Stakeholders Meeting
August 2, 2011

- **Forest Inventory Update/**

  John Pemberton, Forest Inventory Coordinator

- **Program Background**

- **Update on Virginia's Forest Resource (Virginia 2010 overview)**

- **Resource "Availability"**

Forest Inventory
A.K.A. "Forest Survey" & "FIA"

- Federal Program to Assess and Monitor the condition of the Nation's Forests.
- Created by Mc Sweeney-McNary Act of 1928
- First Inventory of Virginia's Forests in 1940
- In 1997, VDOF entered into Co-op Agreement with US Forest Service to conduct Forest Inventory field data collection in the Commonwealth

Forest Inventory Cooperative Agreement

D.O.F. Provides:

- Forest Inventory Crew Staffing, Coordinator, Fleet & Equipment
- Field data collection
- Analytical Assistance

US Forest Service Provides:

- Grant (75%/25% match)
- Quality Assurance
- Data Processing and Analysis
- Publication of Results

Inventory Plot Characteristics

- Randomly Located – 1 plot per 6,000 acres; approx. 4,600 plots total

- Occur on All Ownership Types – Private, National Forest, State Lands, DoD, etc.

- Occur in All Forest Types & Conditions - pine plantations, mature hardwood, young cutovers, etc.

- Discreetly Marked to Discourage "Special Treatment"

- In addition to Forest and Tree characteristics, invasive plant distribution and abundance as well as down woody biomass recorded.

9th Forest Inventory - Field Work in Progress

- 9th Survey Field work began March, 2007
- Crews to measure 20% of the total # of plots annually – 5 year cycle
- 6 DOF crews in state
- Crew Structure - One permanent Crew Leader & one hourly employee

Forest Inventory "Products"

- Web-based database query applications for users "FIDO" & "Evalidator"
- Spatial Data Services
- Comprehensive 5 year report e.g., *Virginia's Forests, 2007*
- Annual Fact Sheets

Users:

- Traditional Forest Industry
- Biomass Processors
- State & Local Government (Comprehensive Plans)
- NGO Assessments e.g. Carbon Sequestration
- VDOF for Resource Analysis

Some FIA Terminology

- "Forestland" – at least 1 acre in size, at least 120' width and 10% stocked
- "Reserved" – NPS, FWS, NFS Wilderness Areas , state parks
- Other "unproductive" forestland <20 cu.ft./ac/yr.
- "Comm. Timberland" – NIPF, F.I., other public, National Forest
- "Net Growth" = Annual Gross Growth - Mortality
- "Removals" = Annual Volume taken in Harvesting and Land Clearing
- "Growth/ Removals Ratio" = "GRM"

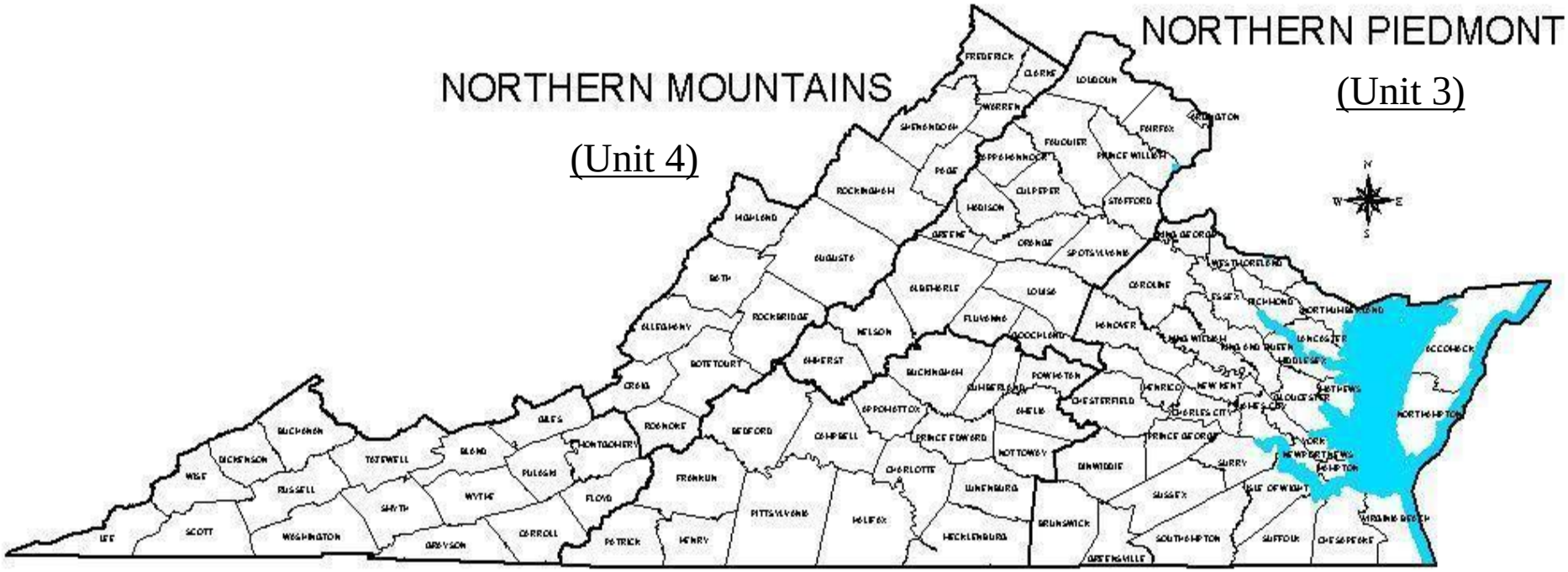
  (Often Expressed as Ratio "1.2:1" or "1.2")

Accuracy

- % Sampling Error Targets
- Area: +/- 3 % per million acres of timberland
- Volume (total volume, net growth, removals): +/- 5% per billion cubic feet on timberland

- Forest Inventory – good as large scale, strategic survey, but poor for small areas and rare events
- For the 16 million acres of forestland in VA, %Sampling Error = 0.7%
- For the 150,000 acres of forestland in Amelia, % Sampling Error = 19%

FOREST INVENTORY UNITS IN VIRGINIA



Update on Virginia's Forest Resources, 2010

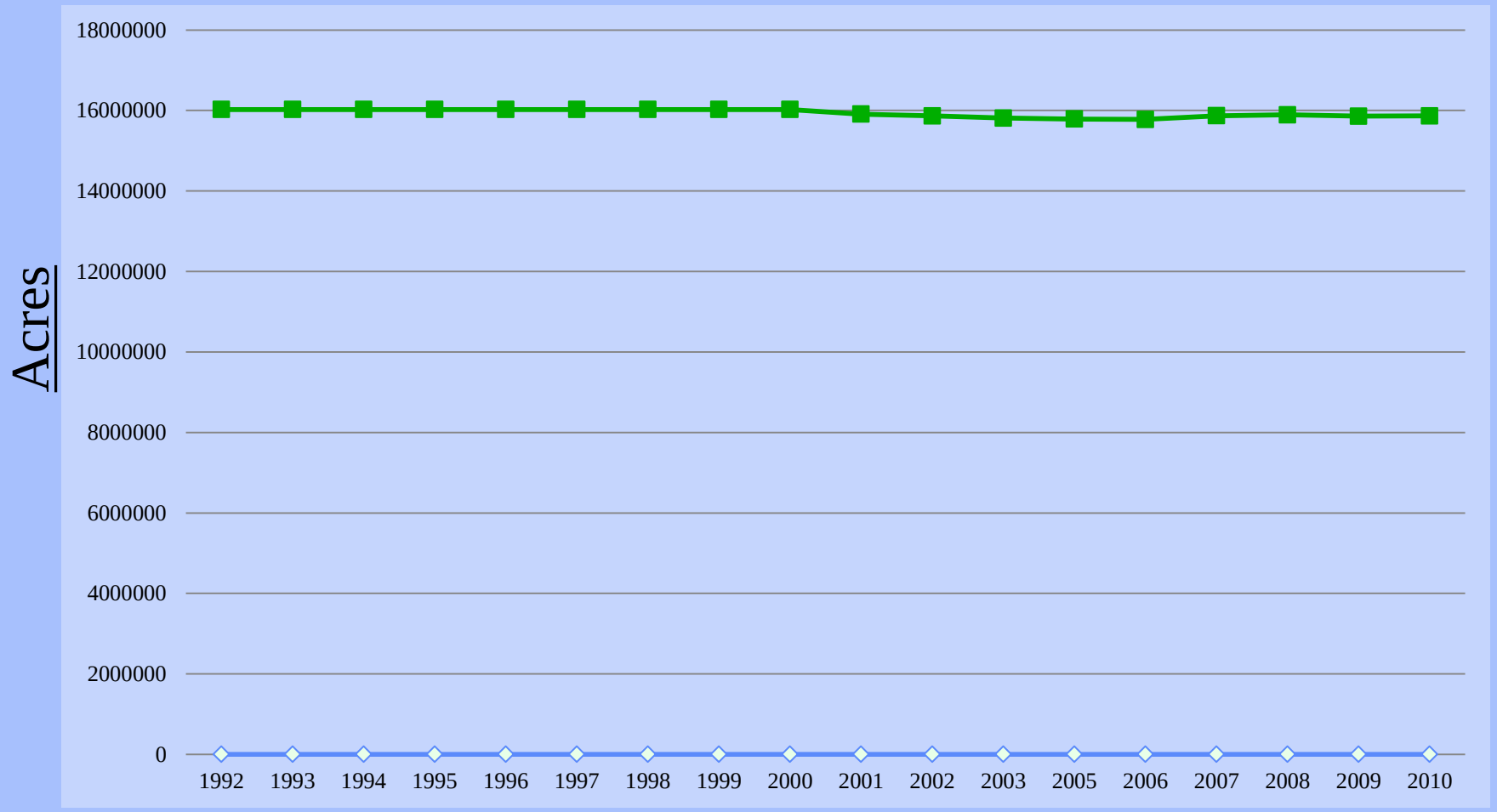
Virginia Forest Cover

62 % Forest

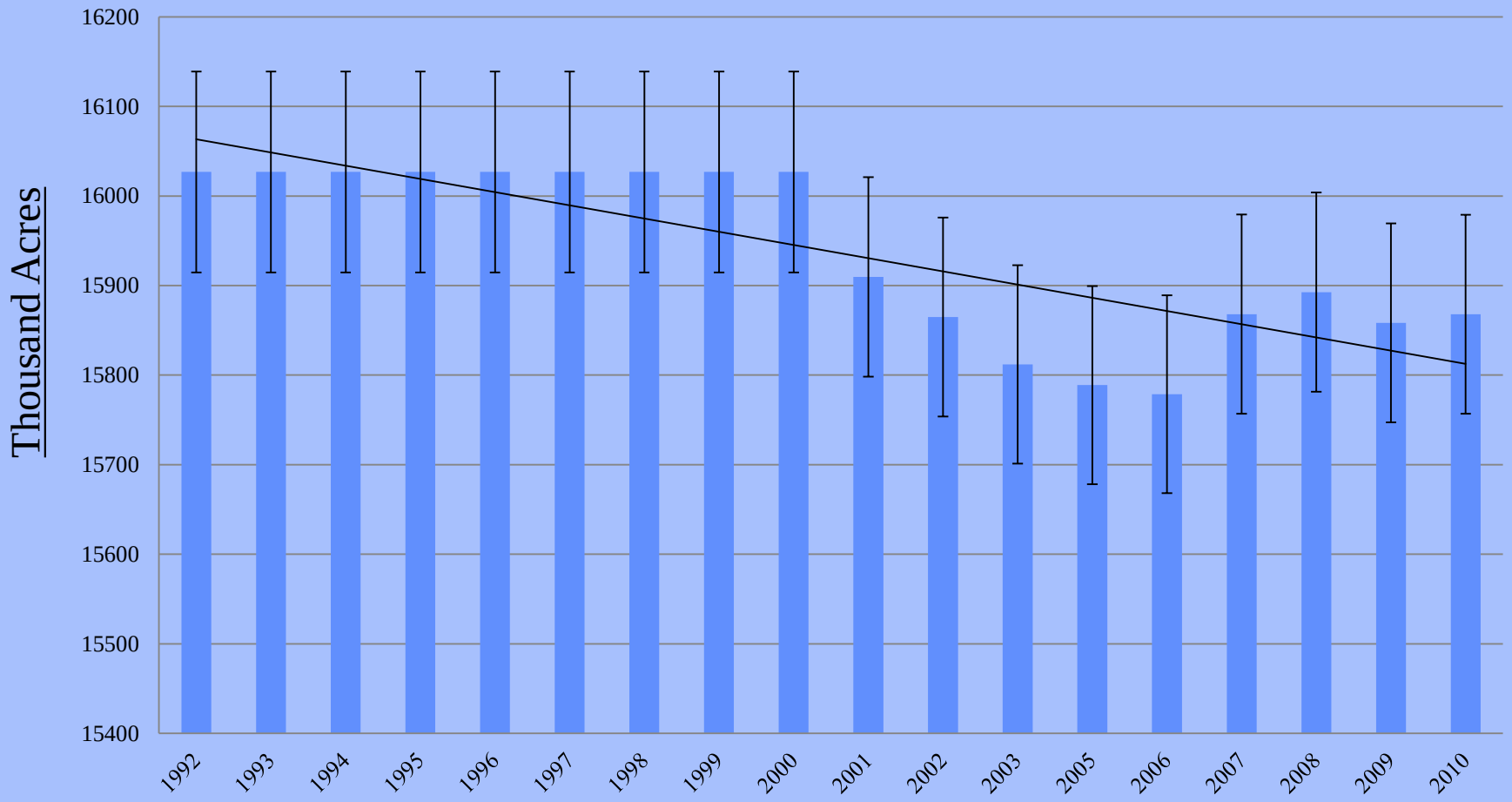
Over 15.8 million acres

From year 2000 Landsat satellite imagery, classified by the Virginia Department of Forestry

Trend in Virginia Forestland

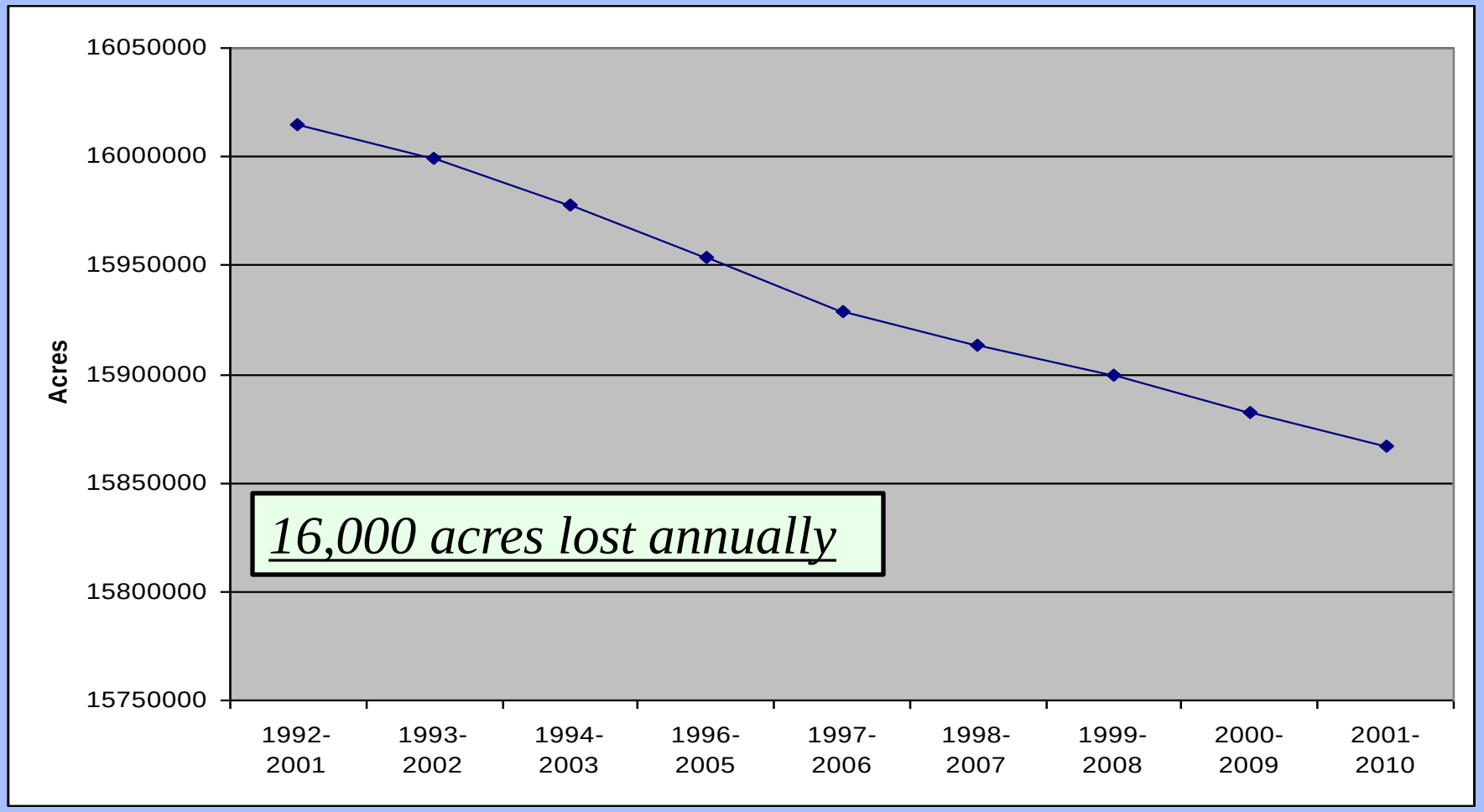


Trend in Virginia Forestland



Forestland in VA

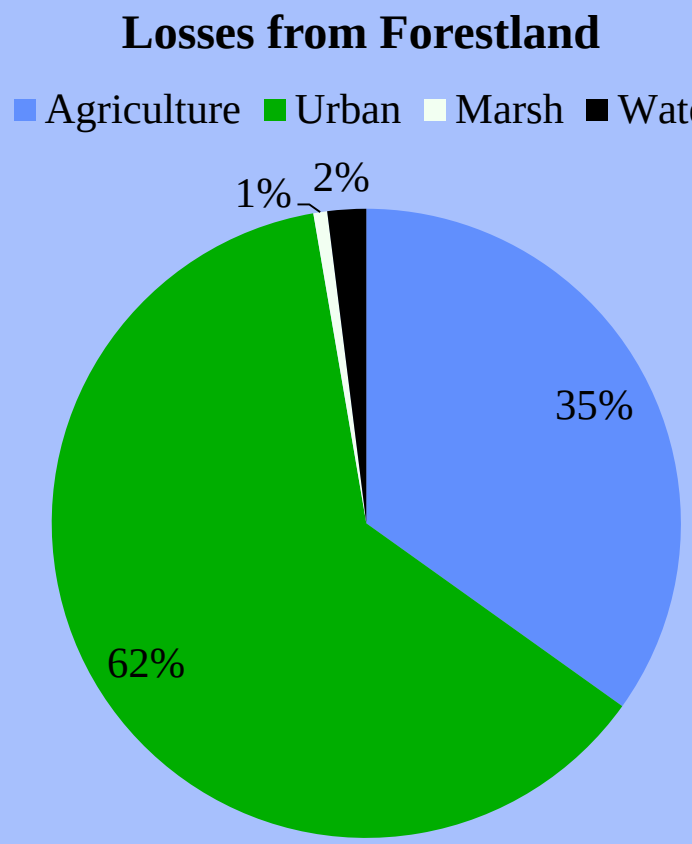
1992 - 2010 (10 year average)

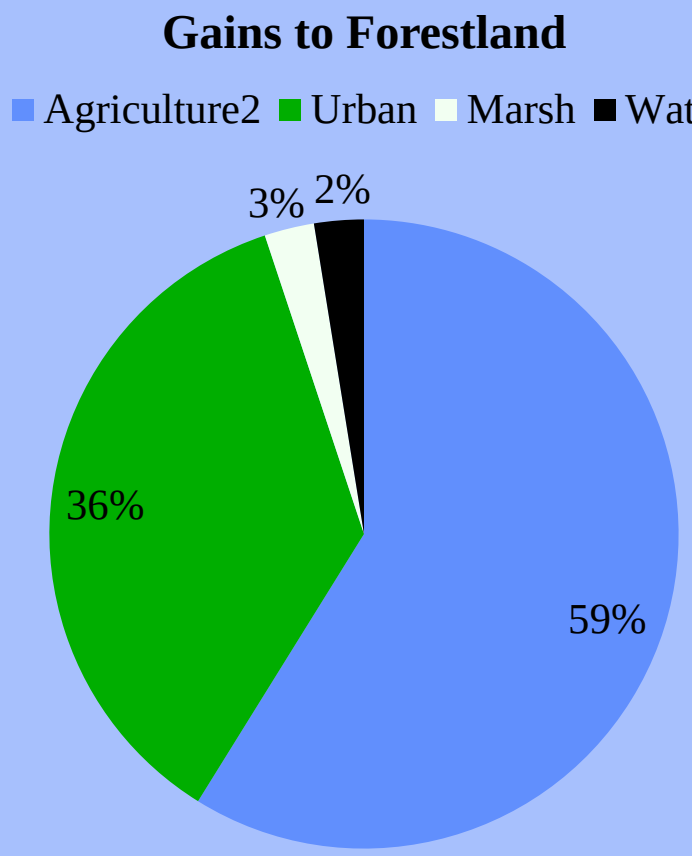


Rates of Land Conversion

- 77,000 acres each year diverted (cleared) from forest to other uses
- 61,000 acres each year converted or reverted (gained back) to forest
- Net loss = 16,000 acres per year
  - 44 acres every day
  - 1 acre every 33 minutes

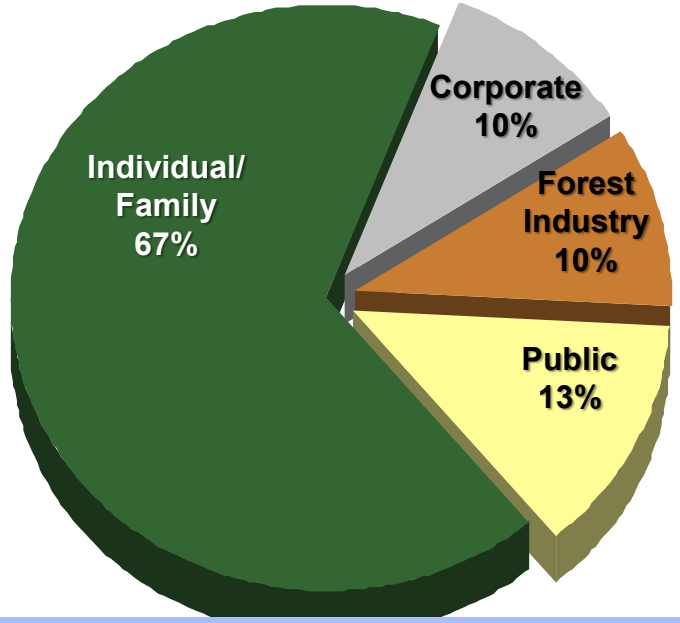
Statewide Land Use Changes



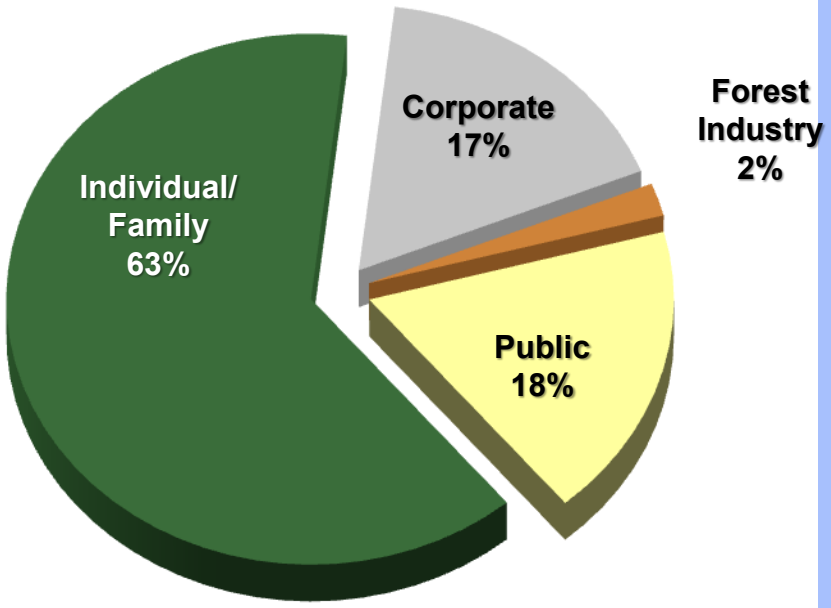


Forest Ownership

1992
16.0 million acres



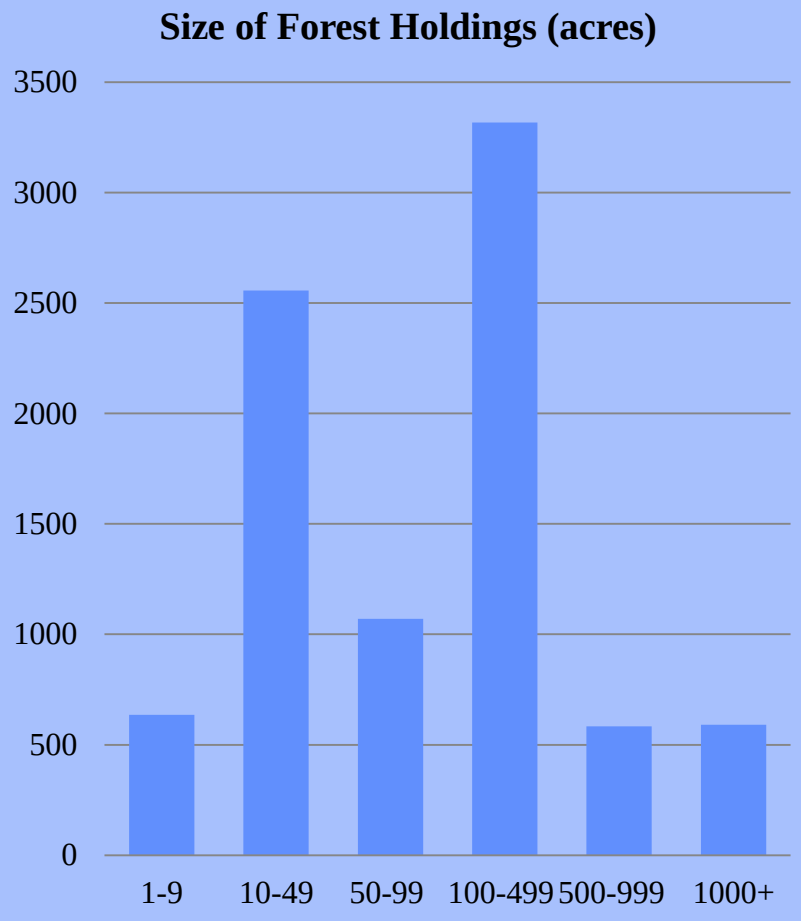
2010
15.8 million acres



- Reduction in total acres since 1992.
- Most significant reduction of ownership has been with forest industry.

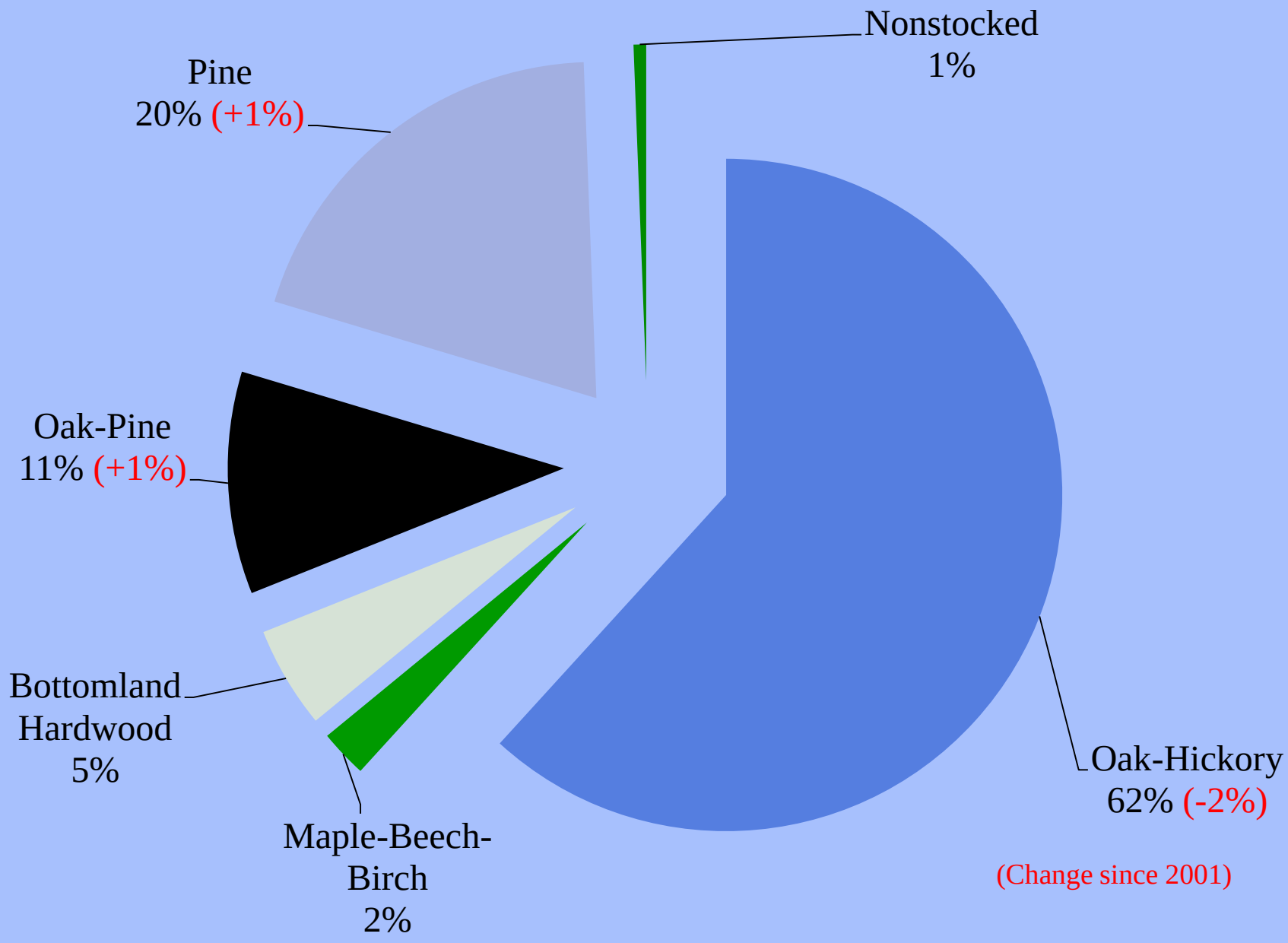
NIPF Forest Ownership

- 374,000 landowners
- Typical NIPF owner:
- 55-64 years old, white, male, BS/BA, retired
- Acquired property by purchasing or inheriting from family
- Reasons for owning: beauty, protect environment, land investment, home site

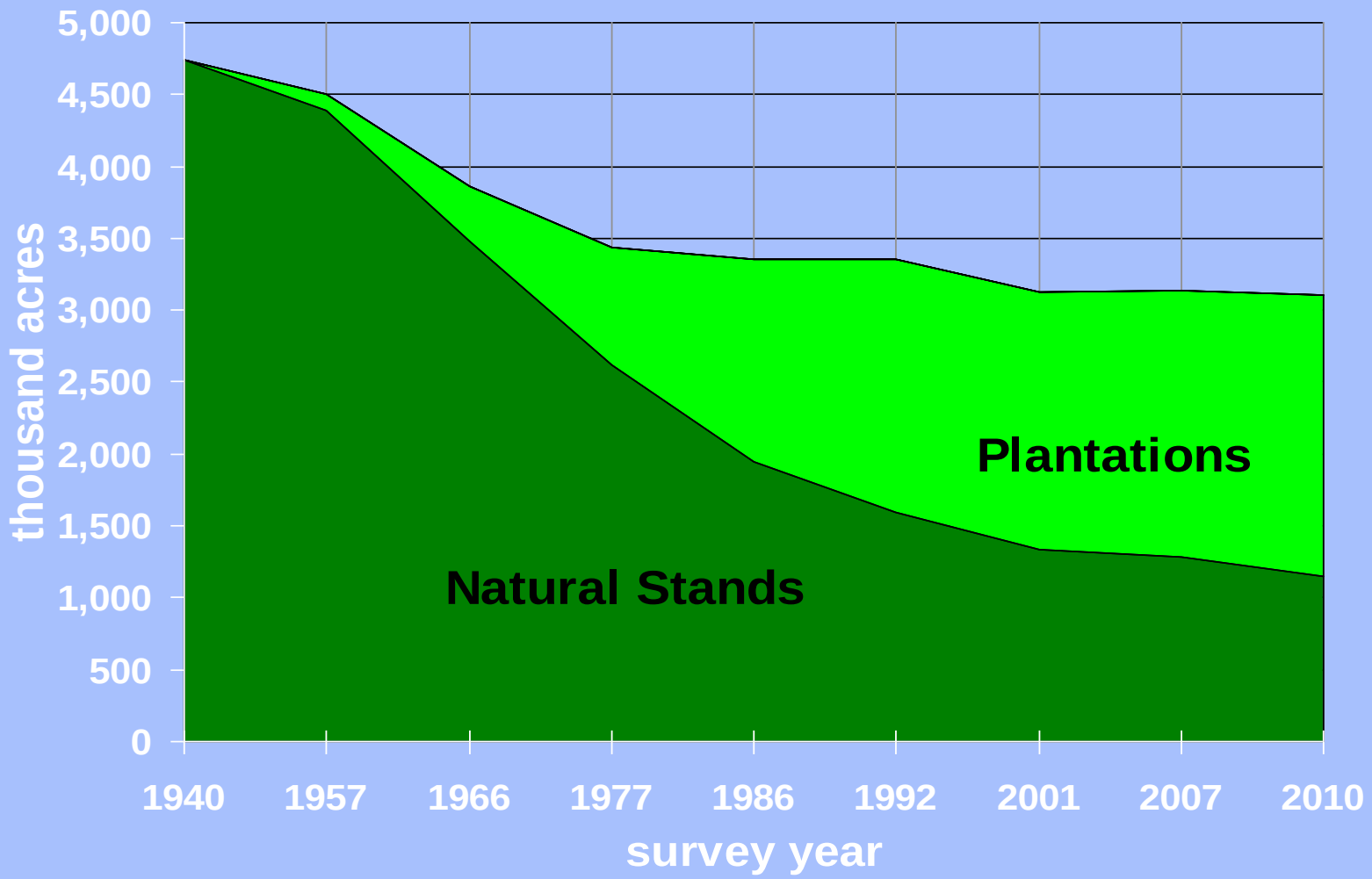


source: National Woodland Owners Survey http://www.fia.fs.fed.us/nwos

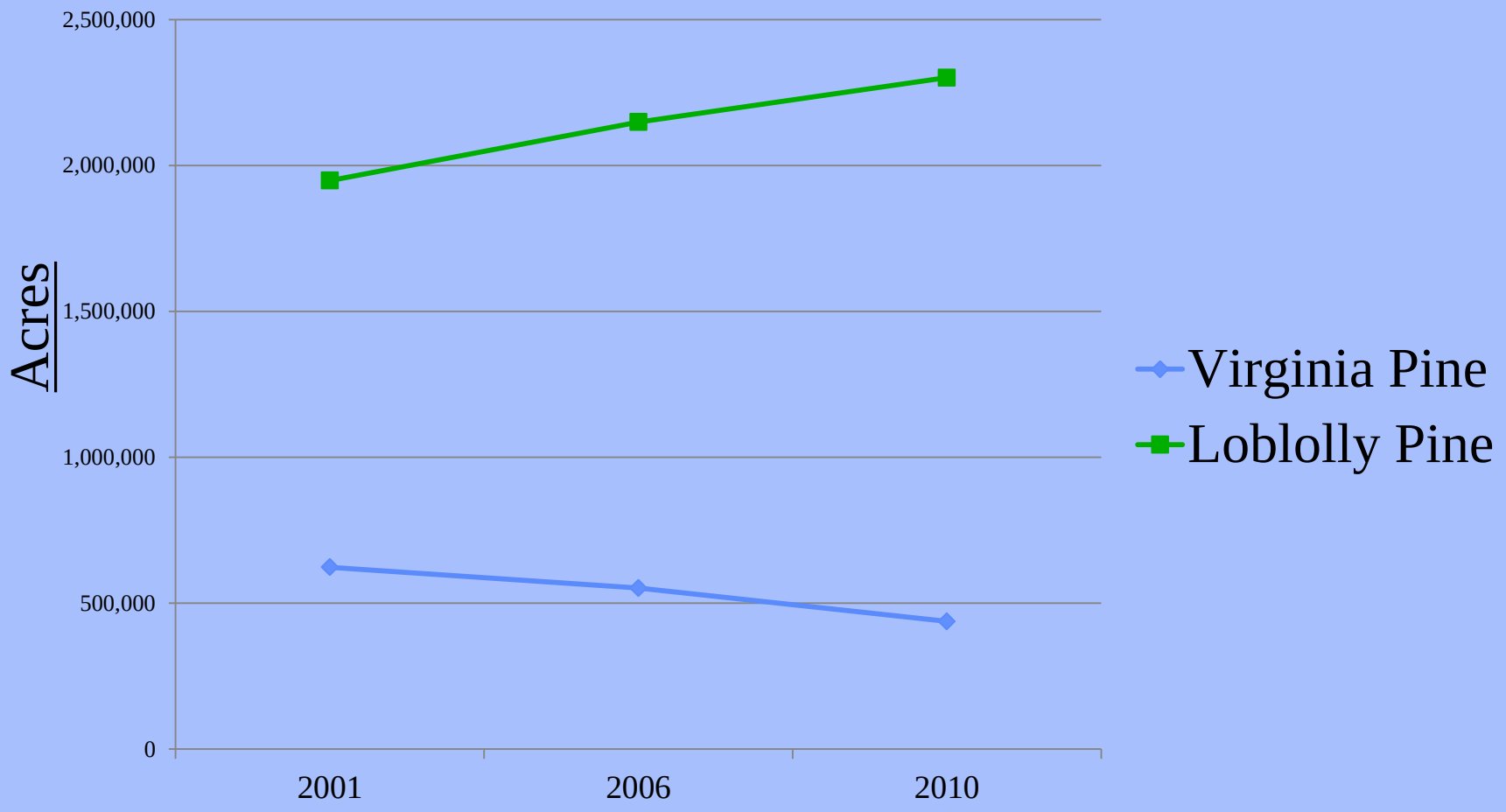
Forest Type Groups, Virginia 2010 (area)



Pine Types


5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
thousand acres
Plantations
Natural Stands
1940
1957
1966
1977
1986
1992
2001
2007
2010
survey year

Trend of Area of Virginia Pine vs. Loblolly Pine Forest Types



10 Most Common Species by Volume &

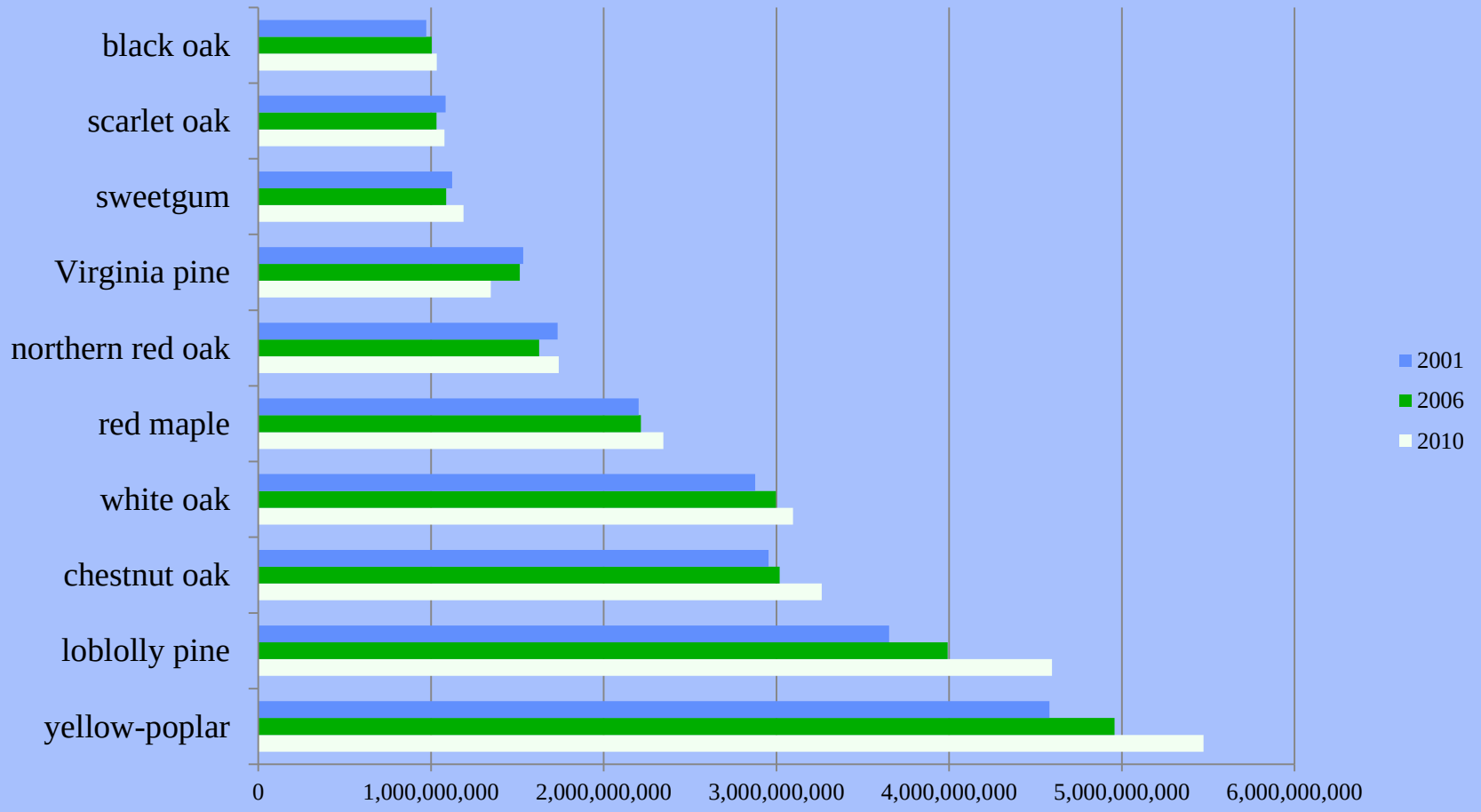
- **Volume %**

1. **yellow-poplar 15.8%**
2. **loblolly pine 13.2%**
3. **chestnut oak 9.4%**
4. **white oak 8.9%**
5. **Red maple 6.7%**
6. N. **red oak 5.0%**
7. **Virginia pine 3.9%**
8. **sweetgum 3.4%**
9. **scarlet oak 3.1%**
10. **black oak 3.0%**

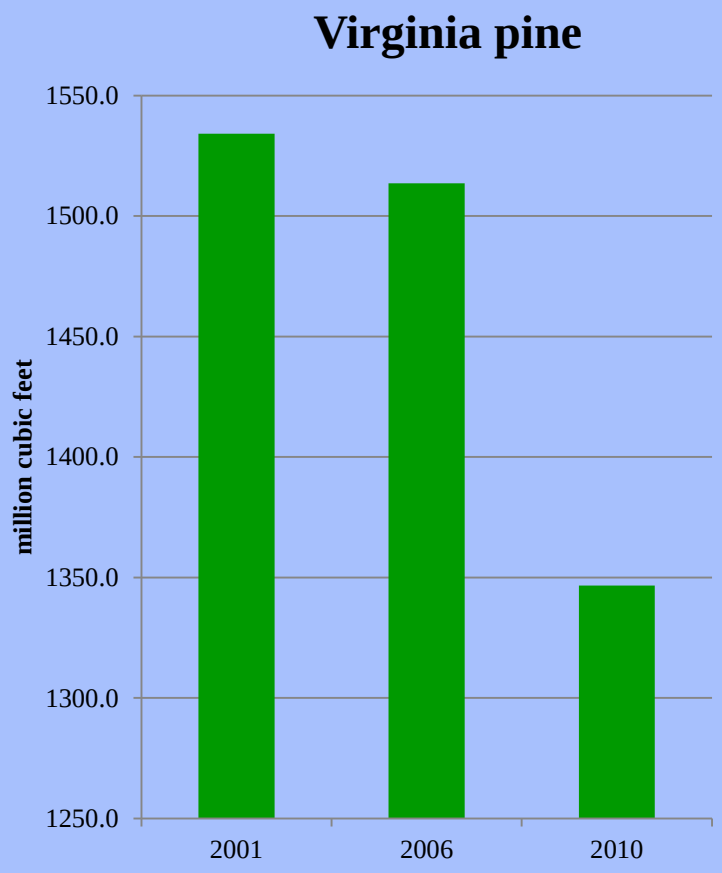
- **# of Trees**

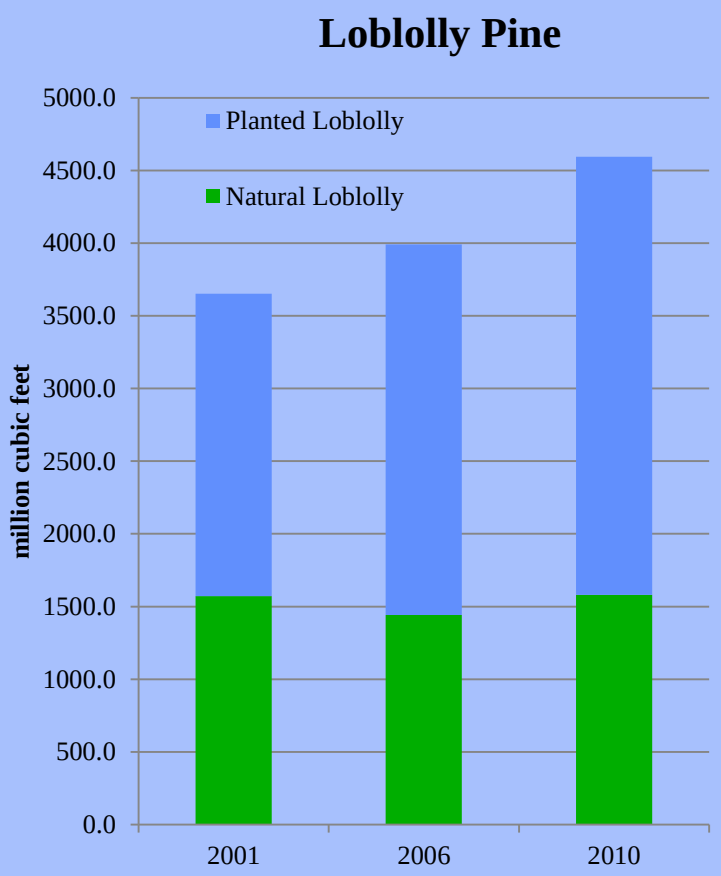
1. **red maple 12.6%**
2. **loblolly pine 10.2%**
3. **yellow-poplar 7.8%**
4. **sweetgum 6.5%**
5. **blackgum 5.6%**
6. **Virginia pine 4.3%**
7. **American holly 4.2%**
8. **white oak 3.7%**
9. **chestnut oak 3.1%**
10. **sourwood 2.7%**

Volume Trends for 10 most common species



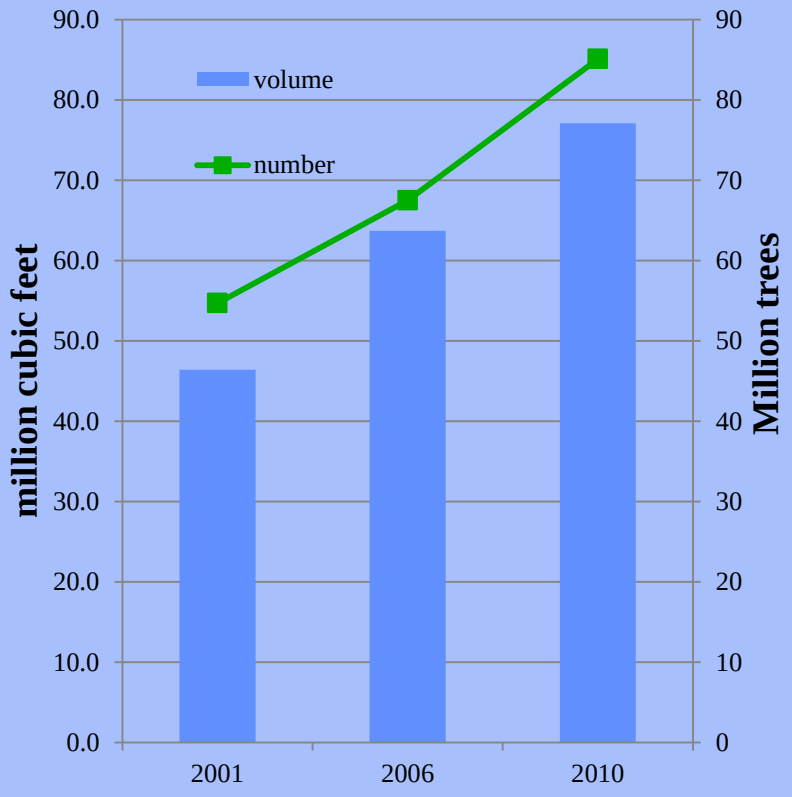
Volume trend of Virginia Pine vs. Loblolly Pine



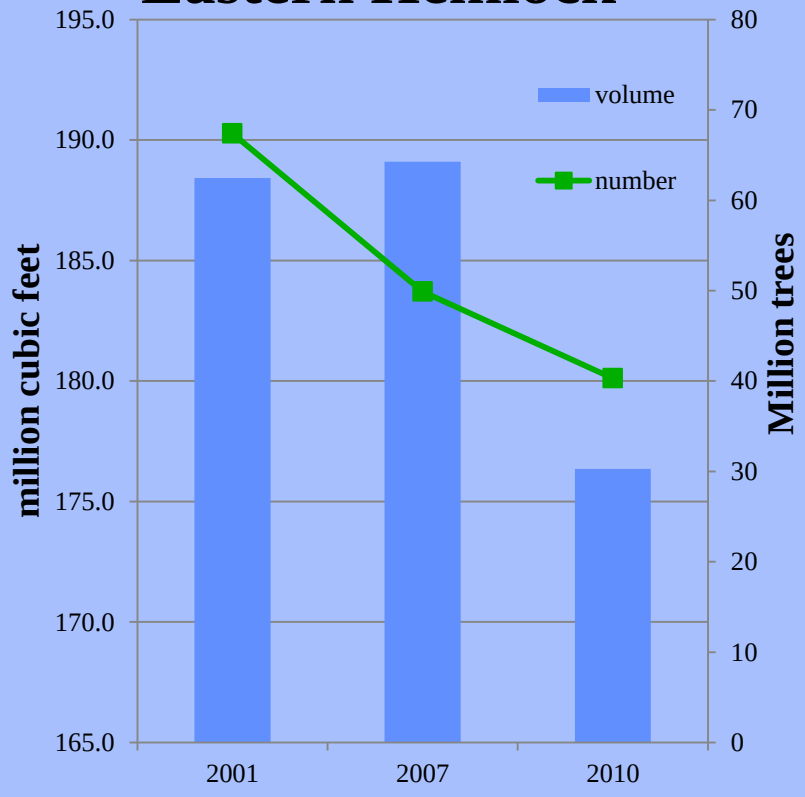


Some other species of Interest…

Ailanthus

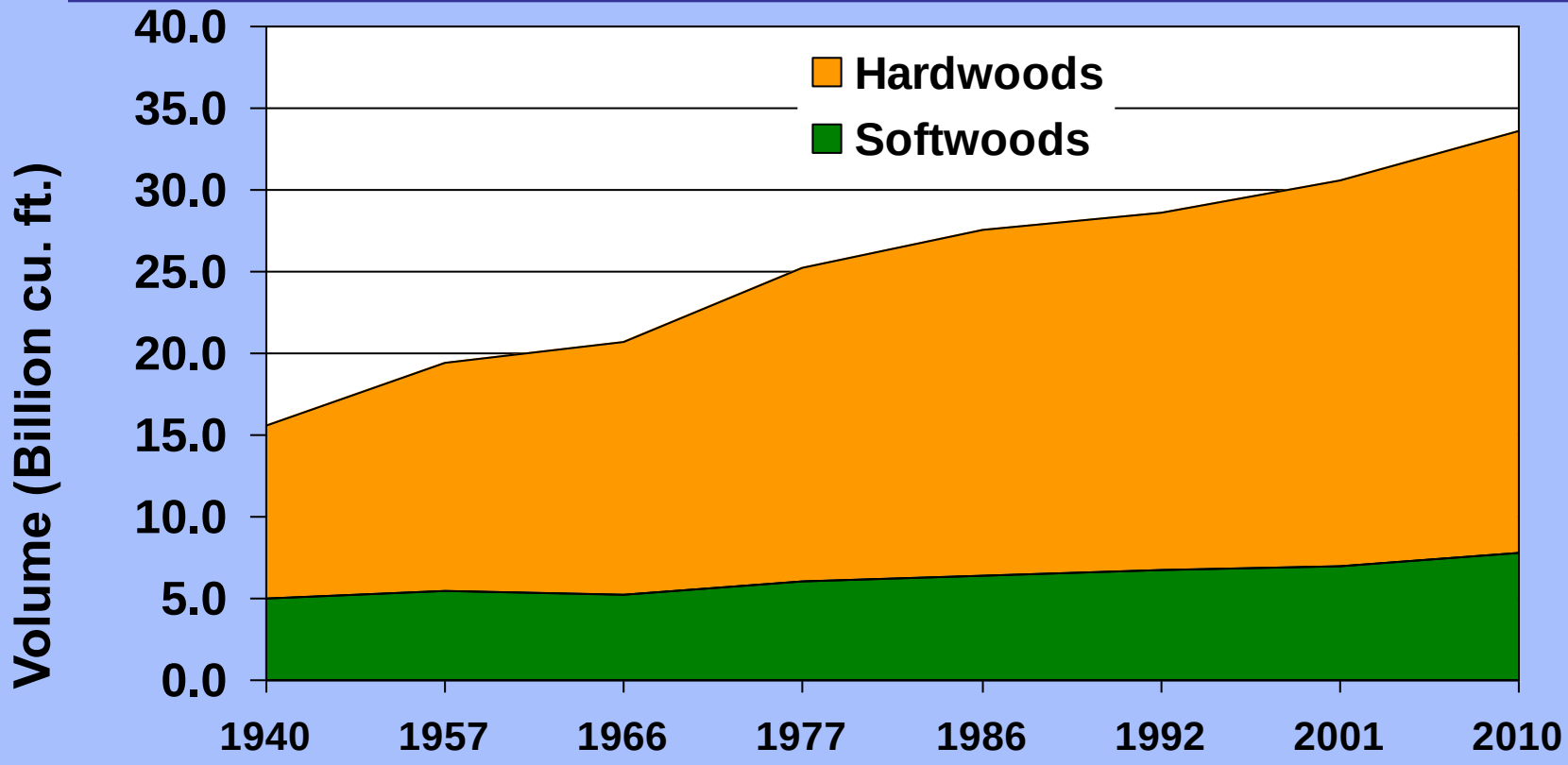


Eastern Hemlock



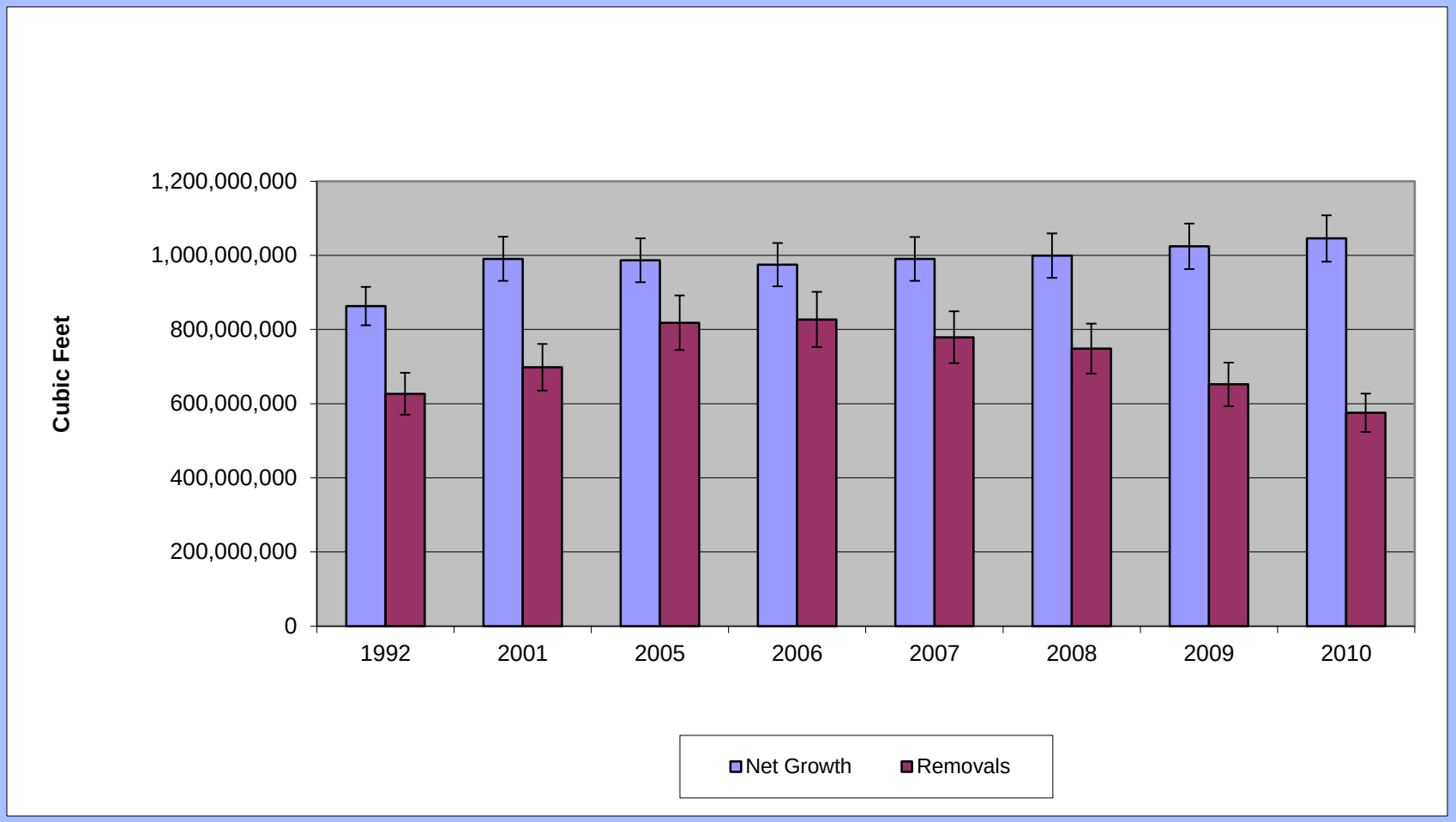
Forest Growth

(Volume of All Live Trees on Timberland)

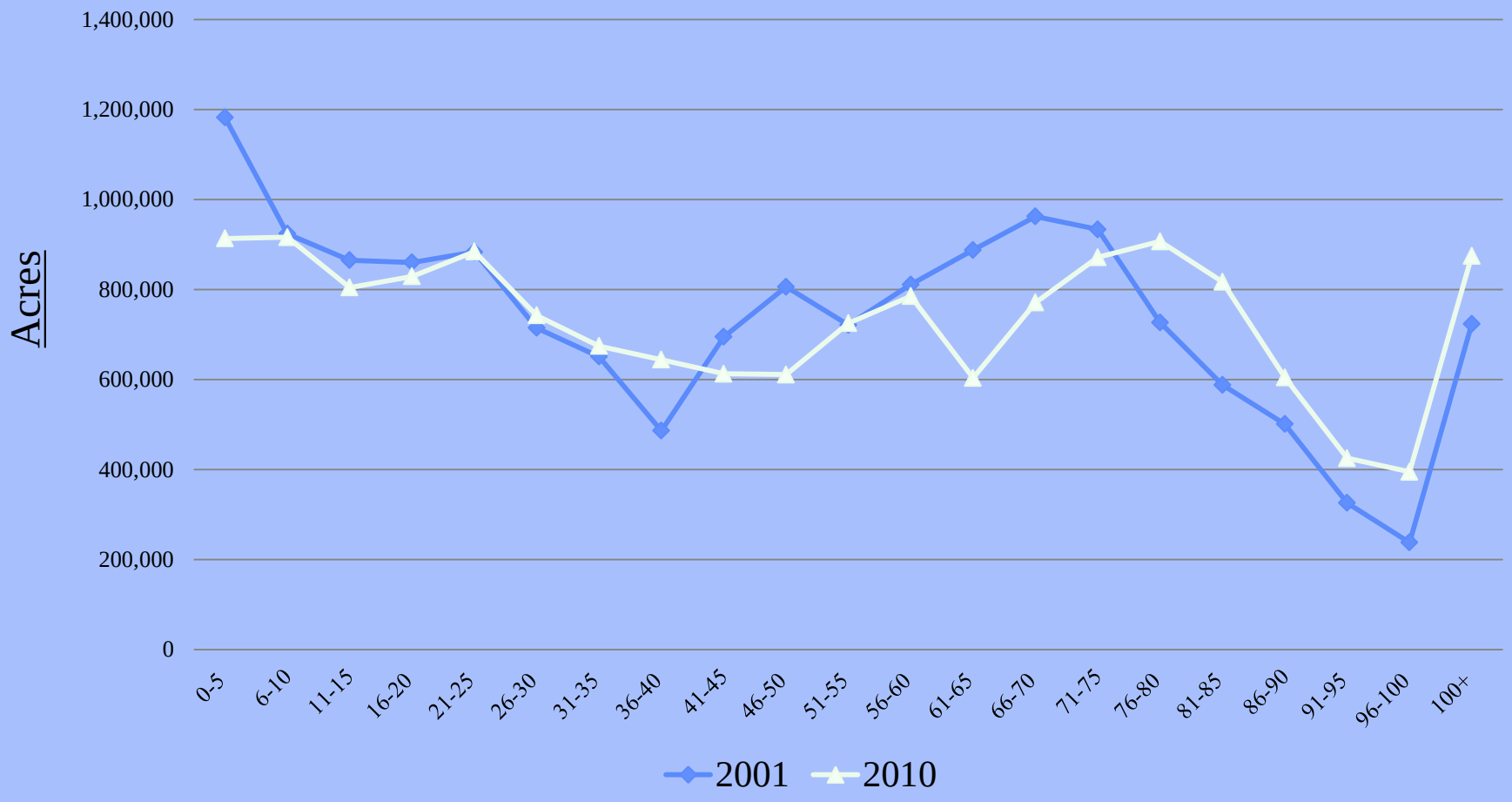


Since 1940, total volume has more than doubled from 15.5 to 33.6 billion cubic feet.

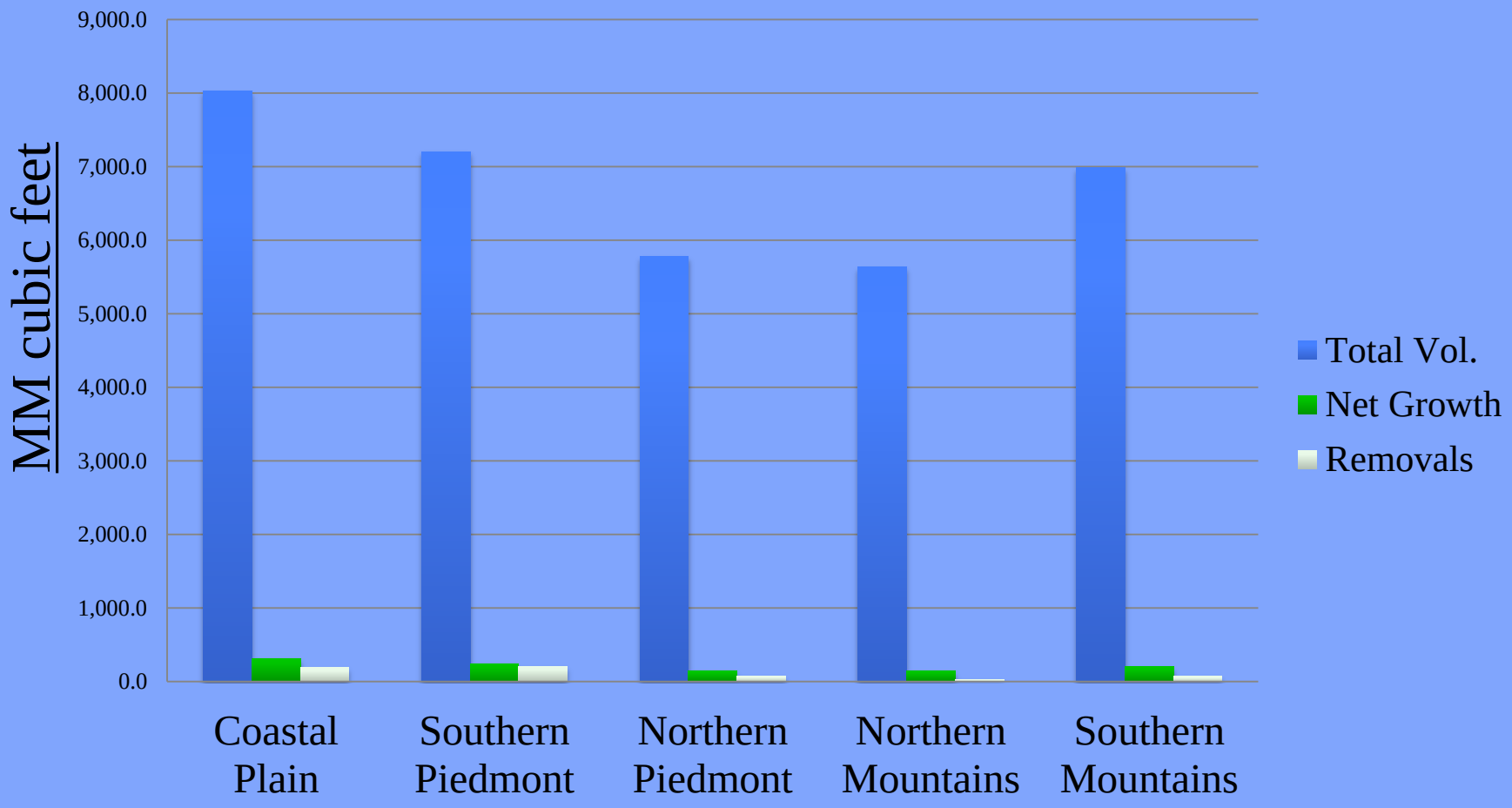
Statewide Net Growth vs. Removals



State Age Class Distribution

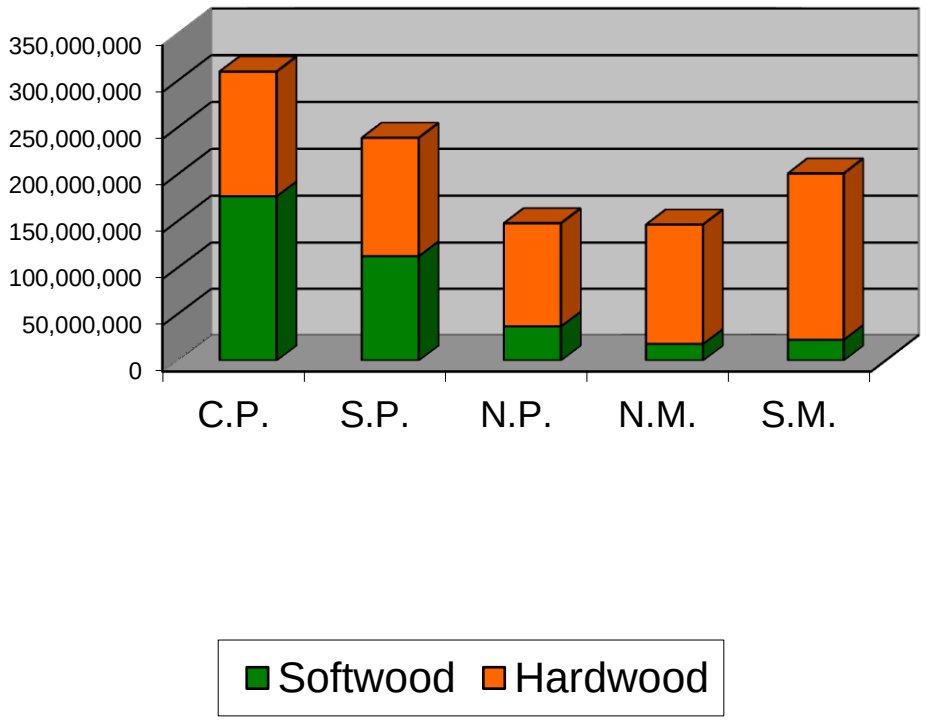


Comparison of Volume, Net Growth & Removals by Unit

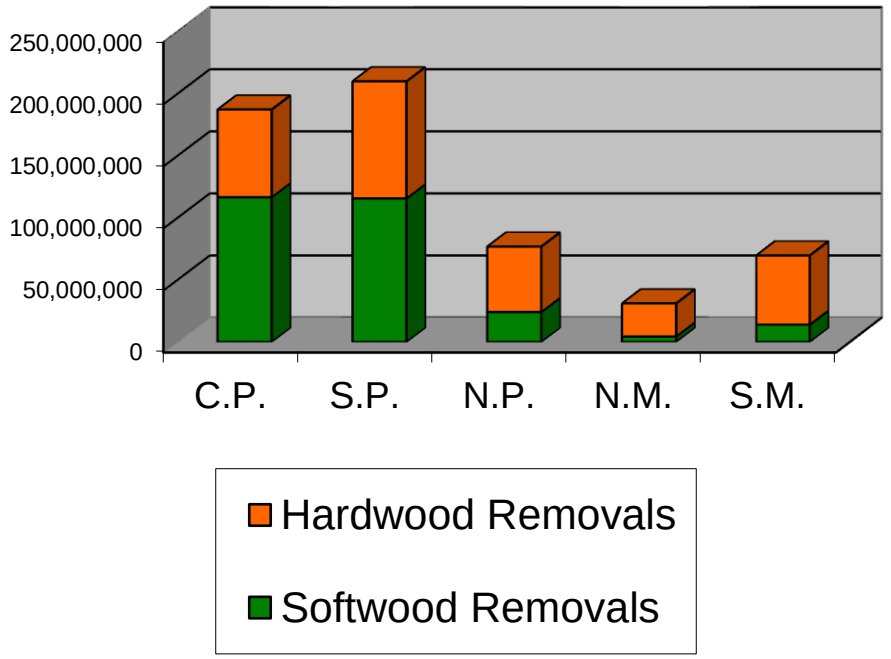


Comparison of Net Growth & Removals by Unit

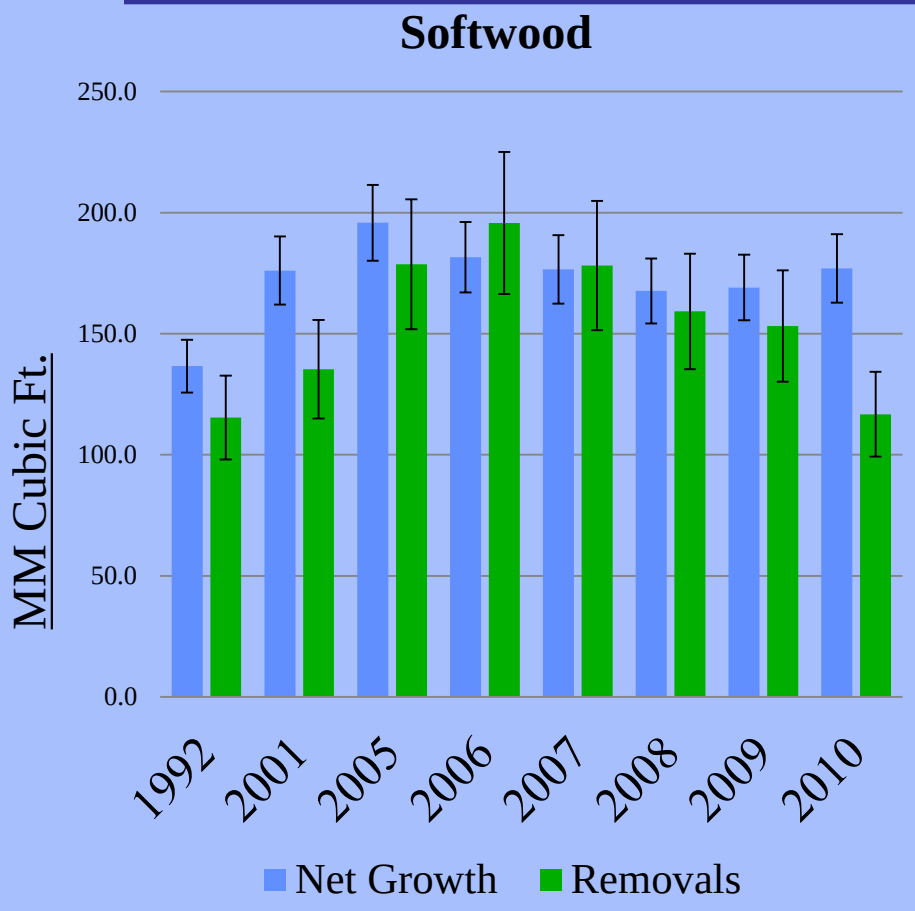
Net Growth by Unit & Type (cubic feet)

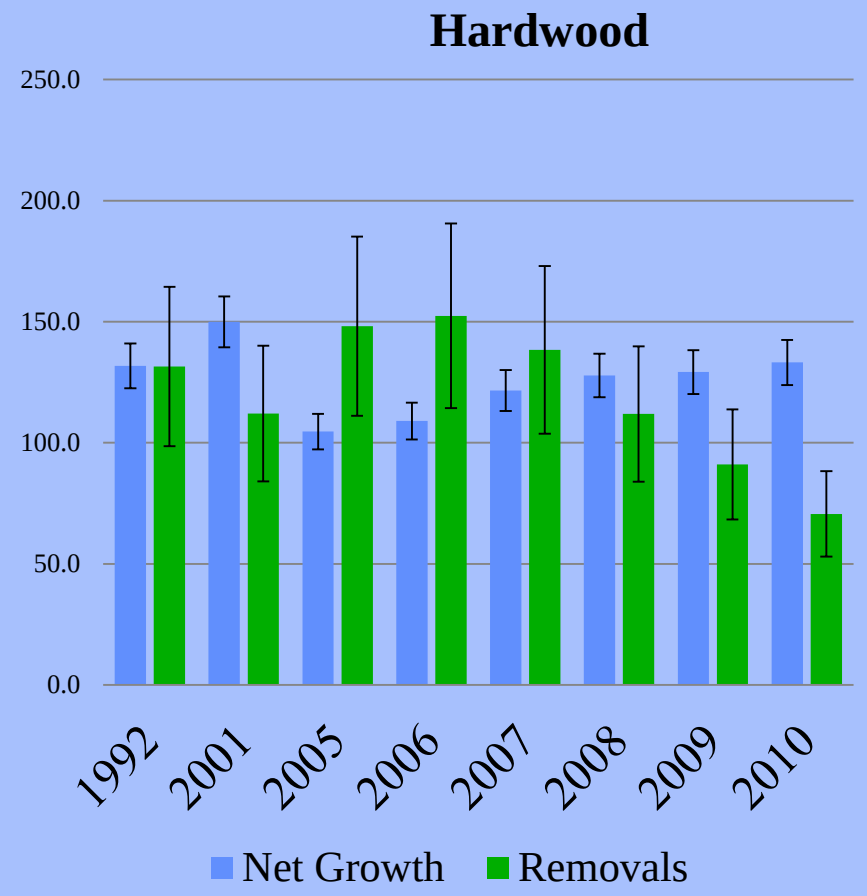


Removals by Unit & Type (cubic feet)



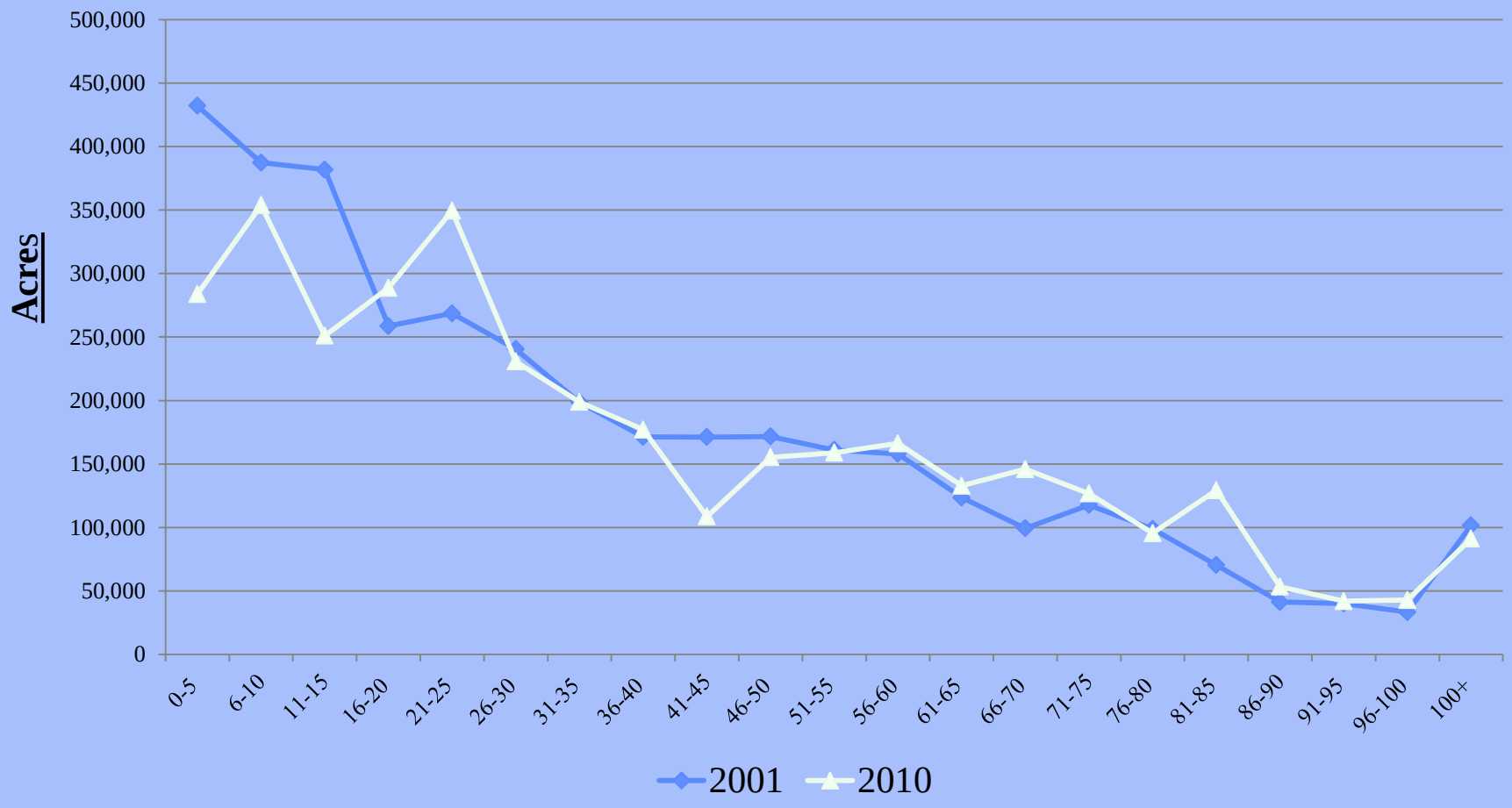
Coastal Plain



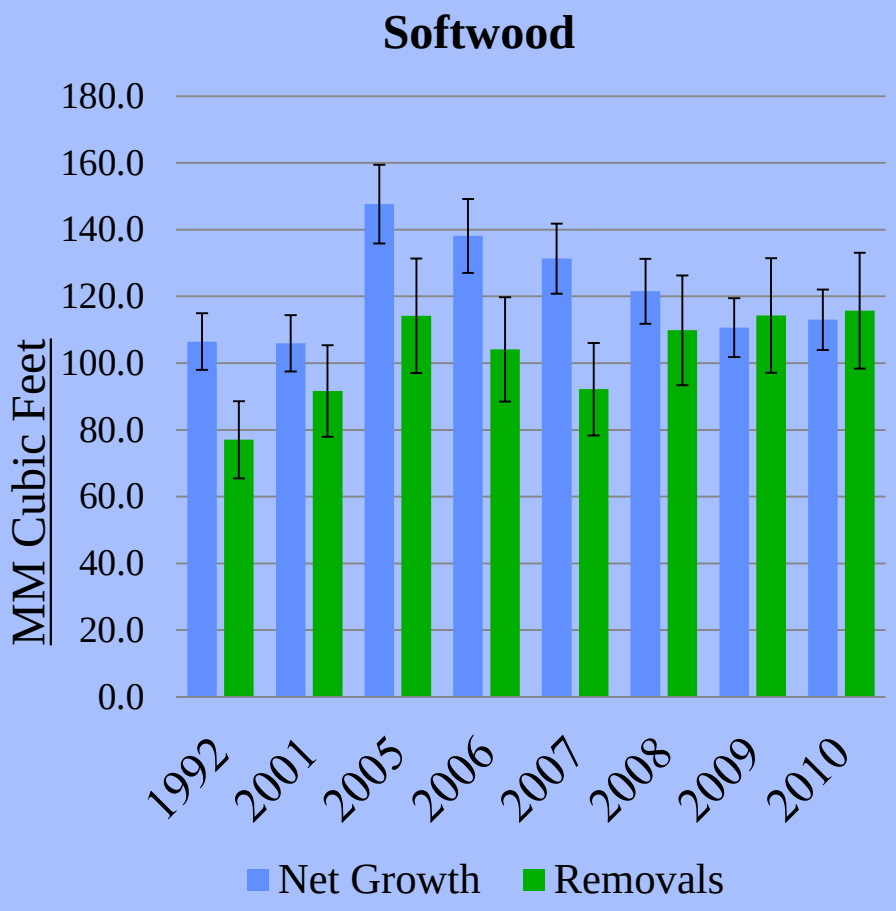


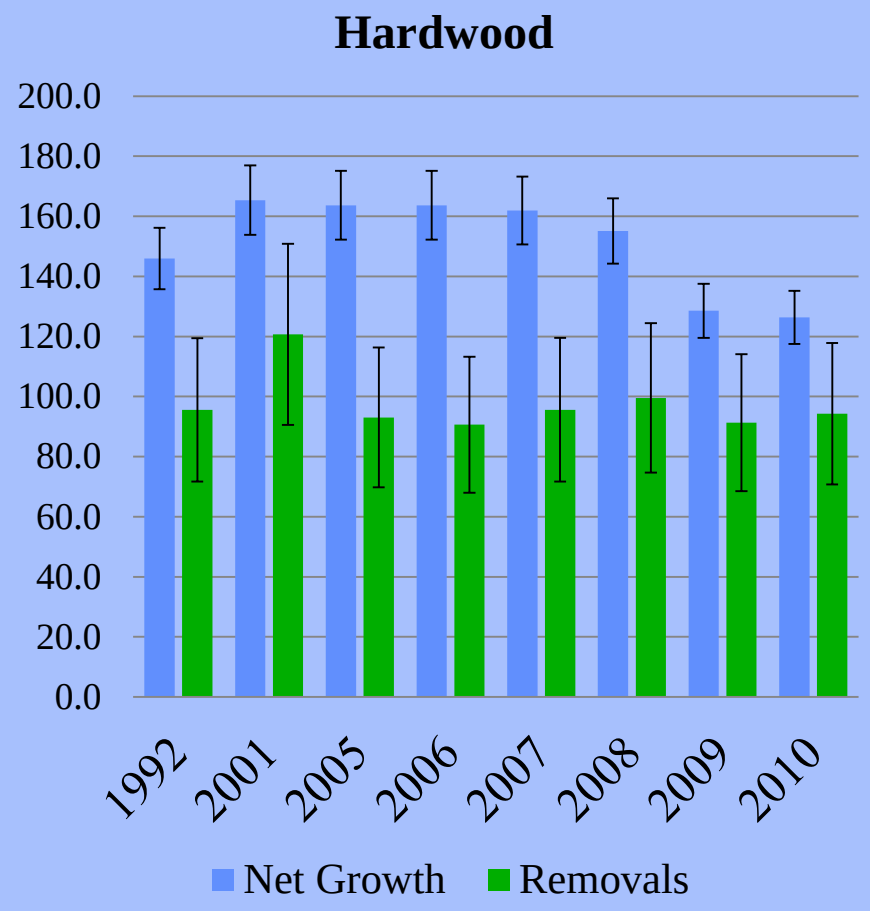
NC Northern Coastal Plain Softwood: .97 Hardwood: .82

Coastal Plain Age Class Distribution



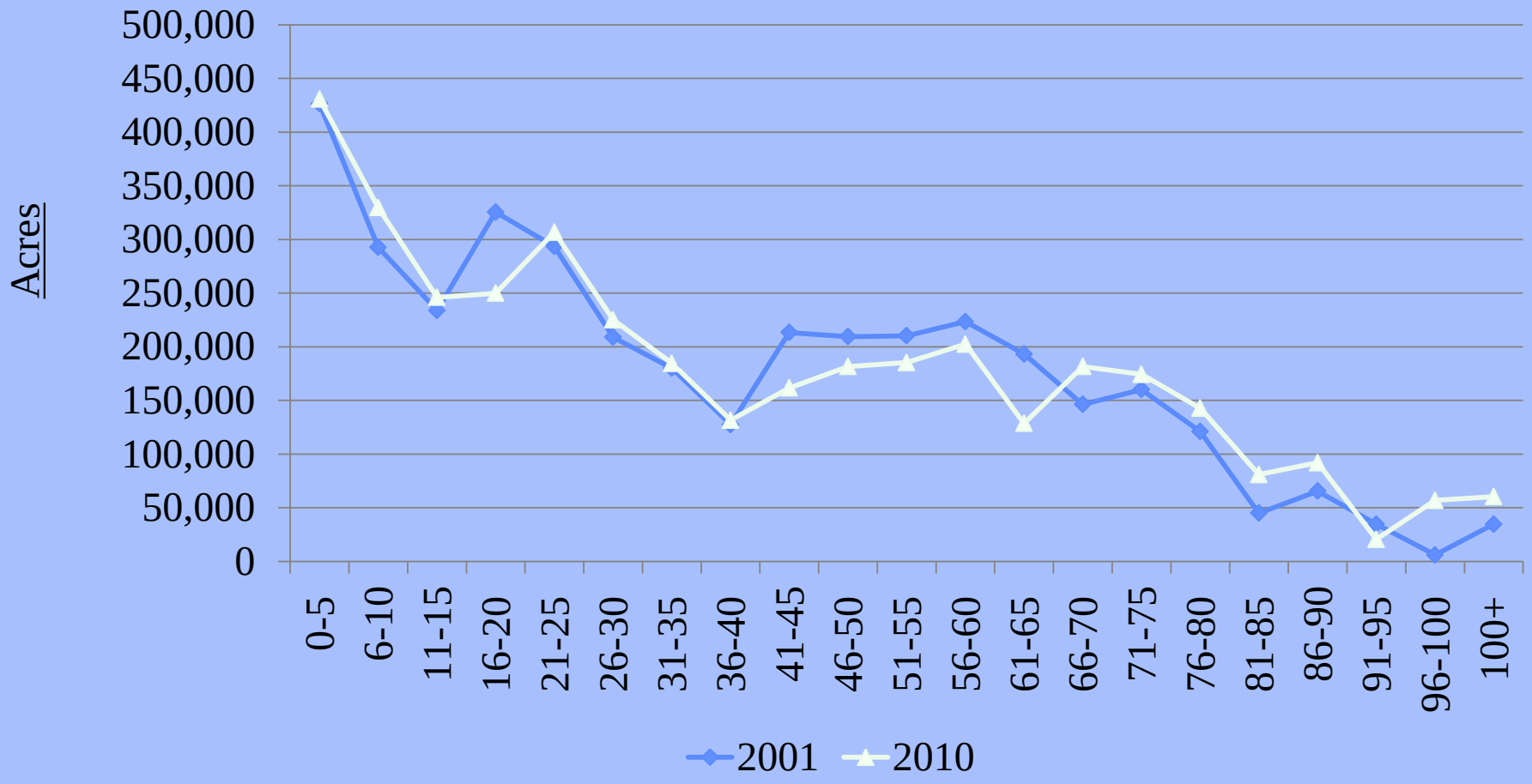
Southern Piedmont



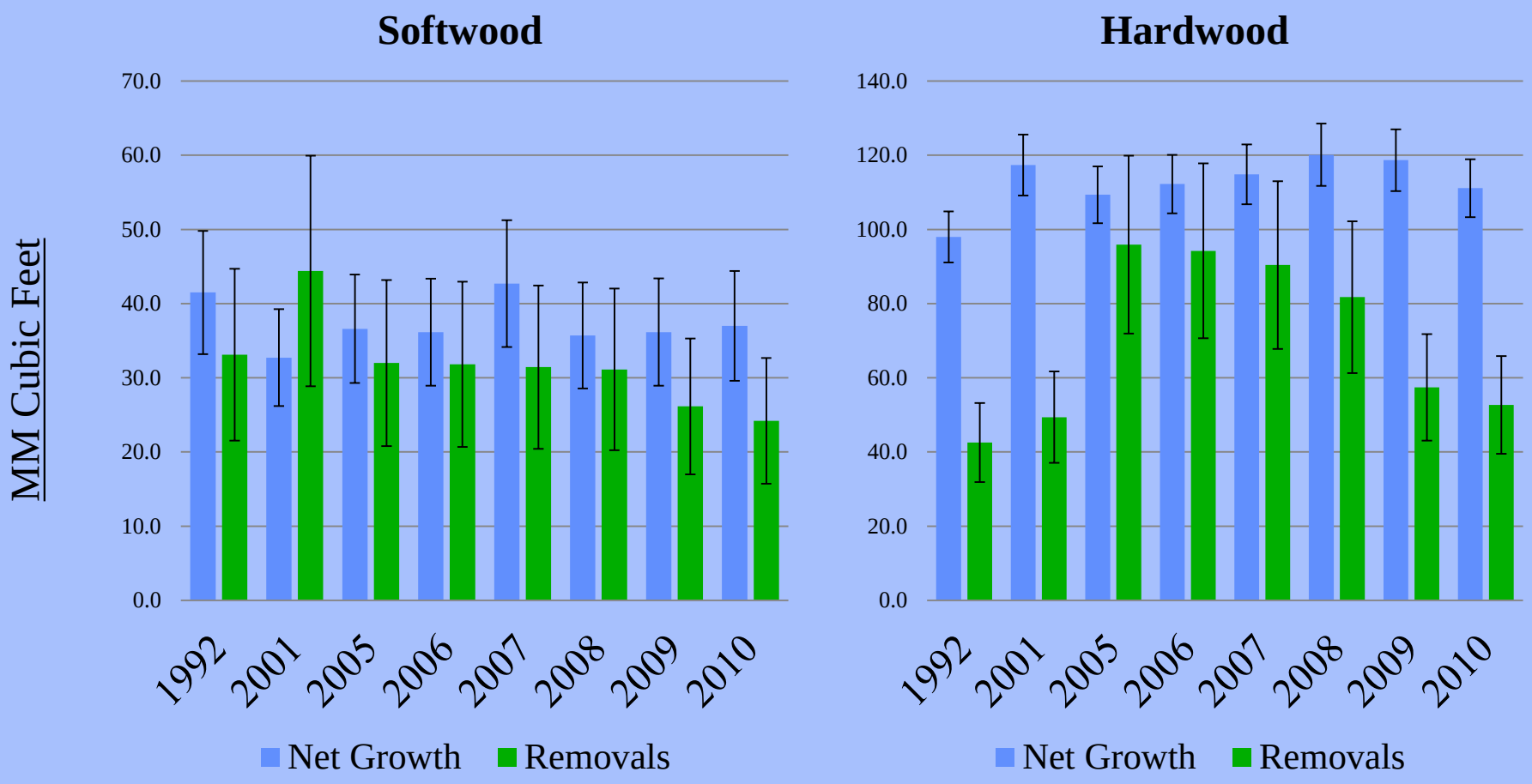


NC Piedmont Softwood:1.06 Hardwood:1.53

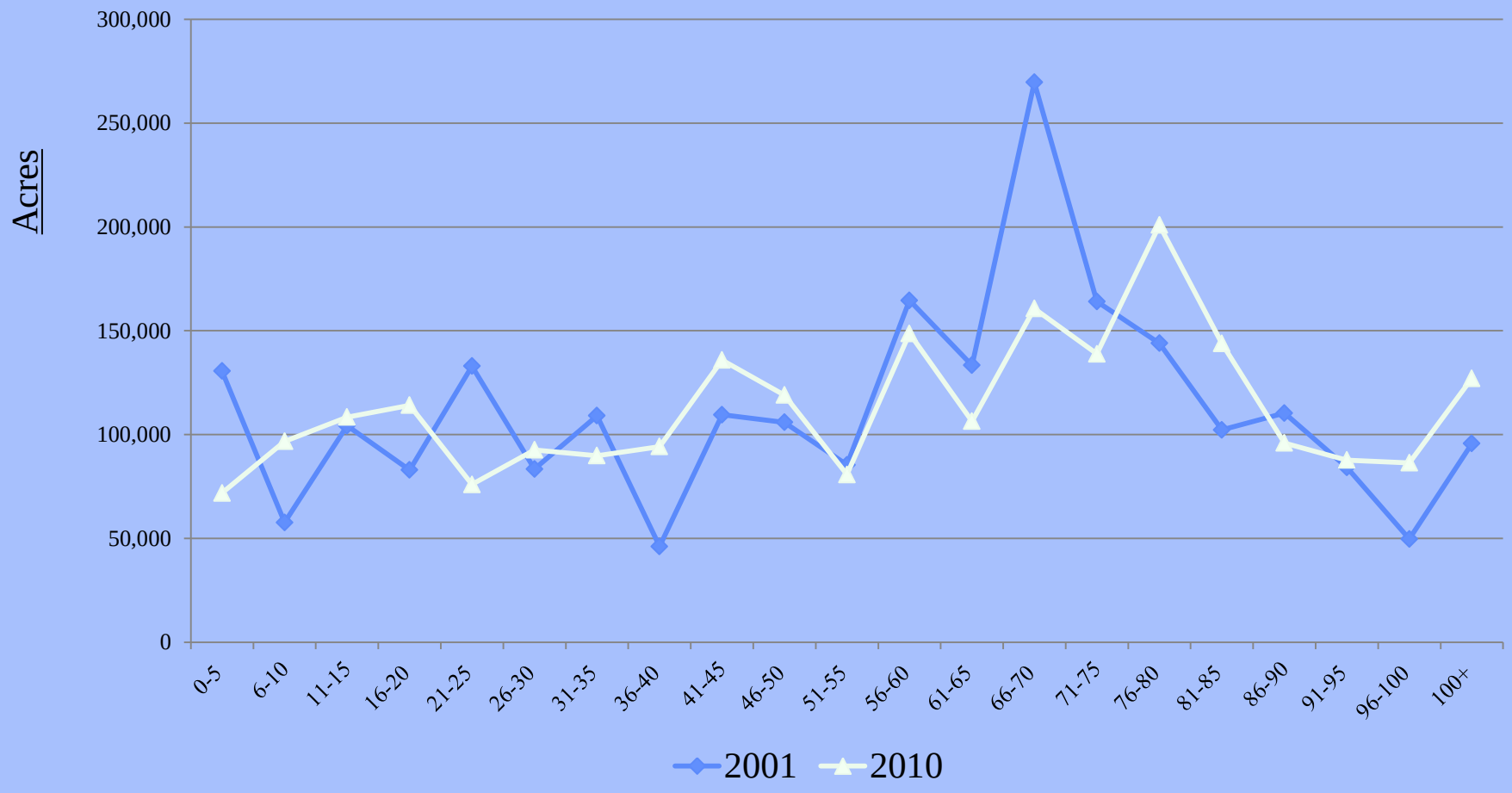
S. Piedmont Age Class Distribution



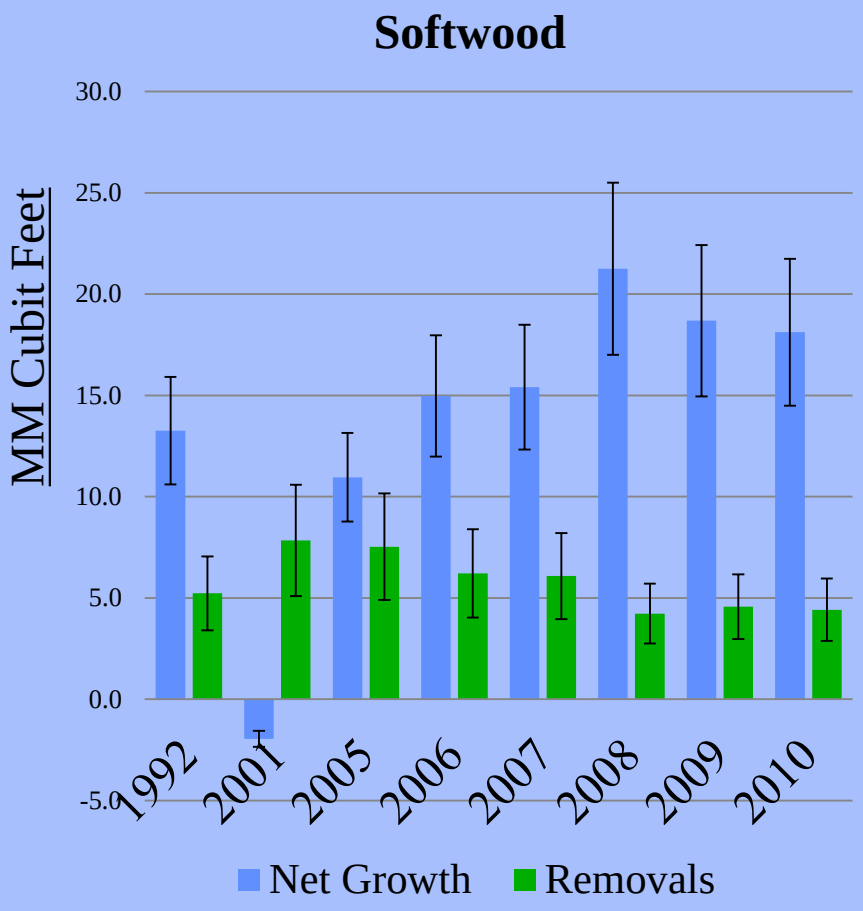
Northern Piedmont

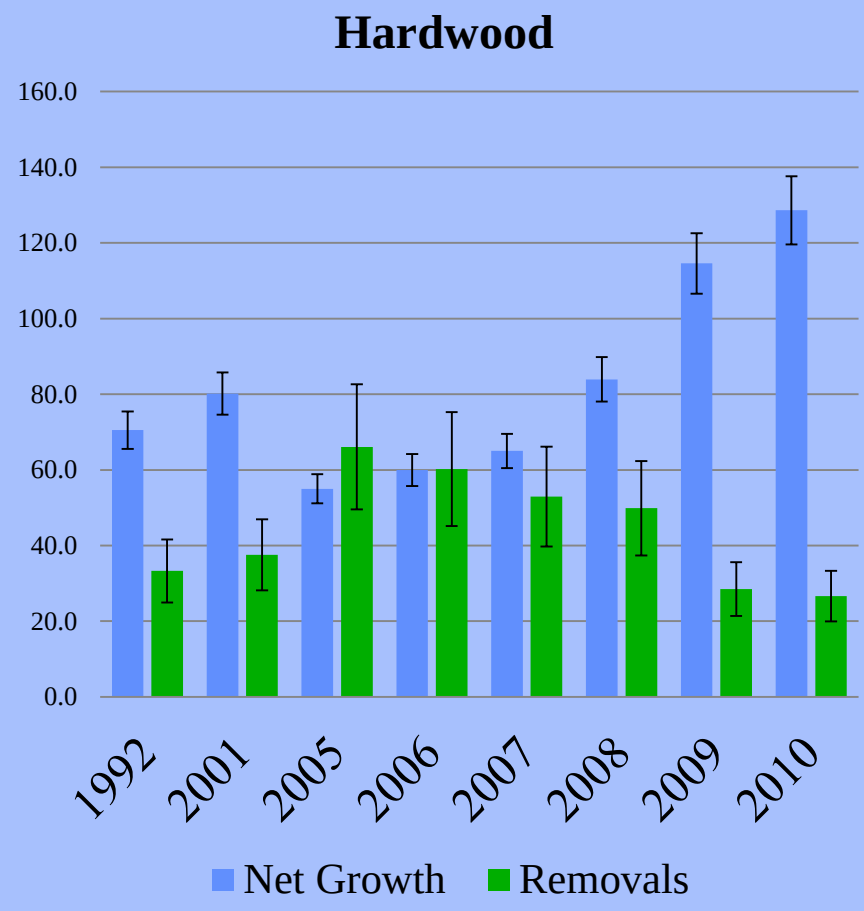


N. Piedmont Age Class Distribution

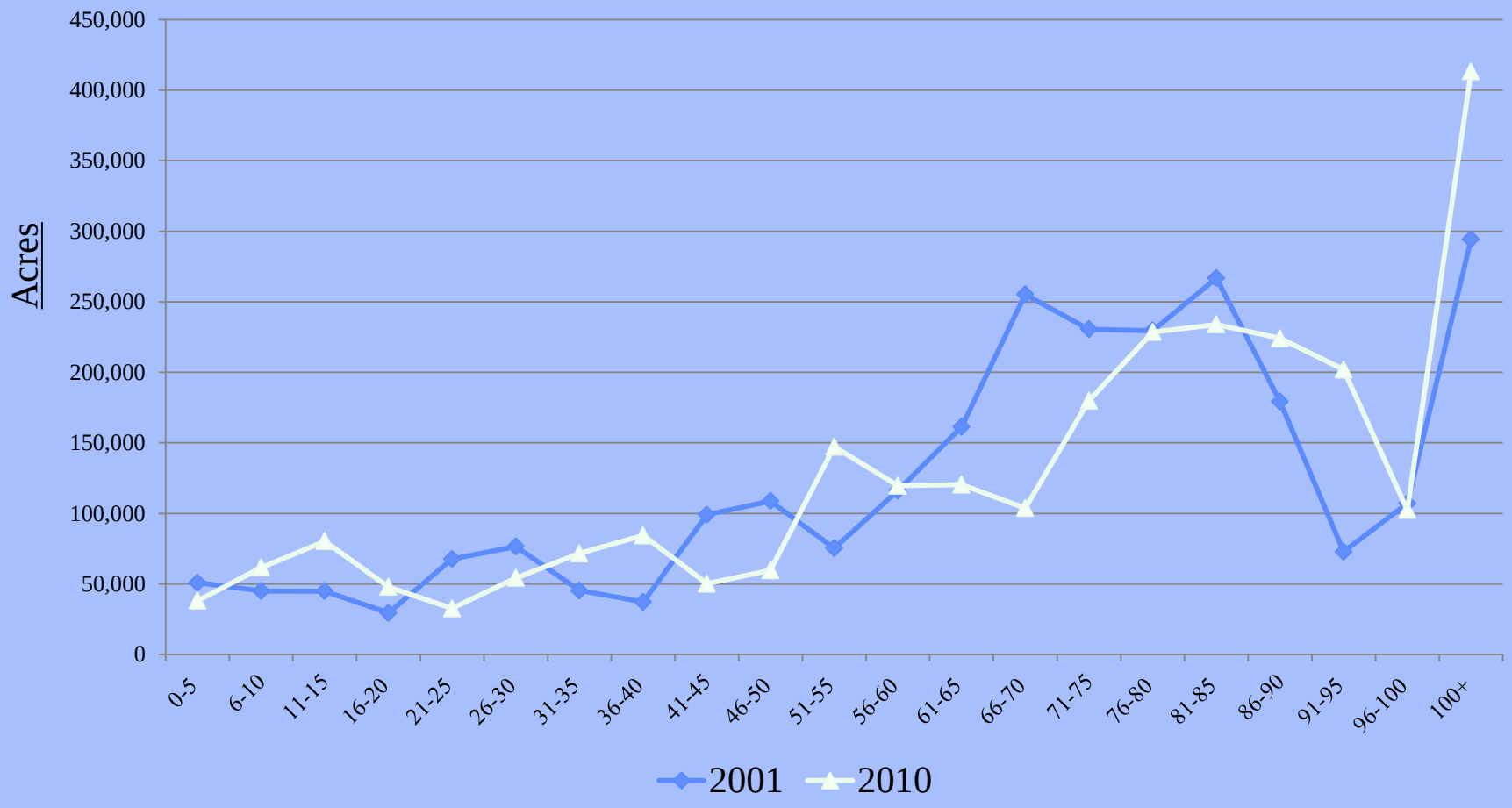


Northern Mountains

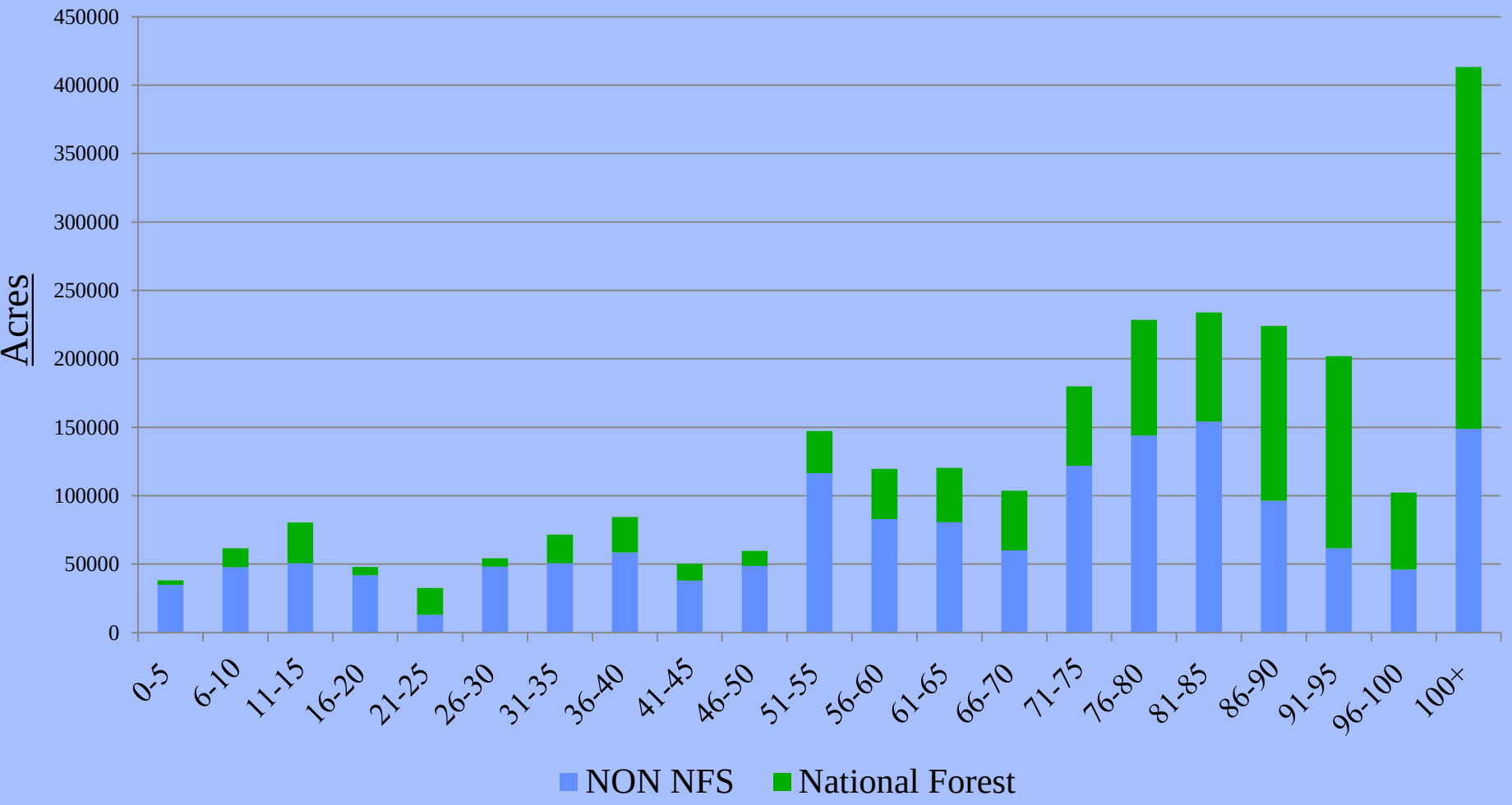




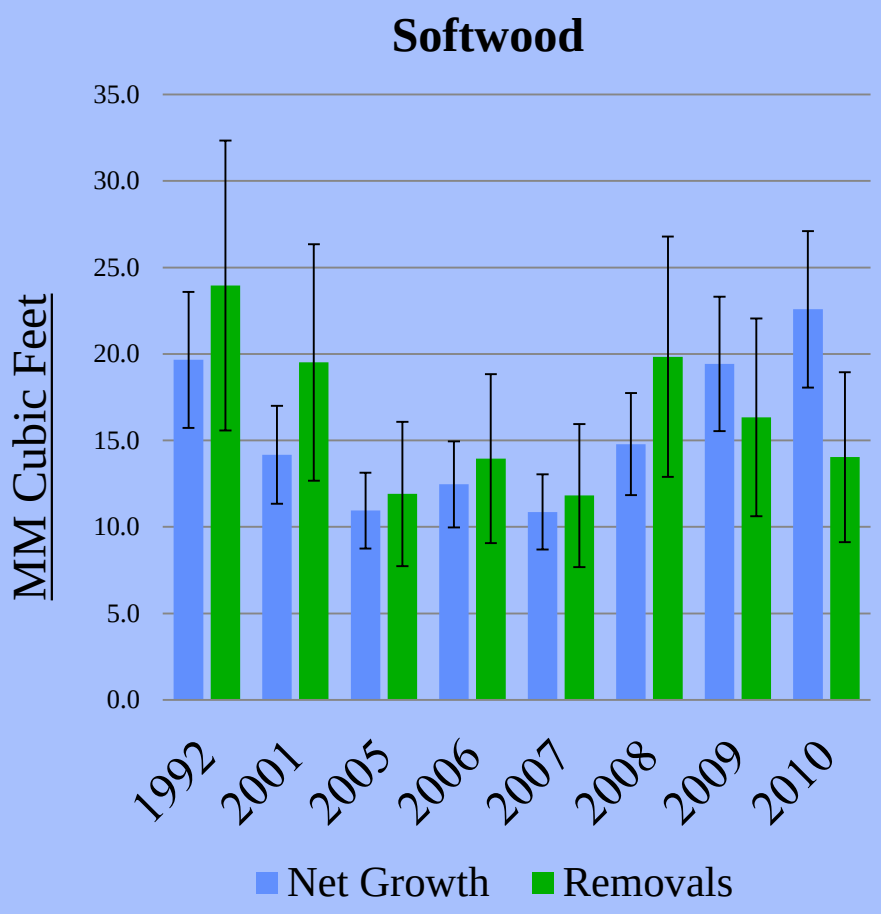
N. Mountains Age Class Distribution

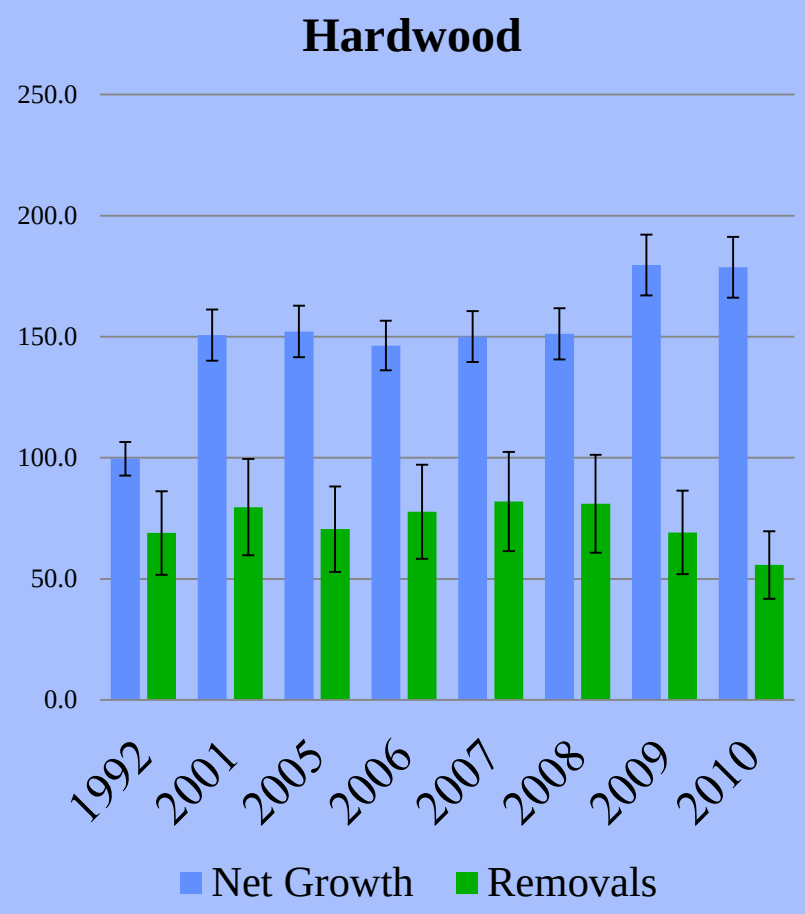


Age Class by National Forest/ Non-NFS (N. Mtns)

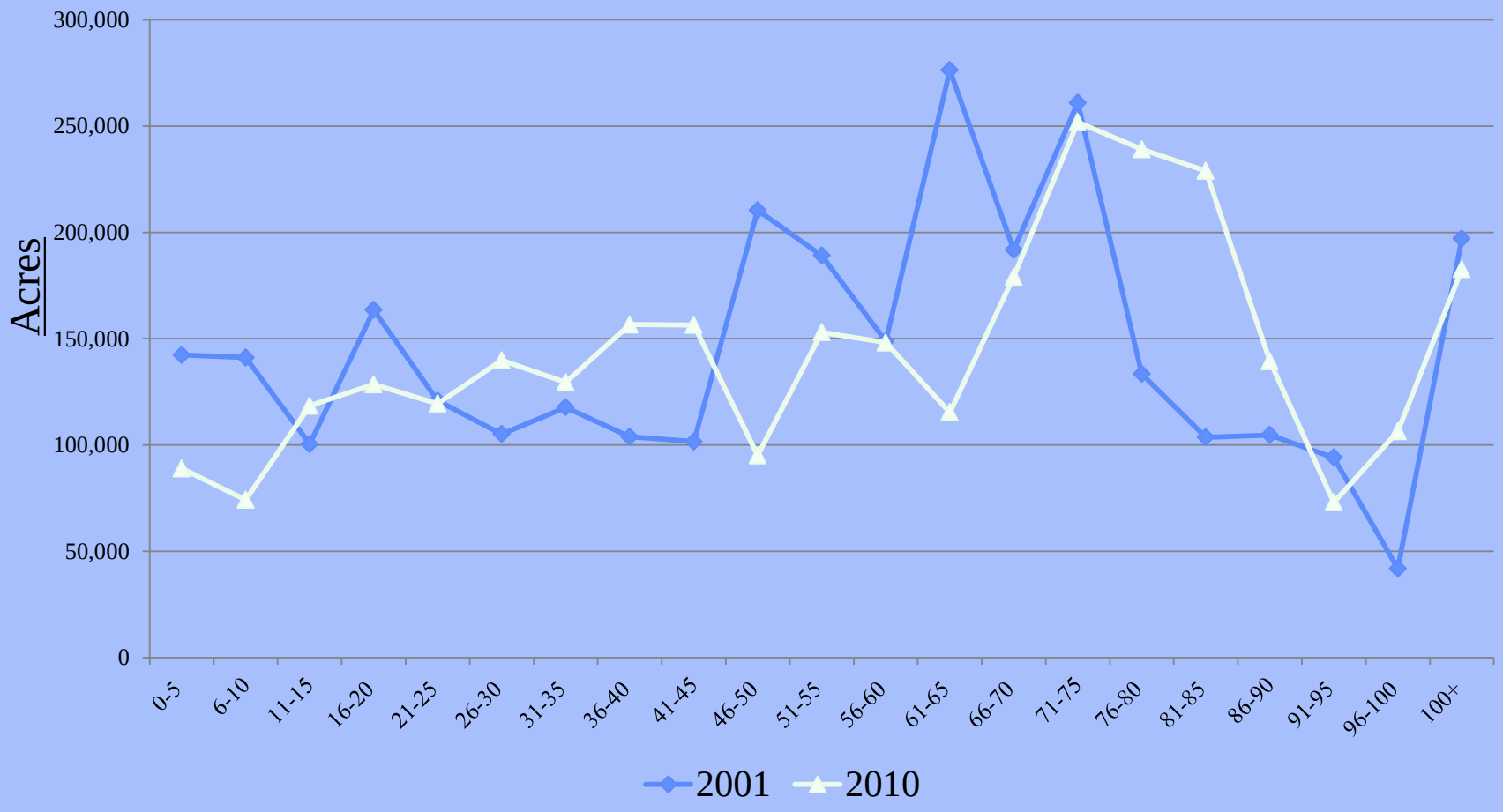


Southern Mountains

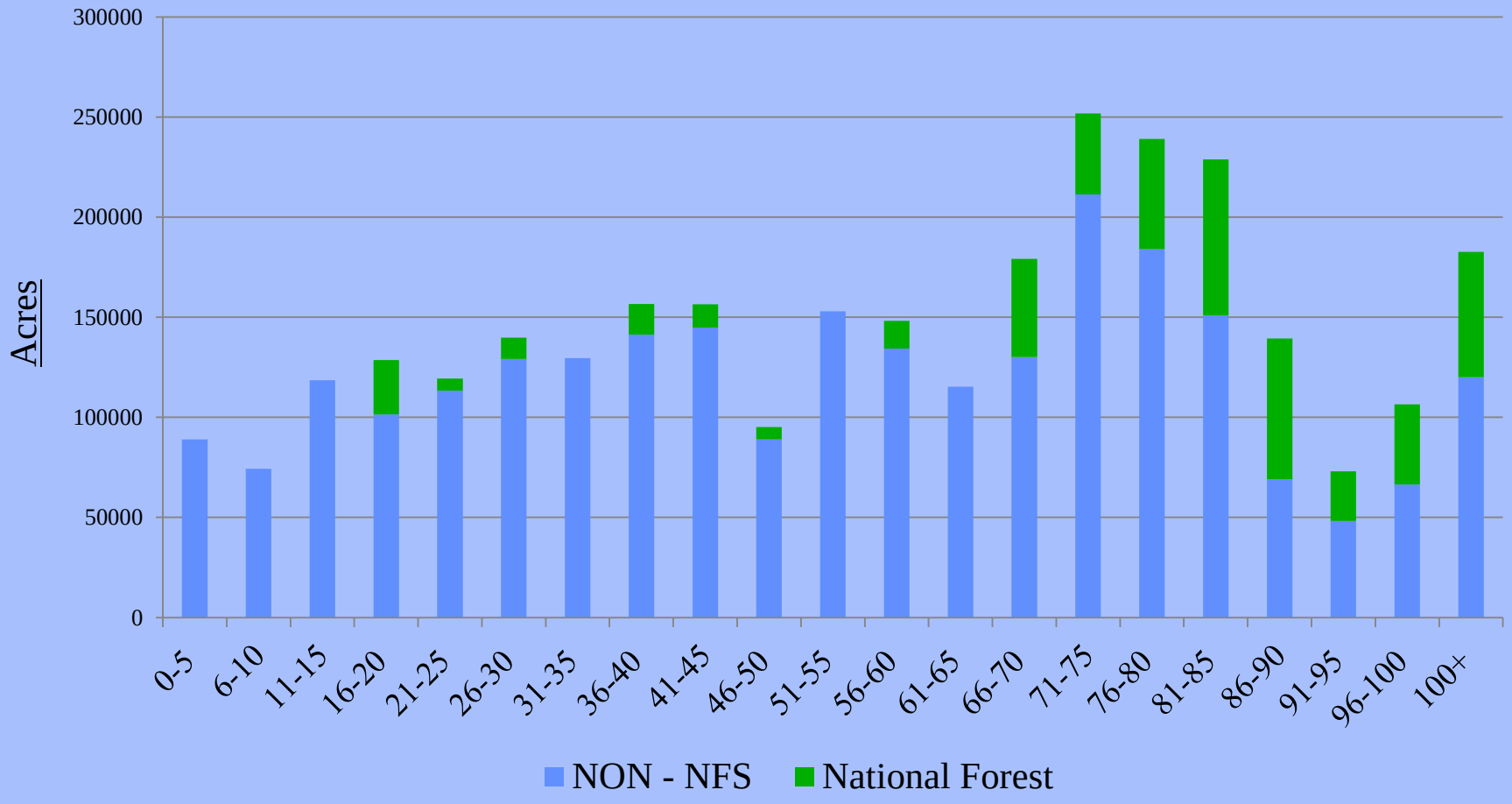




S. Mountains Age Class Distribution



Age Class by National Forest/ Non-NFS (S. Mtns)



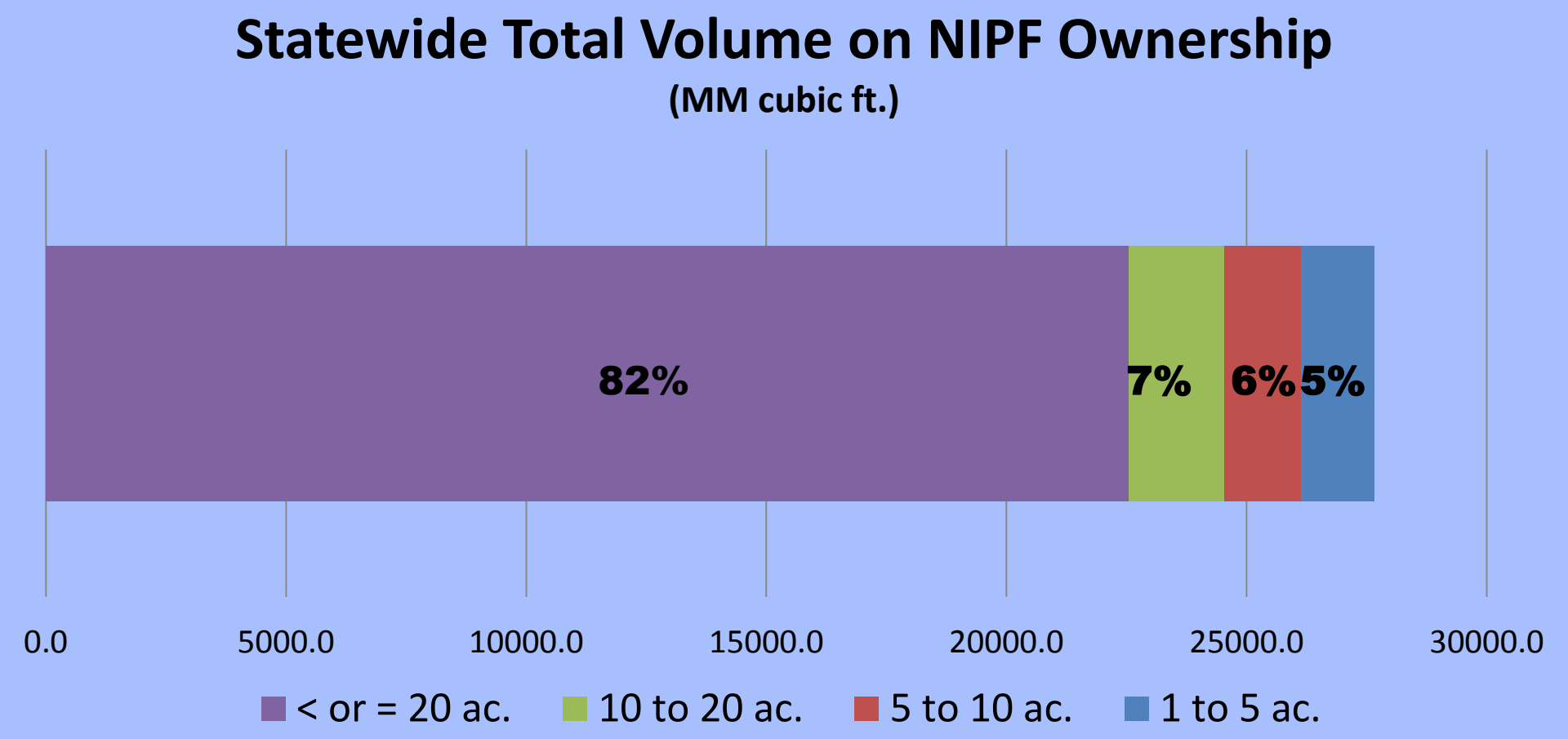
Summary – Annual Change (tons)

2010	Softwoods	% Change	Hardwoods	% Change
Coastal Plain	2,059,988	1.9%	2,394,603	1.3%
Southern Piedmont	-92,404	-0.1%	1,225,985	0.6%
Northern Piedmont	437,920	1.4%	2,238,274	1.2%
Northern Mountains	468,657	1.6%	3,904,143	2.1%
Southern Mountains	292,220	1.3%	4,708,838	2.0%
Total State	3,166,381	1.2%	14,471,844	1.5%

"Availability"

- Parcel Size – minimum tract size
- Operability/Slope
- Impact of National Forest – FIA definition vs. GW/Jefferson Forest Plans

Effect of Tract Size



Source: Anita Rose, Research Ecologist, Southern Research Station, USDA Forest Service

Operability

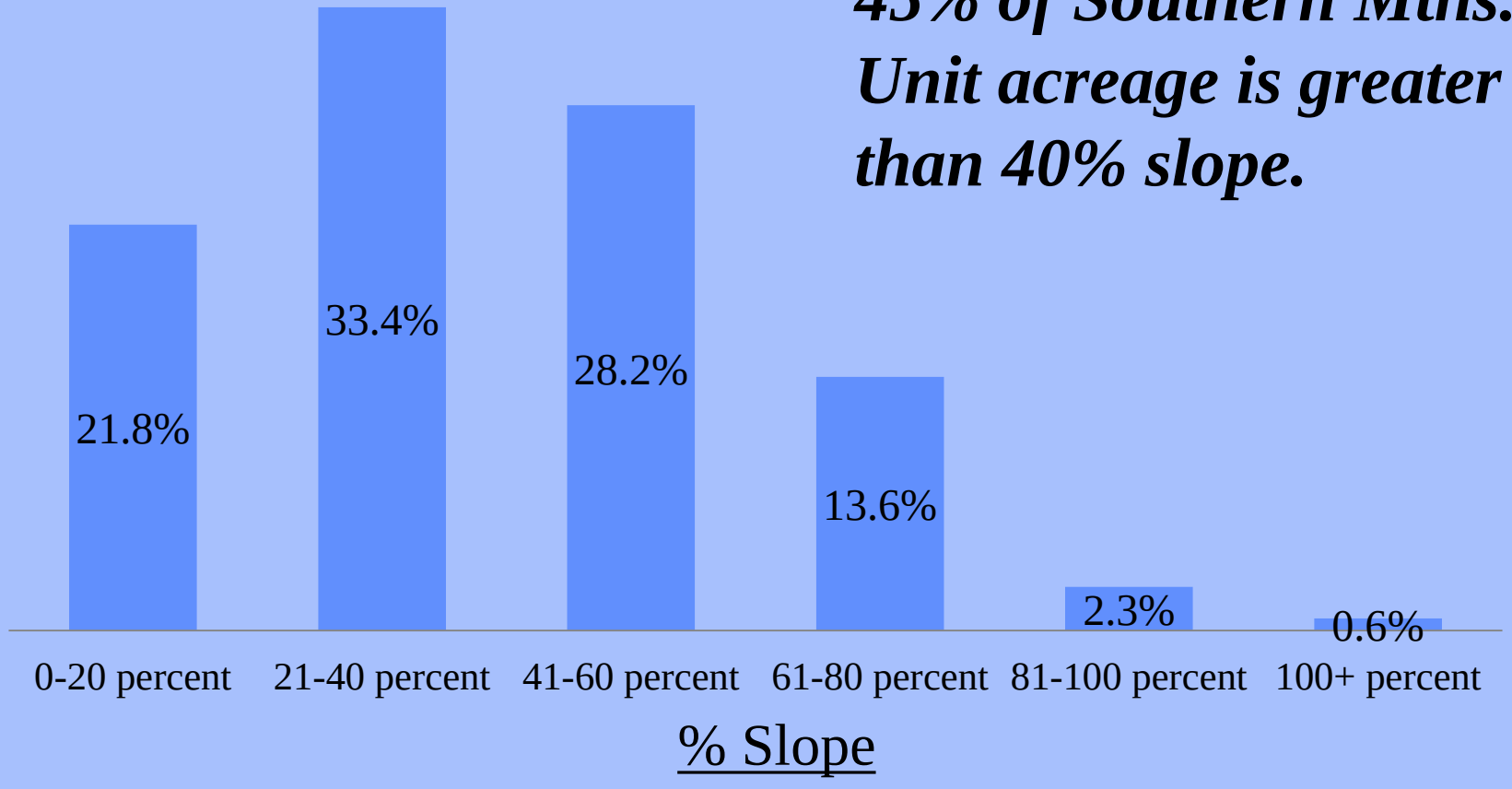
- *If we exclude all NIPF volume on >40% slope and permanent wet areas, we reduce total volume by:*
- **Statewide – 13%**
- **Coastal Plain – 4%**
- **Southern Piedmont – 2%**
- **Northern Piedmont – 11%**
- **Northern Mountains – 8%**
- **Southern Mountains – 52%**

Source: Anita Rose, Research Ecologist, Southern Research Station, USDA Forest Service

Slope Distribution in Southern Mtns.

% of Acreage by Slope Classes

45% of Southern Mtns. Unit acreage is greater than 40% slope.



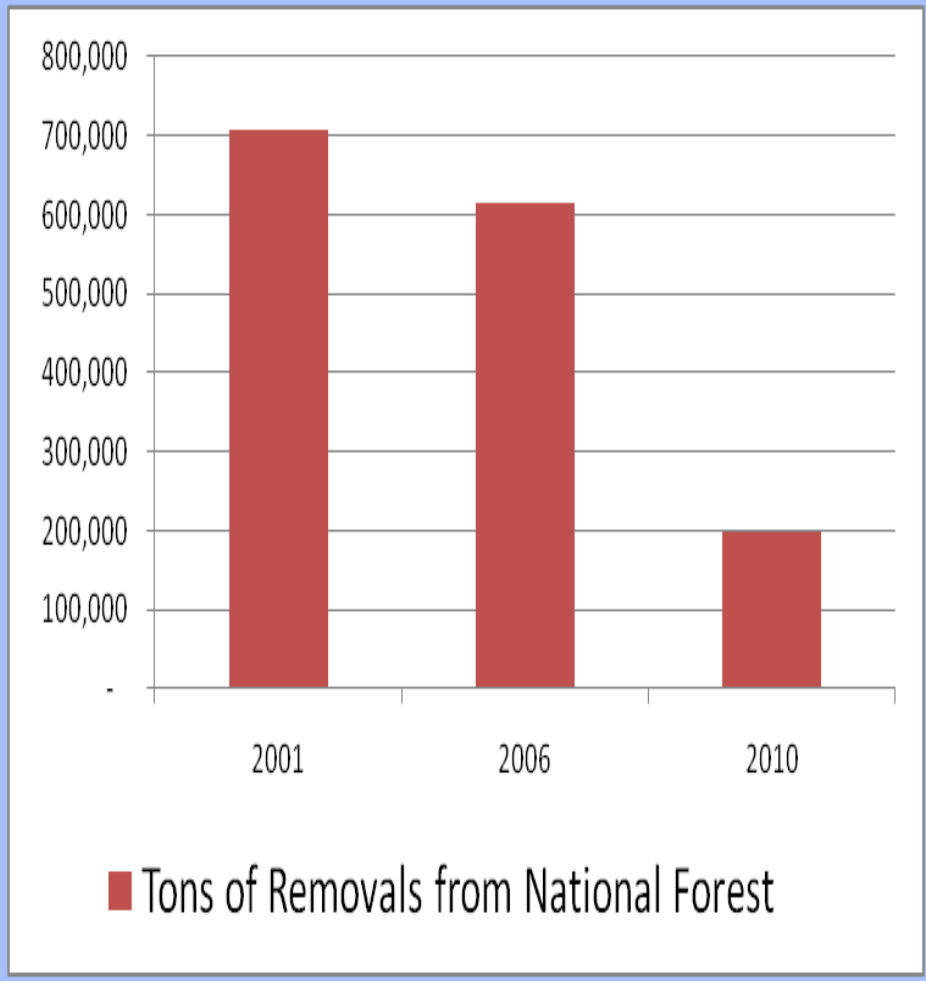
Impact of National Forest on Availability

- Discrepancy between FIA definition of Comm. Timberland vs. G.W. & Jefferson Forest Plans
- FIA – 1.7 MM acres of "Comm. Timberland"

  vs.

  GW/Jeff. NFs 34% (600,000 acres) "suitable for timber production"

  by Forest Plans



Summary

- **FIA Program in VA:**
  - Cooperation relationship
  - Ongoing data collection
  - Annual updates available online
- **Update on Virginia's Forests**
  - 16M annual loss, improvement in GRMs EXCEPT Southside VA
- **Resource "Availability" effect of tract size**

Acknowledgements

- "EVALIDATOR" web application version 4.01.01
  http://apps.fs.fed.us/Evalidator/tmattribute.jsp
  P.D. Miles, Northern Research Station, USDA, Forest Service

- Anita K. Rose, Research Ecologist
  USDA - Forest Service, Forest Inventory & Analysis
  4700 Old Kingston Pike
  Knoxville, TN 37919
  anitarose@fs.fed.us

Questions?

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