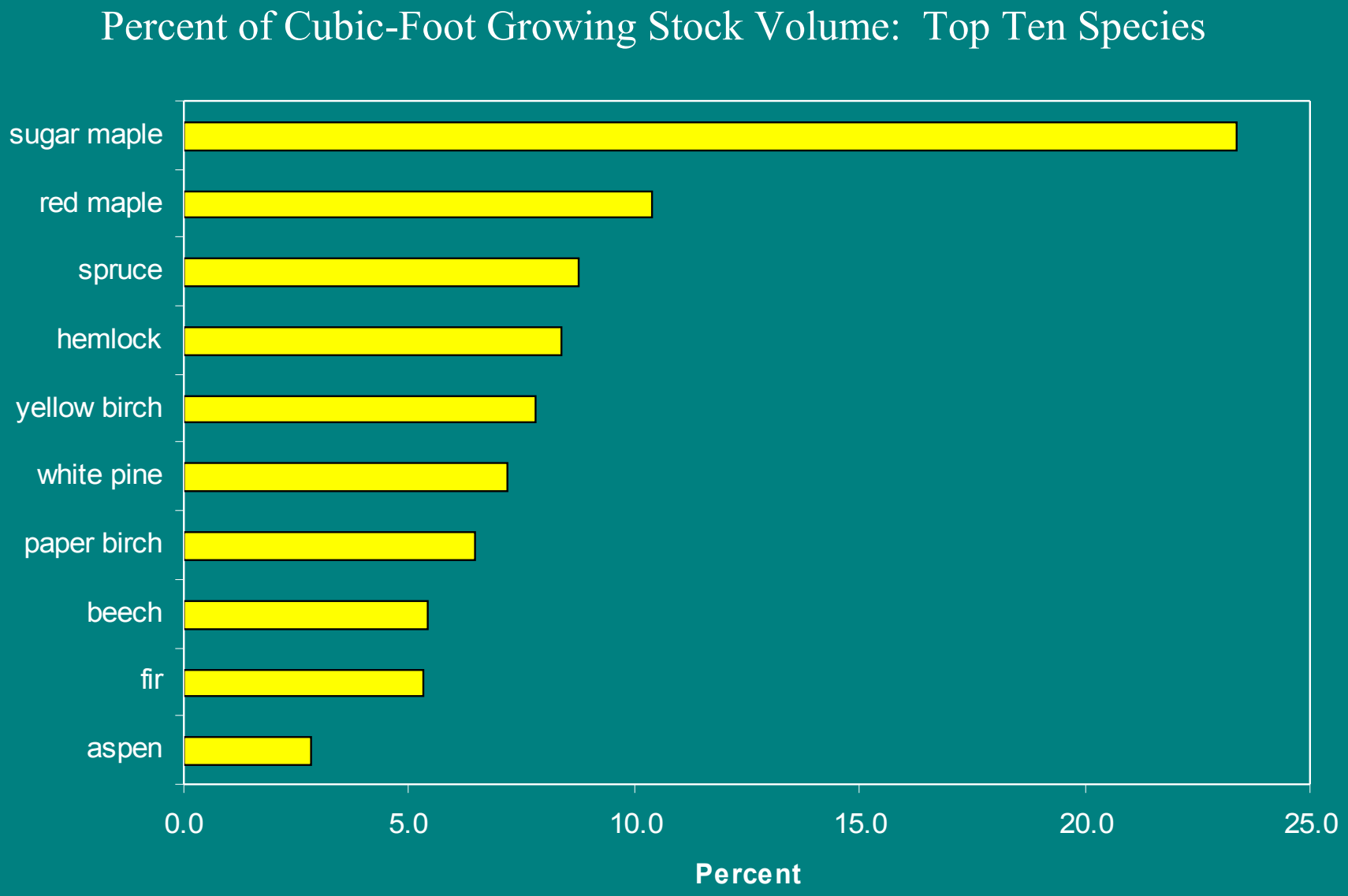
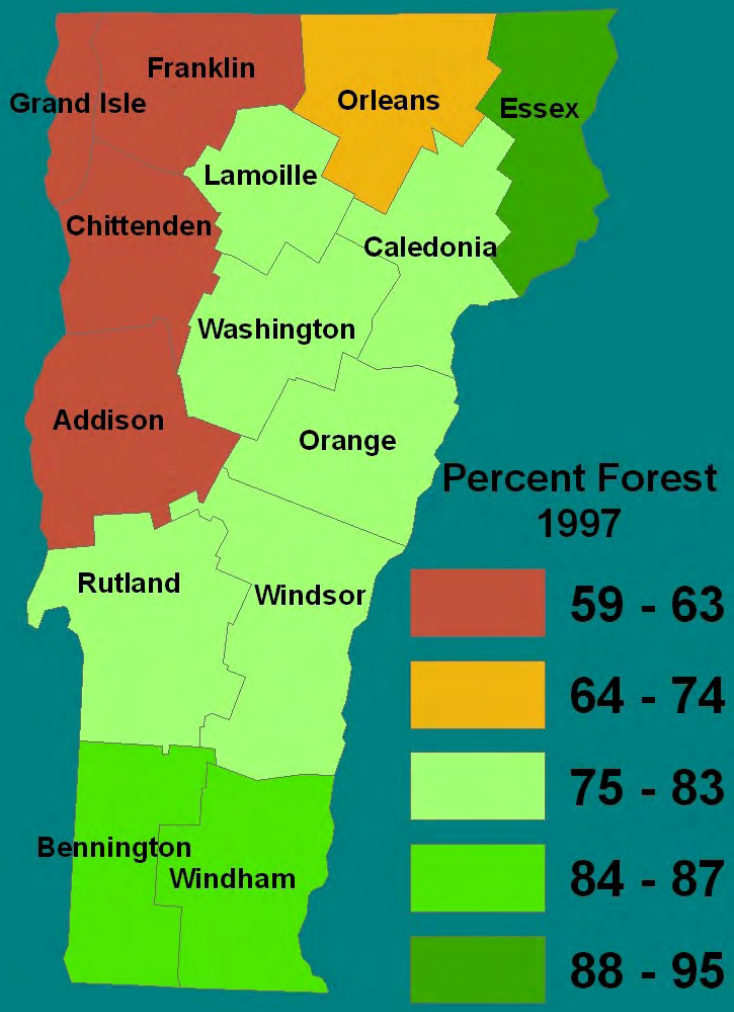


Forest Conditions: 1997

- Forest area for Vermont increases by 1 percent (78%)
- Poletimber forests were growing into the sawtimber size-class



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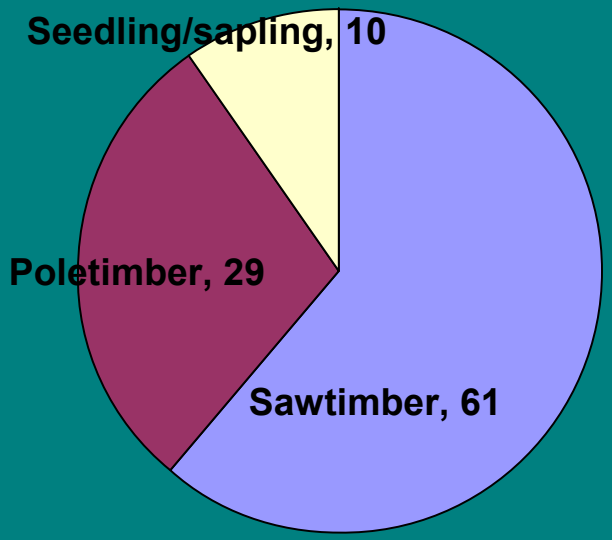

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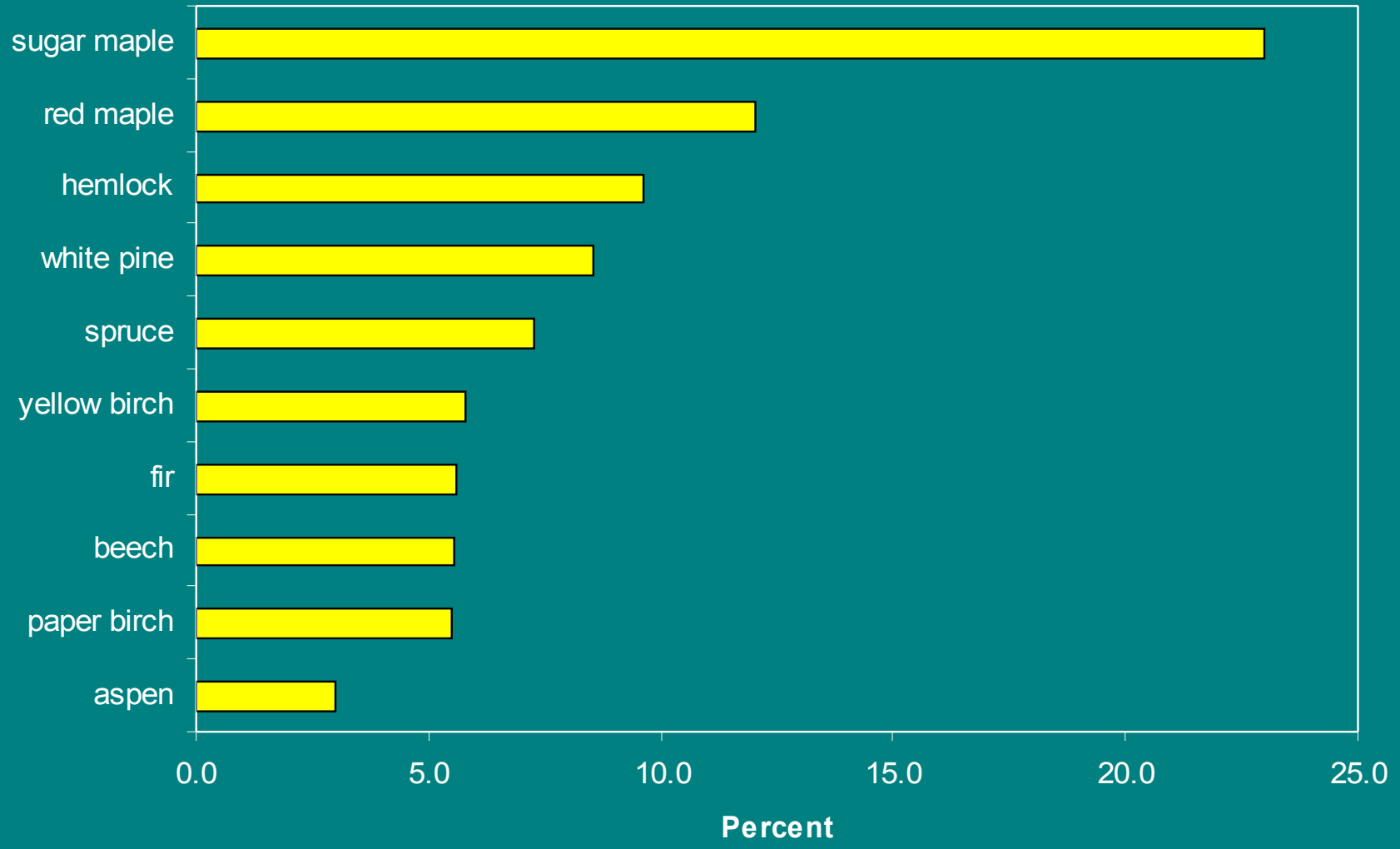
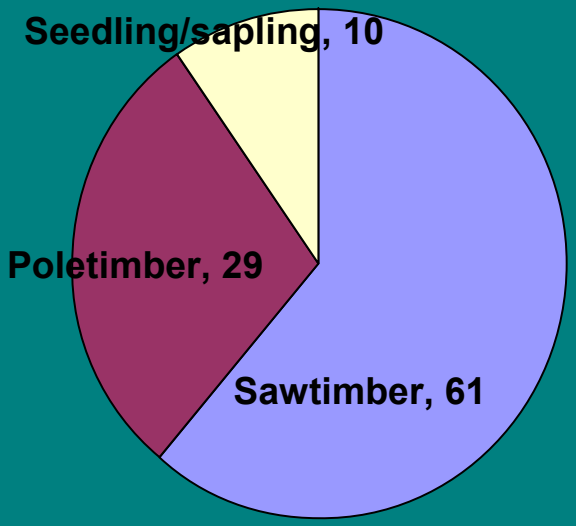


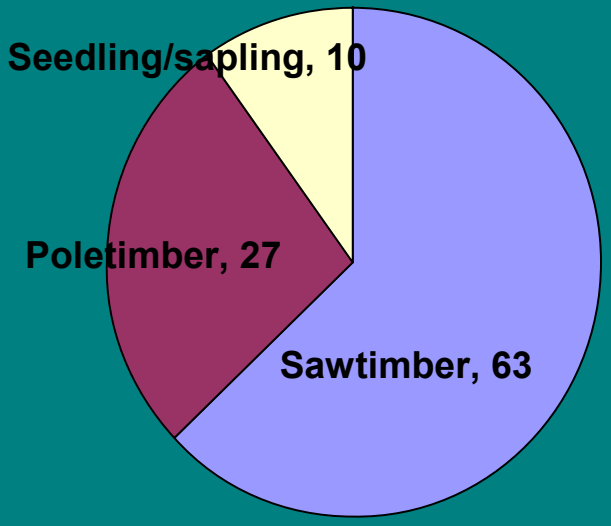
Forest Conditions: 2006

- Forest area for Vermont remains stable
- Vermont's forests continue to mature

Distribution of Commercial Forest-Land by Stand-Size Class 1997



Distribution of Commercial Forest-Land by Stand-Size Class 2006



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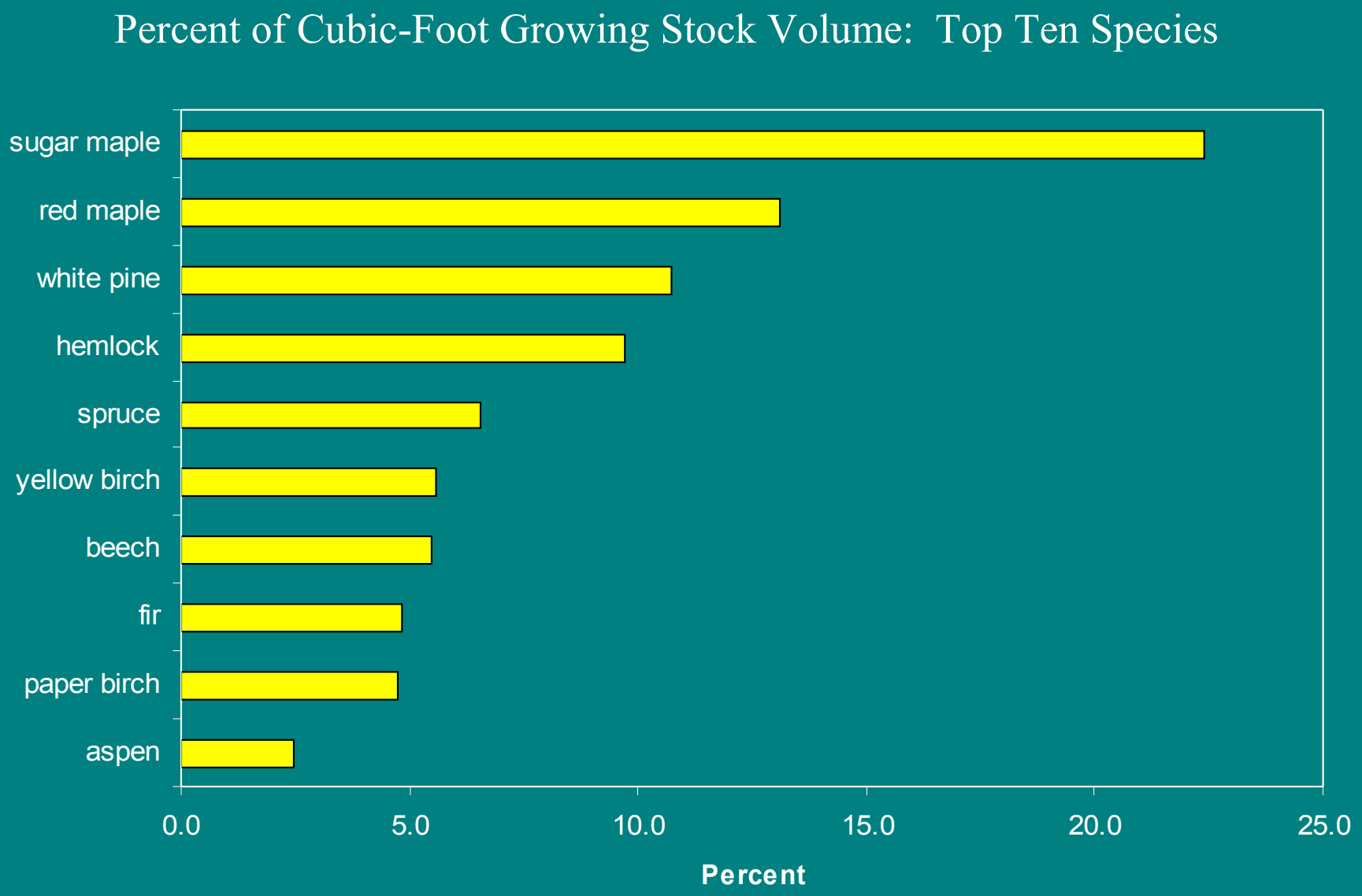
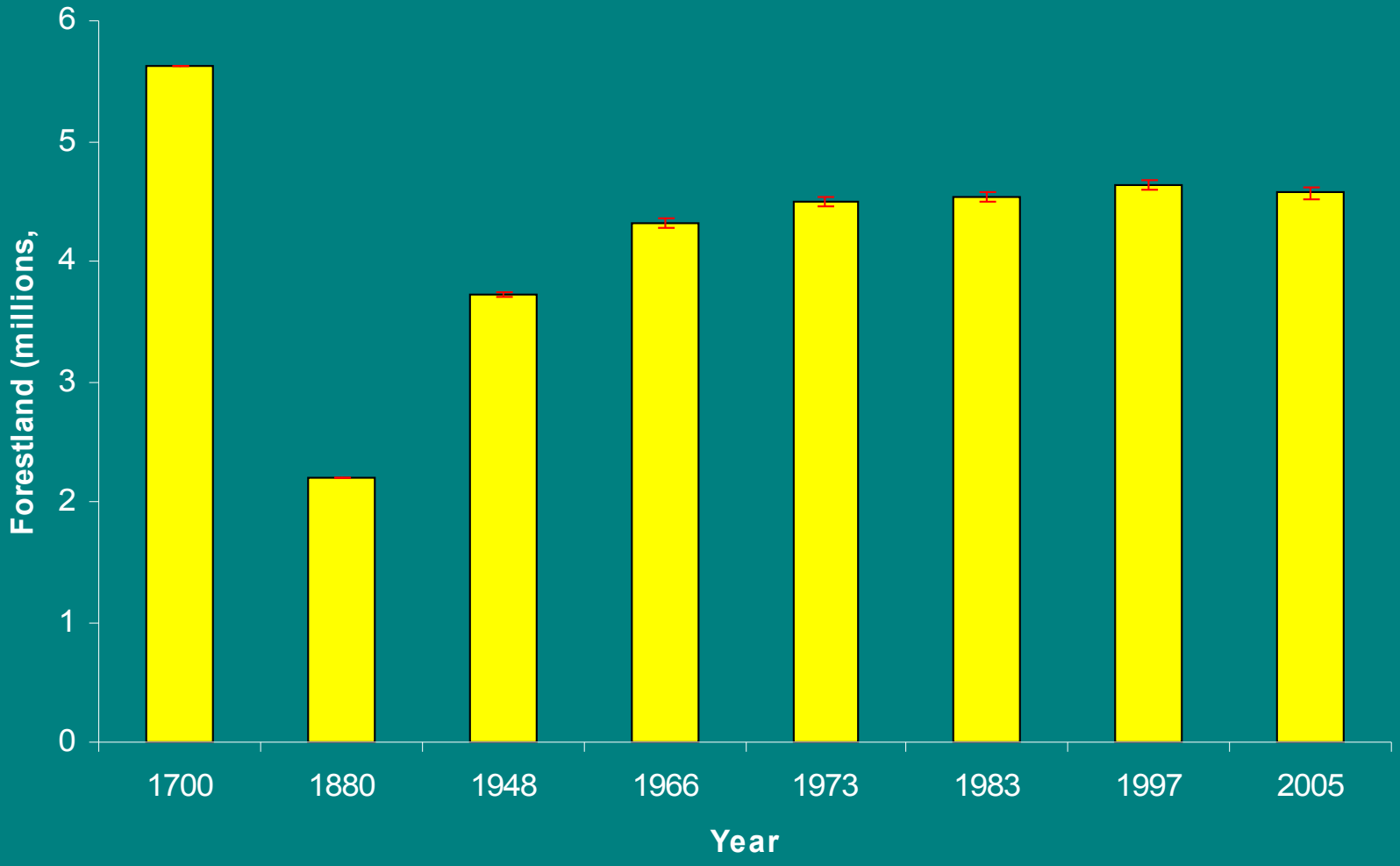


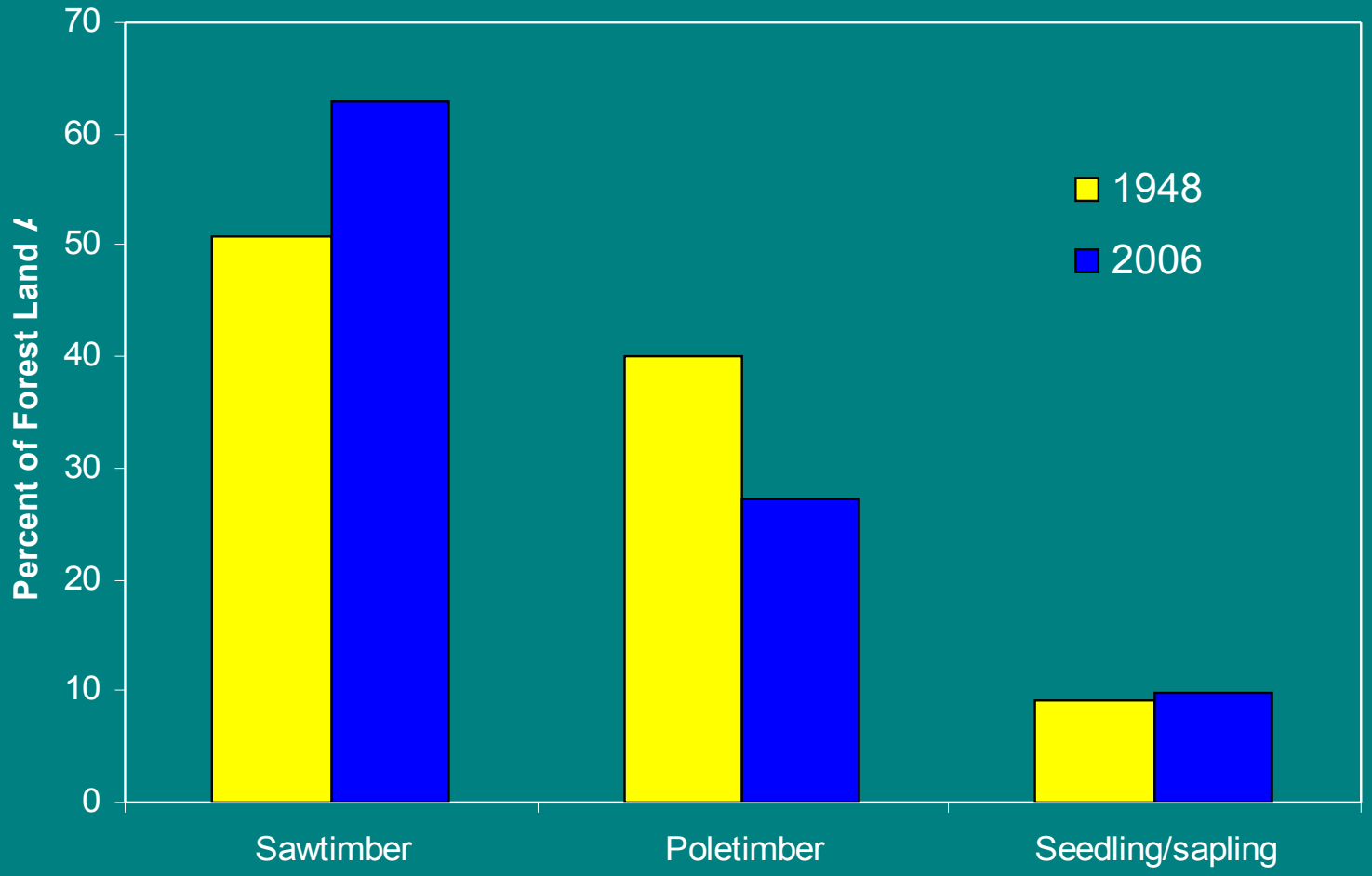
Mega-Trends: Land-Use Change

Forest land base is stable



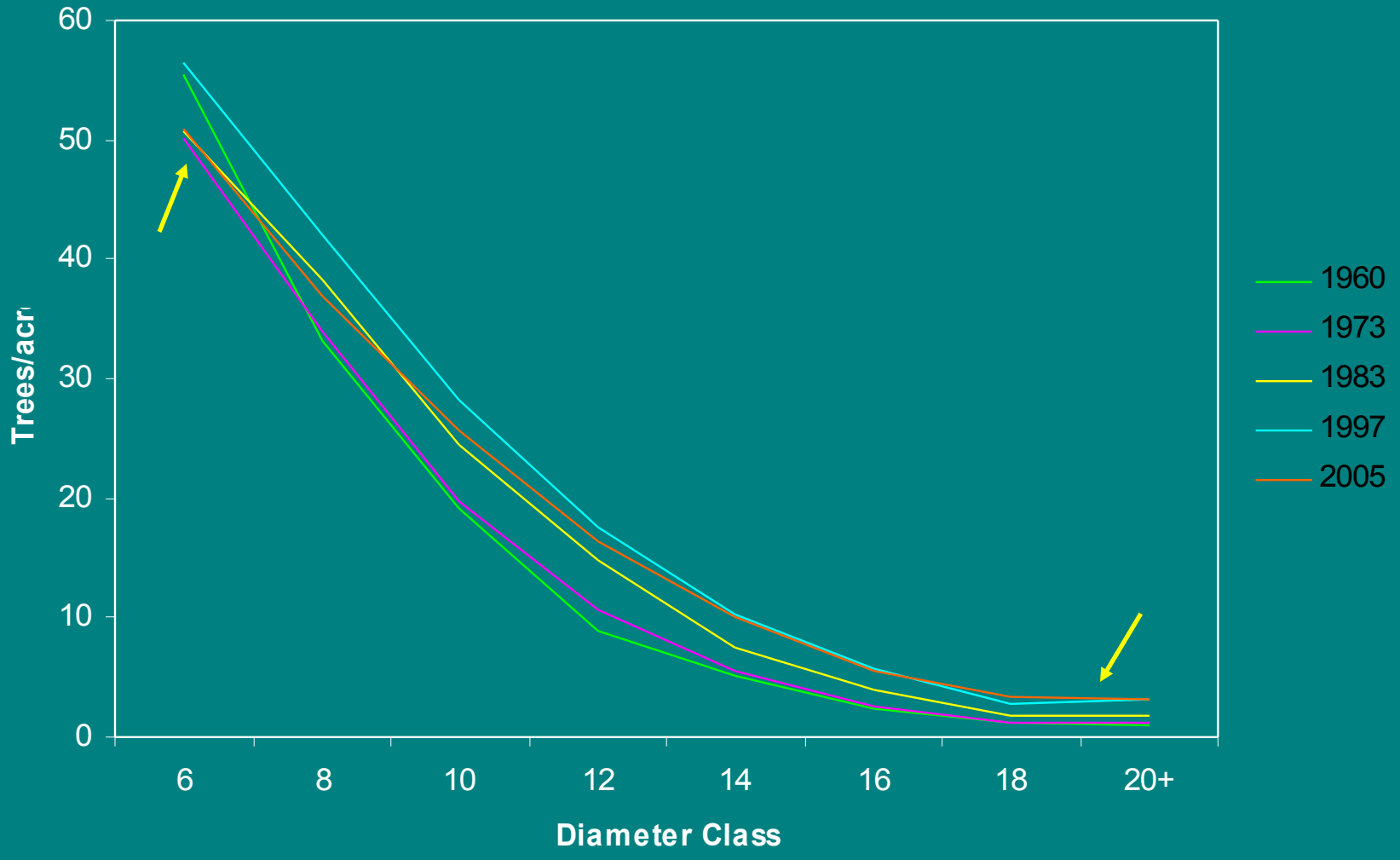
Mega-Trends: Structure

Distribution of Forest Land by Stand-Size Class



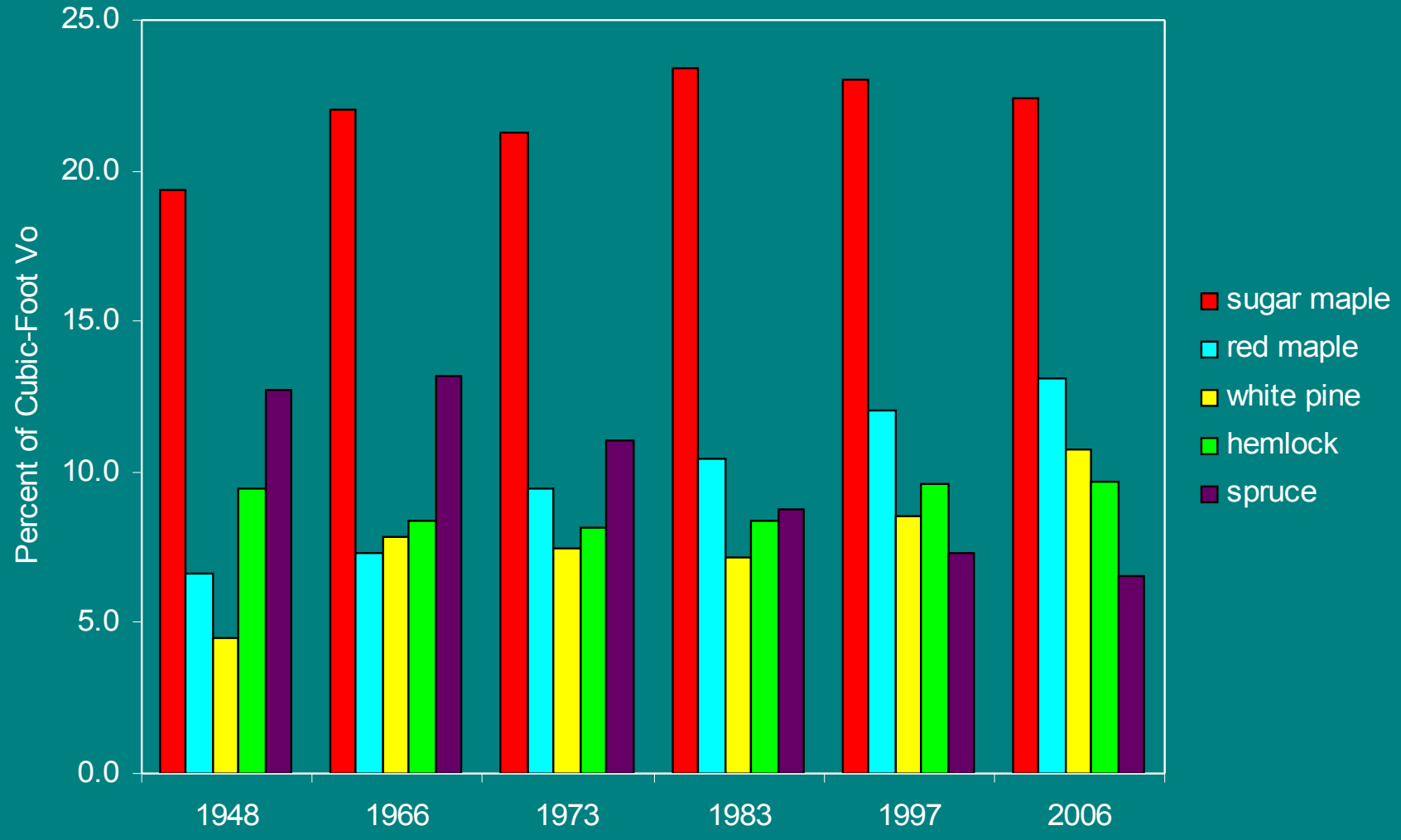
Mega-Trends: Structure

Number of Growing-Stock Trees Per Acre



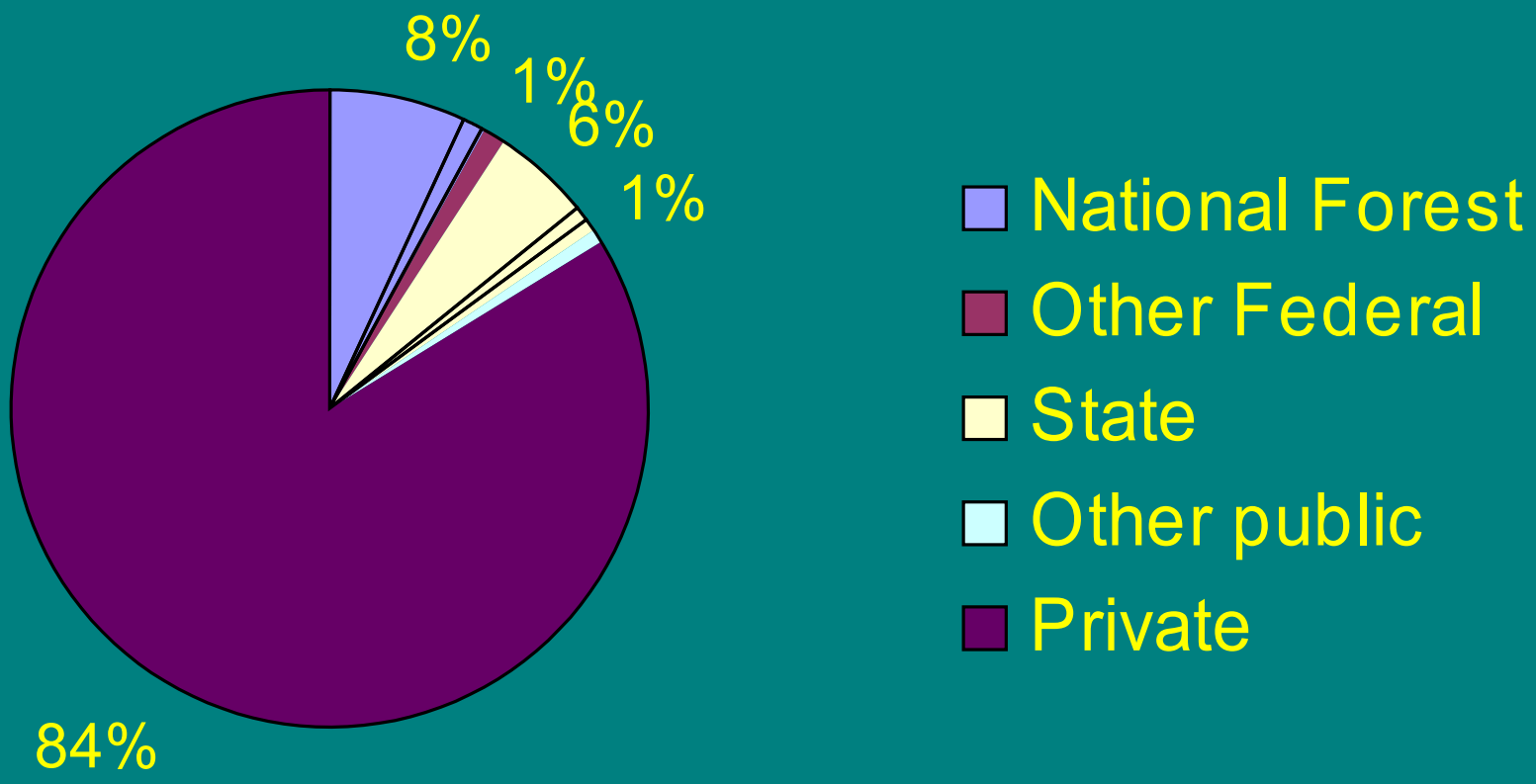
Mega-Trends: Species Composition

Composition has changed substantially



Area of Timberland by Ownership

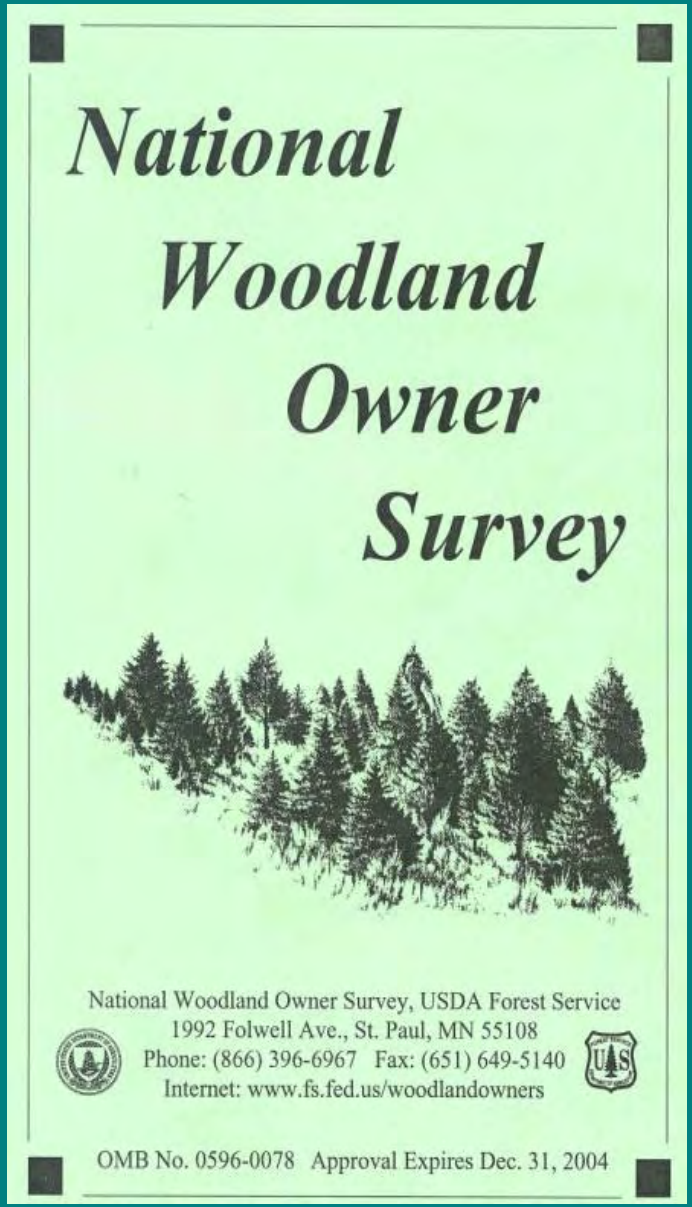
98% of forest land meets FIA definition of ‘timberland’



80% of private ownership by individuals

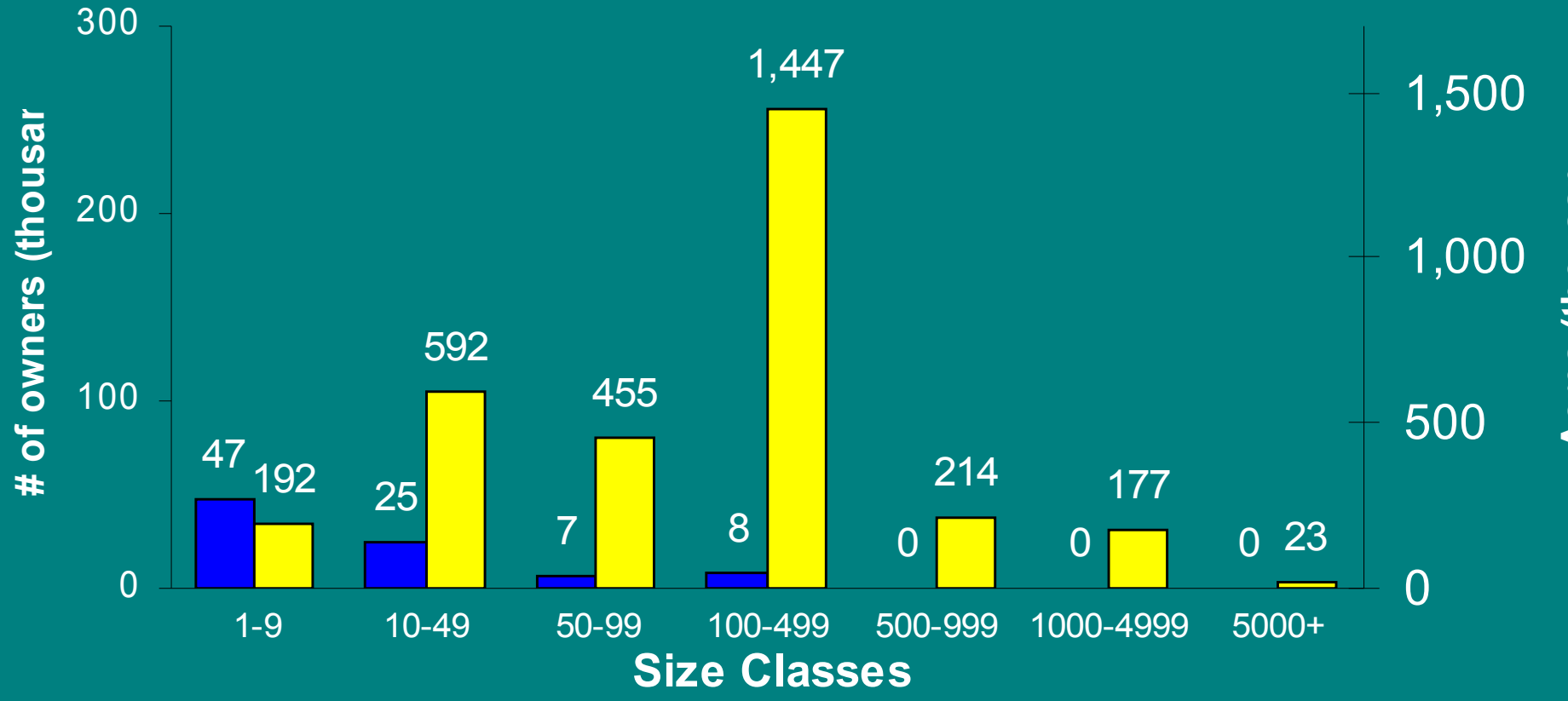
National Woodland Ownership Survey

- Woodland characteristics
- Ownership objectives
- Forest management and education
- Concerns and issues
- Future intentions
- Demographics



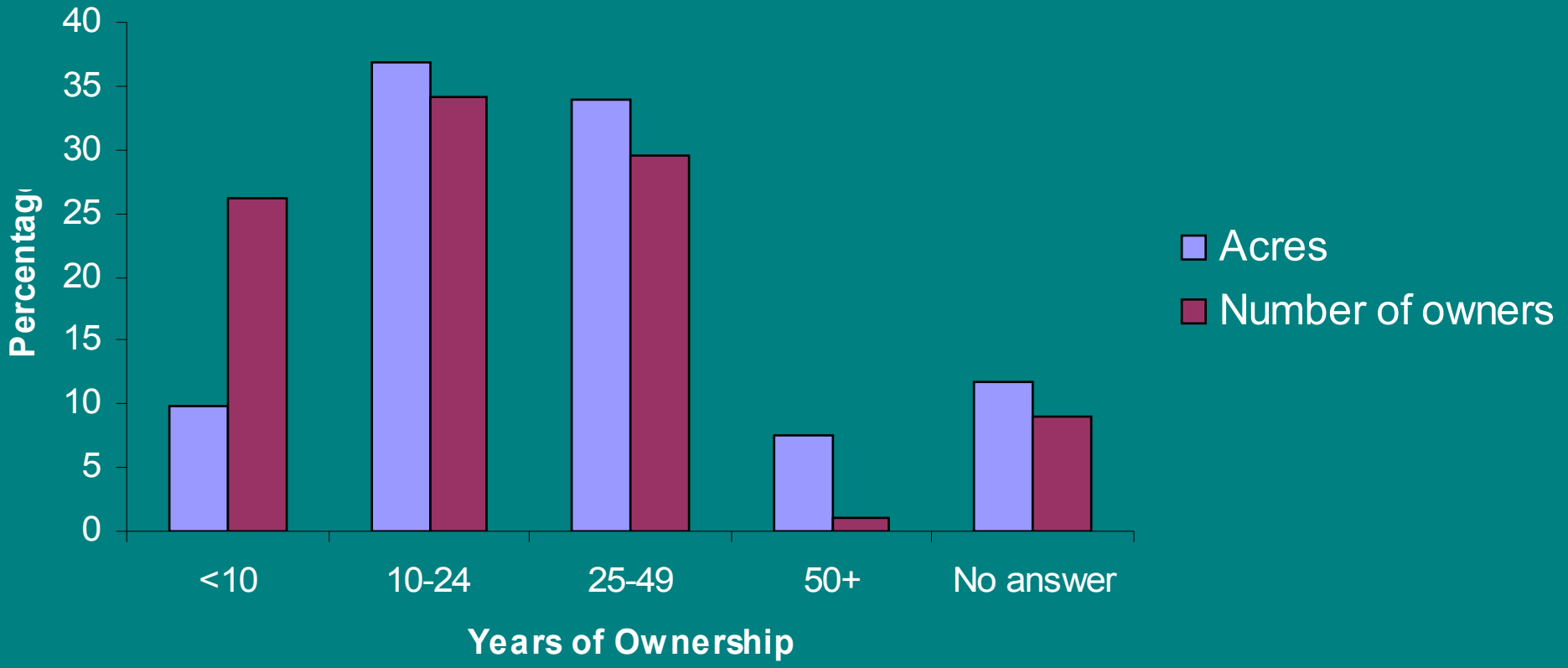
Number of Family Forest Owners

Vermont has about 88 thousand family forest owners



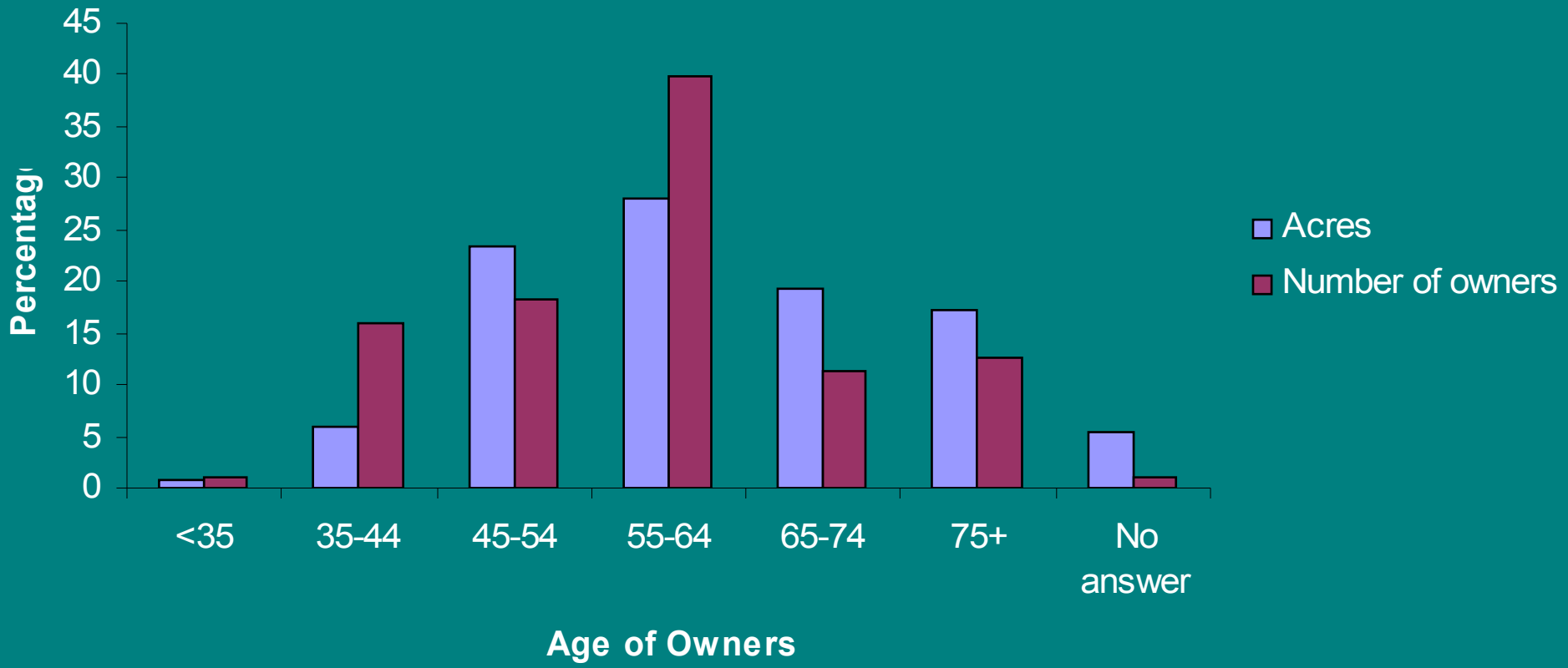
Tenure Family Forest Owners

75% of owners and 90% of acres longer than 10 years



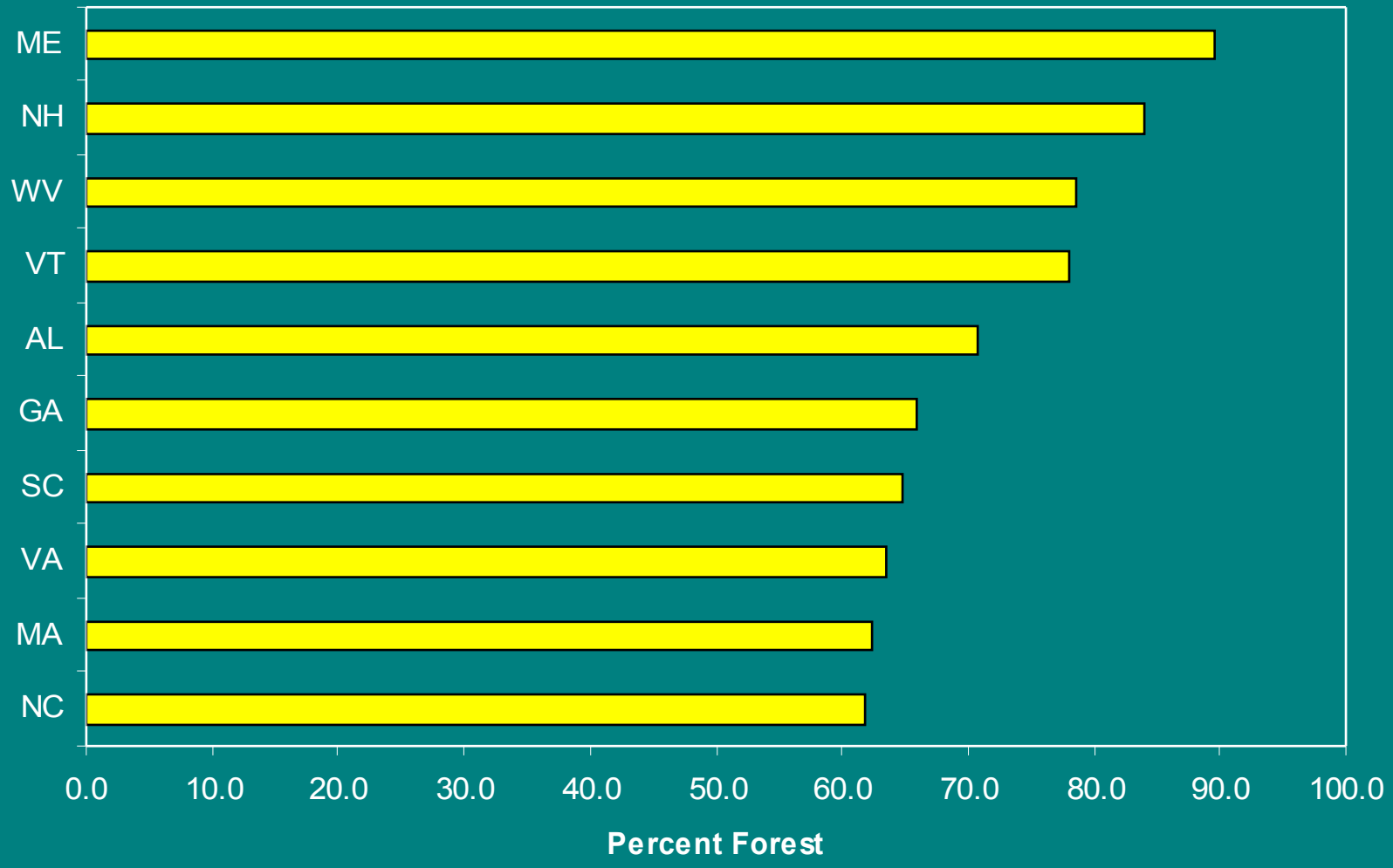
Age of Family Forest Owners

Very few young owners (nearly 65% of owners over 55)



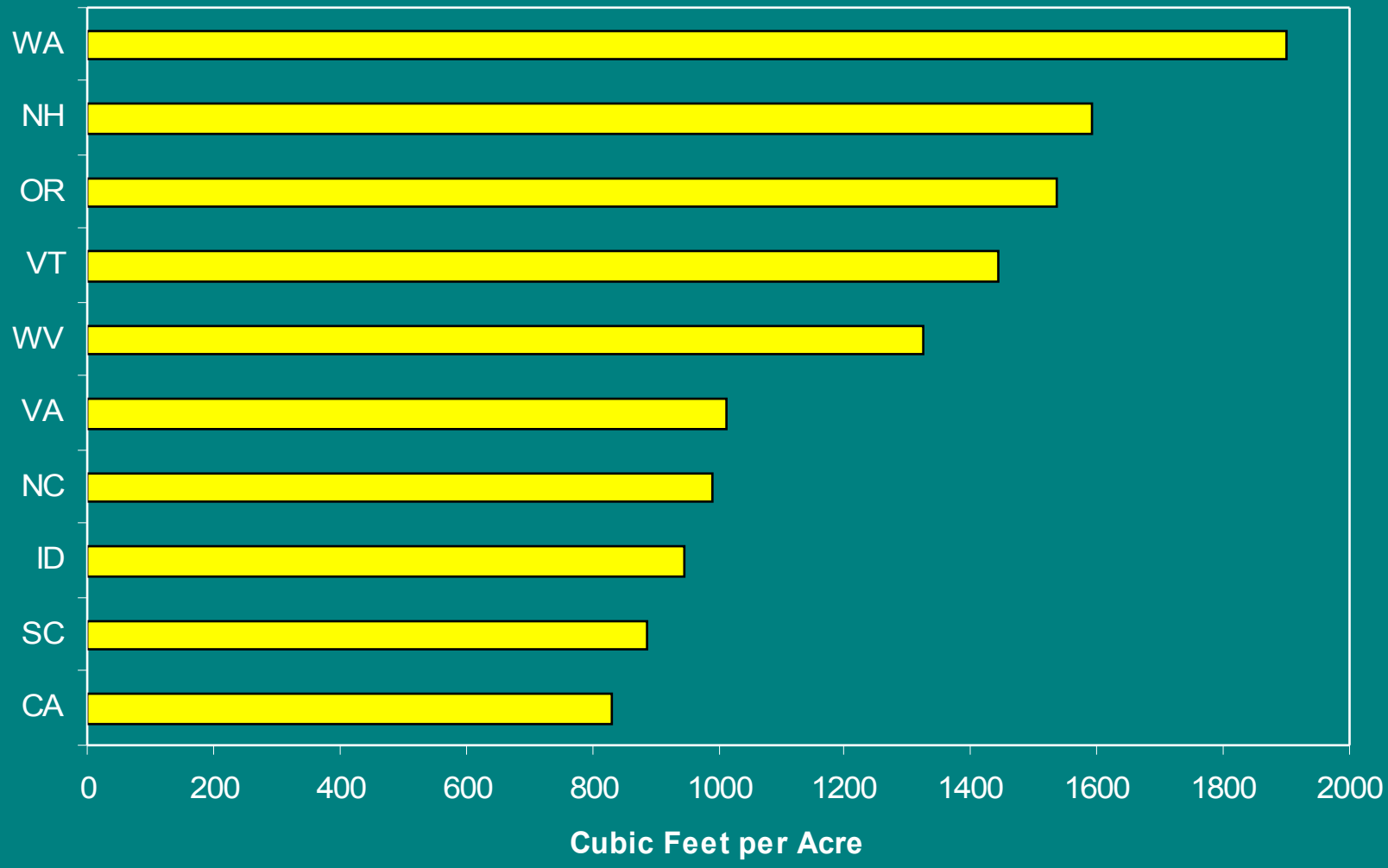
Vermont in a National Context

VT ranks #4 in forest land area (based on % of land area)



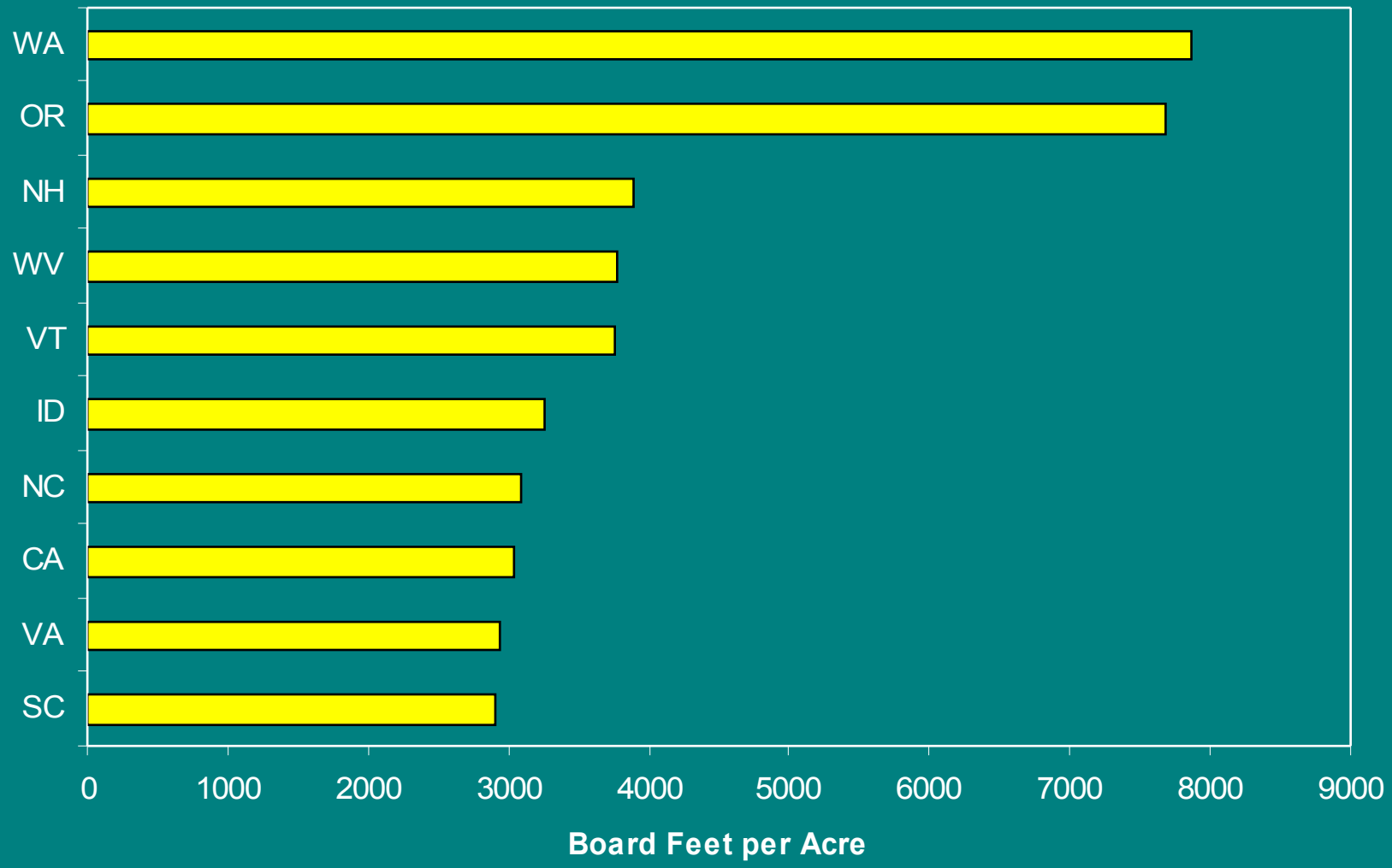
Vermont in a National Context

VT ranks #4 in growing stock volume per acre



Vermont in a National Context

VT ranks #5 in sawtimber volume per acre



FIA Tools on the Web

FIA MapMaker

Forest Inventory Data Online

http:\\www.fiatools.fs.fed.us

FIA Mapmaker

- Standard Tables
- Filters
- Custom Tables
- State or User-Defined Area

Mapmaker Weaknesses

- No sampling errors produced
- Output options are limited

Forest Inventory Data Online (FIDO)

- Provides estimates and sampling errors
- Several output options
- Replacement for Mapmaker
- Plans for inclusion of P3 variables
- Plans for continuous mapping

National Inventory and Monitoring Applications Center (NIMAC)

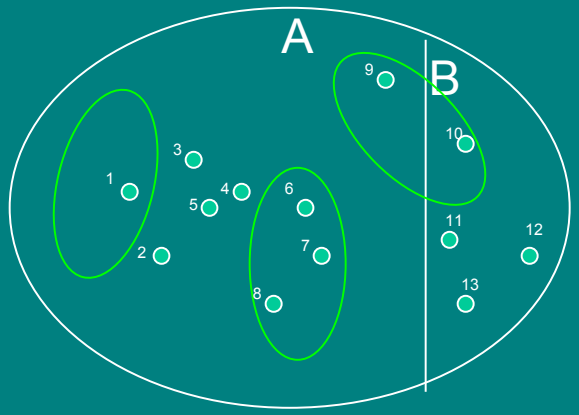
- "Arms of FIA"
  - Augmentation
  - Intensification
  - A la carte
  - NFS

Monitoring Toolkit

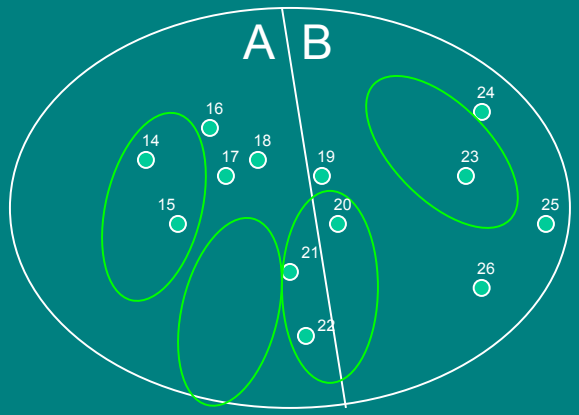
- Planning Tool – to identify monitoring needs, and to specify sampling design to balance cost and precision in order to address monitoring questions.
- Portable Data Recorder Tool – software on PDR to collect, validate, and transfer data.
- Database and Compilation Tool – to store and compute calculated fields
- Spatial / Tabular Analytical Tools – use standard methods or spatial means of specifying area for which to estimate tables and maps.

Spatial Intersection Tool

Forest 1

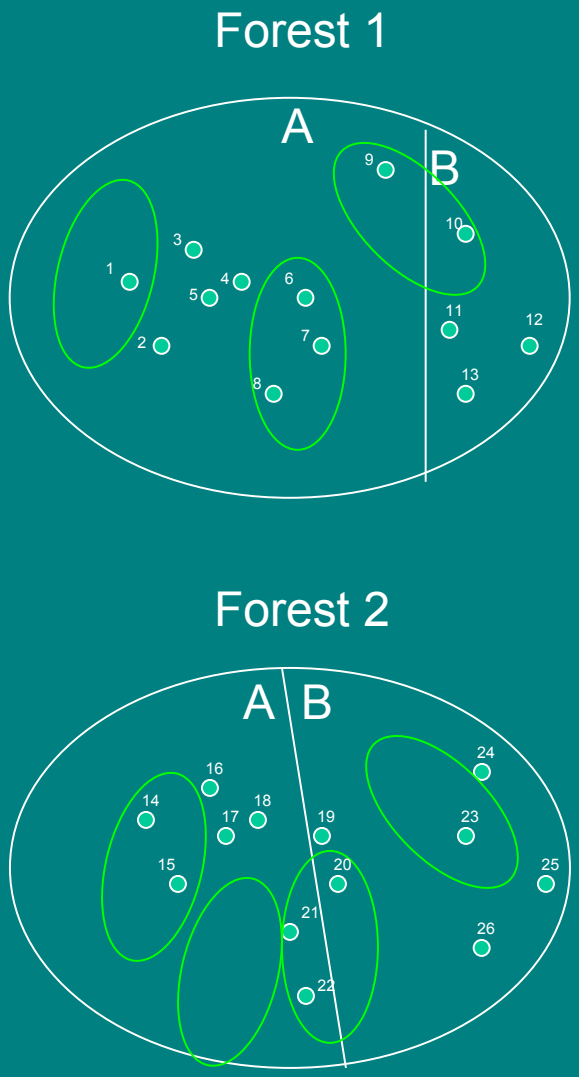


Forest 2



- 2 100 hectare forests (estimation units) with domains of interest (green circles
- 2 strata, which for simplicity have been drawn as polygons A and B
- Choose strata that group the plots such that there is lower within stratum variance

Spatial Intersection Tool



- GIS tool will return 2 things to FIDO
- List of plot ID's coded for estimation unit and domain
- Table of area by estimation unit by domain
- FIDO then generates estimates and sampling errors

QUESTIONS?

CONTACT INFORMATION
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