

Survey the Lessons Learned About Managing Forests for Biodiversity and Sustainability Based on Practical Experiences



S U S T A I N A B L E
F O R E S T R Y
P A R T N E R S H I P



OREGON STATE
UNIVERSITY





Products

- Product I: Key informant interviews and data matrix
- Product II: Data base of national survey
- Product III: Impact of indicators on biodiversity programs
- Product IV: Futures scenarios showing consequences of incremental changes in biodiversity programs
- Product V: Users workshops

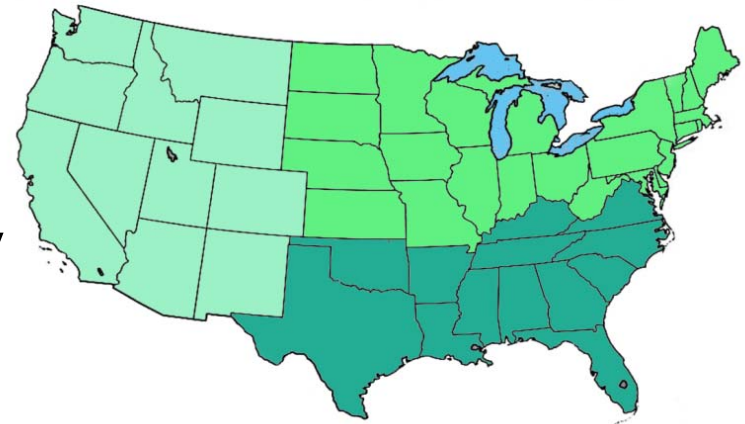


Four Phase Study

To collect, summarize, simulate, and release information on biodiversity programs to forest managers across the continental United States...

Phase 1: local, state, regional, and national scale data collection

- 9 forest landownership classes
- 20 Key Informants
- Build a matrix
- Quantitative survey





Phase II—Develop a database that documents findings from an extensive forest biodiversity survey

- Surveys sent to capture a diverse range of forested land conditions

653 National Surveys

223 hard copies

430 e-mail

900 Private Landowner Surveys (AL, OR, PA)

- Nominal Survey Populations

OR---large Federal/industrial forests; strict State forestry practices

AL---mixture of small-private and large industrial owners

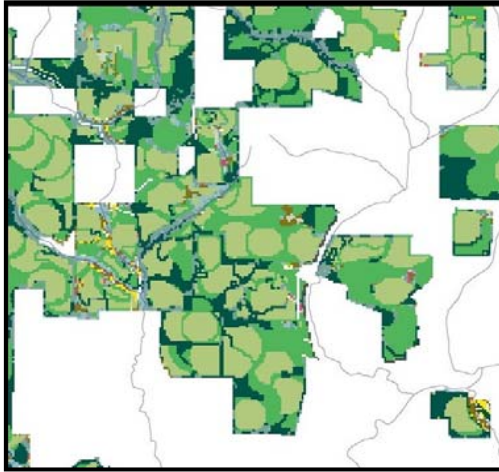
PA---many small-private landowners, few large Federal

- Surveys received

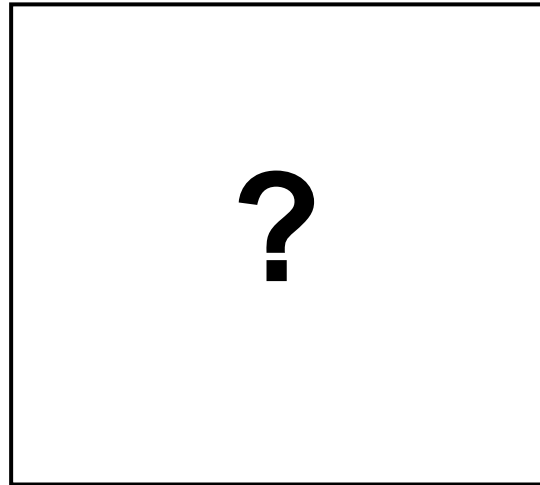
335 in-hand surveys (e-mail, FAX, hard copy, or Internet site)

60 refusals or not forest owners or managers

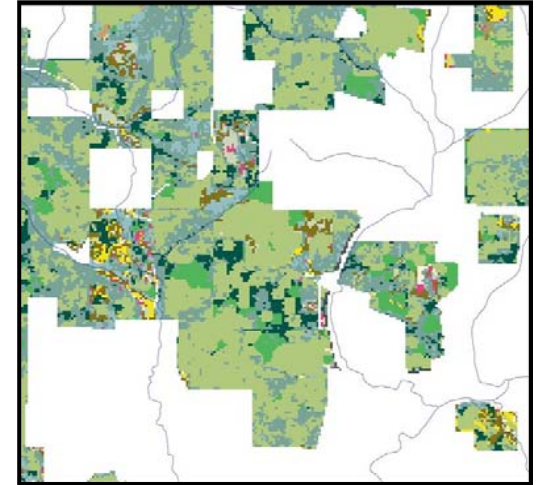
Phase III—Assess changes in forest habitats and vertebrate species under three management scenarios



Strict Certification

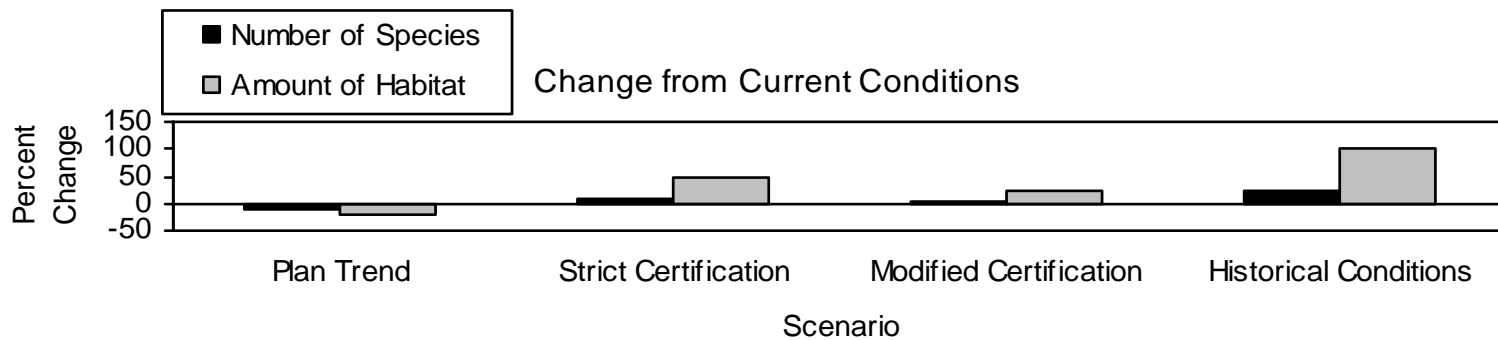


Modified Certification



Plan Trend

Differences in vertebrate species by forest management scenarios.





Phase IV—Present survey database findings to diverse users, including the general public

- Regional meetings with users/experts
 - Share project results
 - Stakeholder input
- Post project findings national Sustainable Forestry Partnership (SFP) web site
- Develop technical and non-technical publications
- Share results at professional meetings
- Final report and database to NCSSF

Biological Indicators



Montreal Process Criteria and Indicators
Sustainable Forestry Initiative®
Forest Stewardship Council



Montreal Process Criteria & Indicators

Criterion 1 - Conservation of Biological Diversity

- Biological diversity includes the elements of the diversity of ecosystems, the diversity between species, and genetic diversity in species.
- 9 indicators in three categories: ecosystem diversity, species diversity, and genetic diversity



Criterion 1:

Ecosystem Diversity

- **Indicator 1** - Extent of area by forest type, relative to total forest area
- **Indicator 2** - Extent of area covered by different forest types and age classes or successional stages
- **Indicator 3** - Extent of area, by forest type, in protected area categories, as defined by IUCN or other classification systems
- **Indicator 4** - Extent of area, by forest type, in protected areas, defined by age class or successional stage
- **Indicator 5** - Fragmentation of forest types



Criterion 1:

Species Diversity

- **Indicator 6** - Number of forest-dependent species
- **Indicator 7** - The status of forest-dependent species that are at risk of not maintaining viable breeding populations, as determined by legislative or scientific assessment

Genetic Diversity

- **Indicator 8** - Number of forest-dependent species occupying a small portion of their former range
- **Indicator 9** - Population levels of representative species from diverse habitats, monitored across their range



Sustainable Forestry Initiative®

4.1.4.1.3 *Program participants* shall apply knowledge gained through research, science, technology and field experience to manage wildlife *habitat* and contribute to the *conservation of biological diversity*.



Core SFI Indicators:

1. Collection of information on *critically imperiled* and *imperiled species* and communities and other biodiversity-related data.
2. Training or education for appropriate personnel in identifying and conserving rare and unique biological communities.
3. Apply knowledge gained through research, science, technology and field experience to manage wildlife habitat and contribute to the conservation of biological diversity.



Other SFI Indicators:

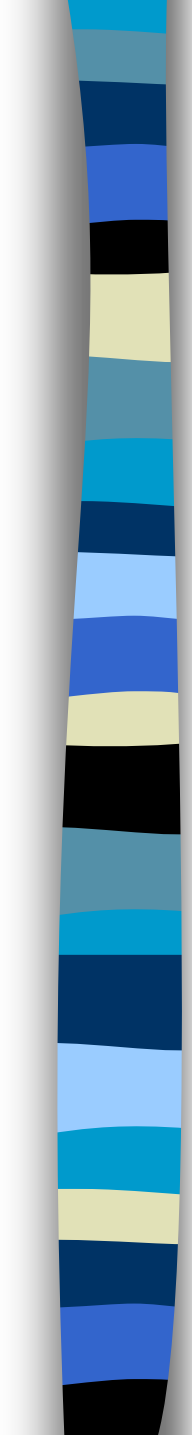
1. Participation in cooperative ecological *landscape* planning efforts where available.
2. Professional expertise available or staff allocated to research and develop wildlife, aquatic or biodiversity programs.
3. Participation in appropriate cooperative agreements with external parties on wildlife *habitat* management, federally-threatened and endangered species conservation, *landscape* planning or *conservation of biological diversity*.

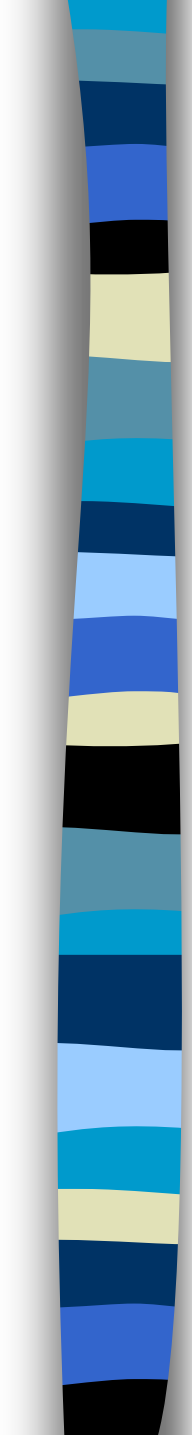


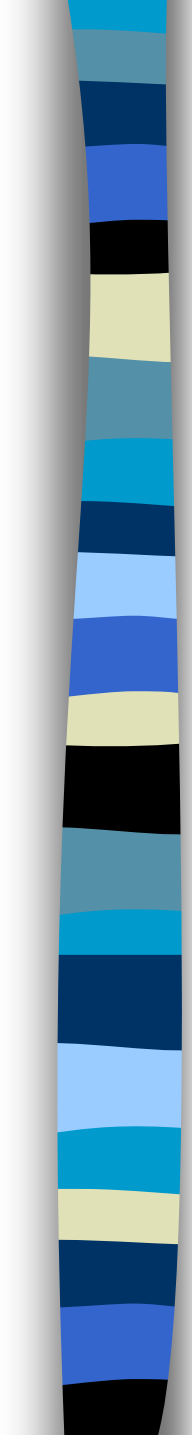
Forest Stewardship Council

Principal 6: Environmental Impact

Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes.

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- 6.1 Assessment of environmental impacts shall be completed and adequately integrated into management systems.
- 6.2 Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g., nesting and feeding areas).
- 6.3 Ecological functions and values shall be maintained intact, enhanced, or restored, including:
- Forest regeneration and succession.
 - Genetic, species, and ecosystem diversity.
 - Natural cycles that affect the productivity of the forest ecosystem.

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- 6.4 Representative samples of existing ecosystems within the landscape shall be protected in their natural state.
- 6.5 Written guidelines shall be prepared and implemented to: control erosion; minimize forest damage during harvesting, road construction, and all other mechanical disturbances; and protect water resources.
- 6.6 Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management.
- 6.7 Chemicals, containers, liquid and solid non-organic wastes shall be disposed of at off-site locations.



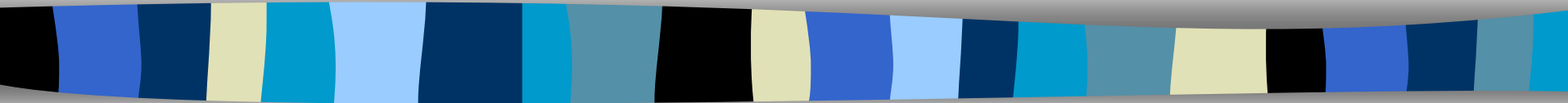
6.8 Use of biological control agents shall be documented, minimized, monitored and strictly controlled in accordance with national laws.

6.9 The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts.

6.10 Forest conversion to plantations or non-forest land uses shall not occur, except in certain circumstances.

Survey Results

Forest Management and Biodiversity

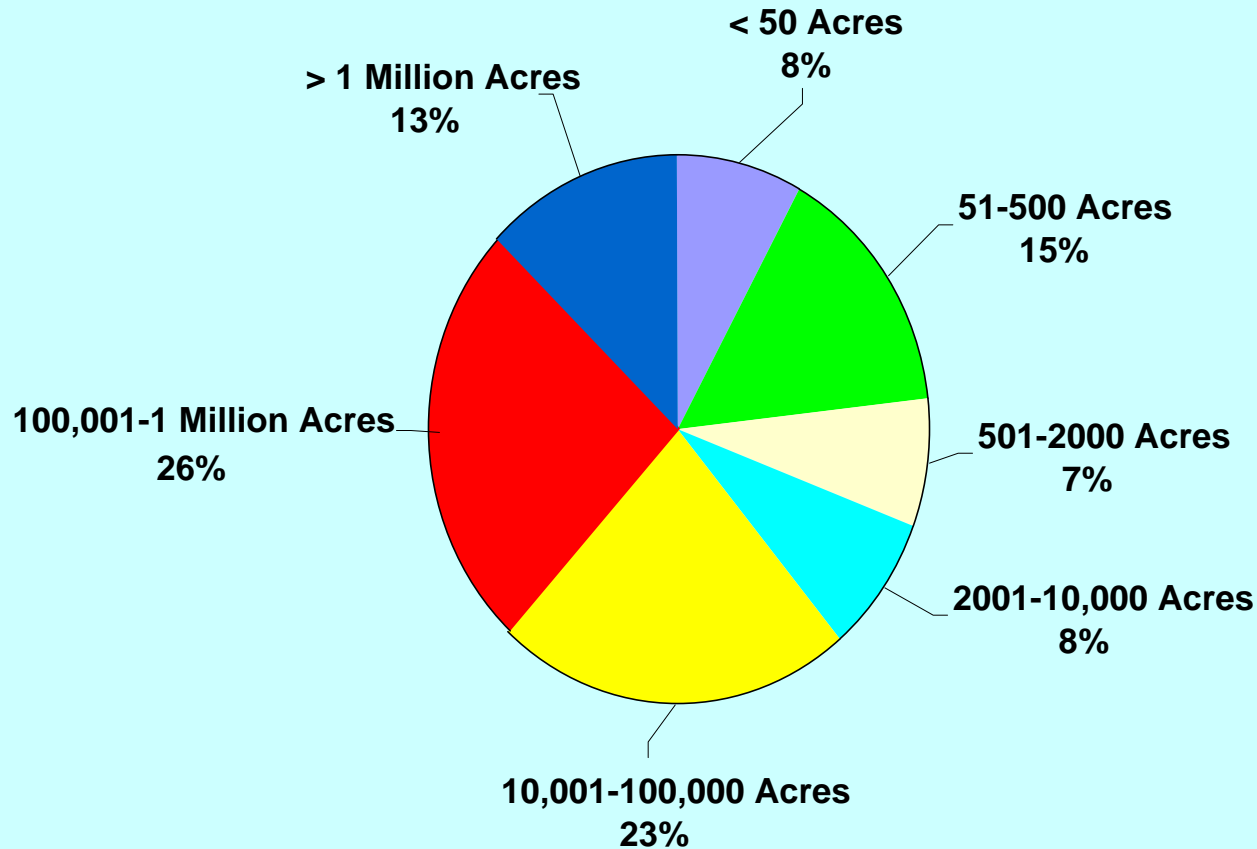




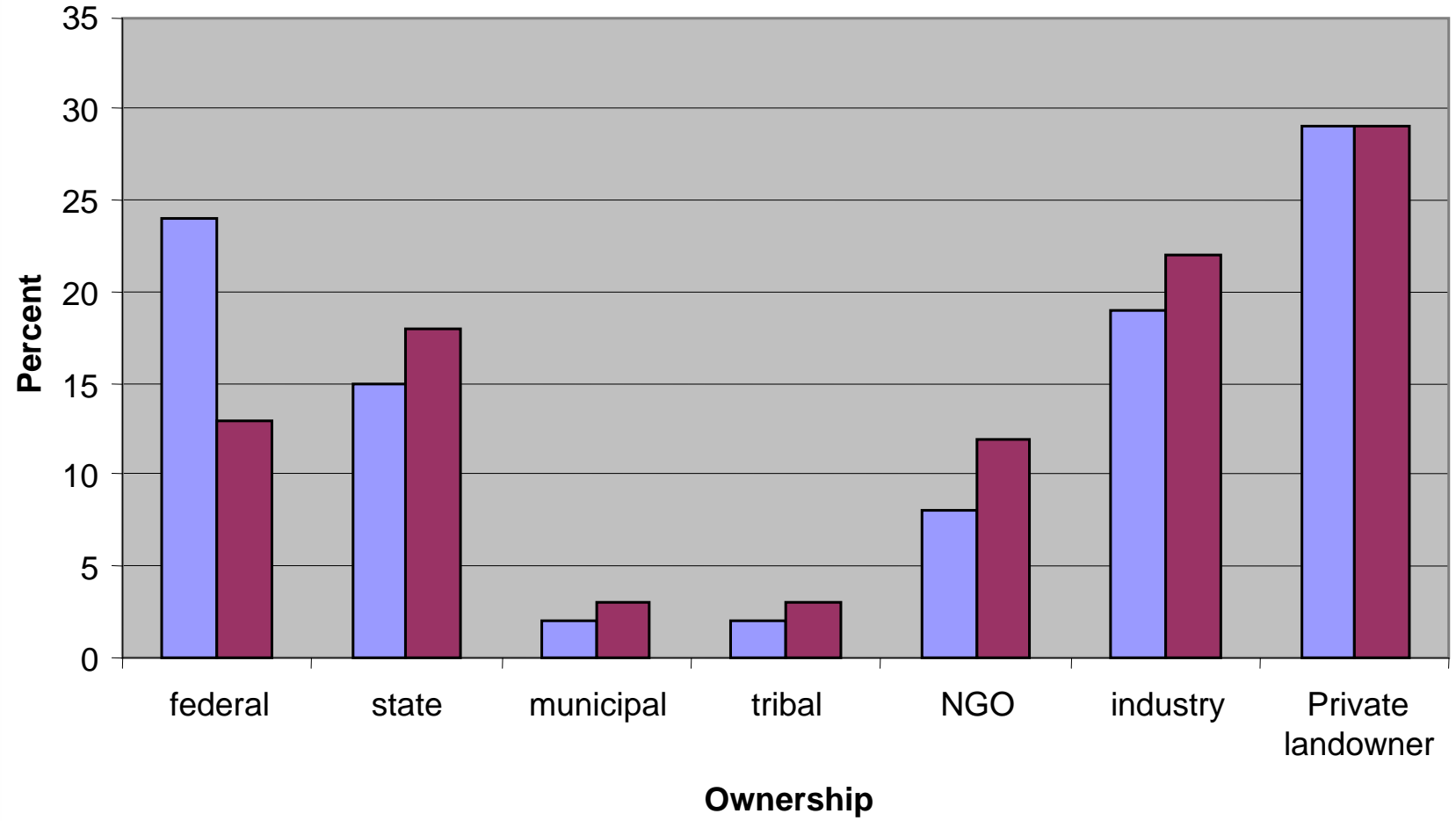
Quantitative Forest Biodiversity Survey

- Informal or formal plans
- Important business goals
- Encourage/discourage biodiversity management
- Guidelines-laws-regulations
- Biodiversity approaches
- Biodiversity indicators
 - Stand-level indicators
 - Landscape-level indicators
- Biodiversity tools
- Effectiveness measures
- Rate IMPLEMENTATION & SUCCESS

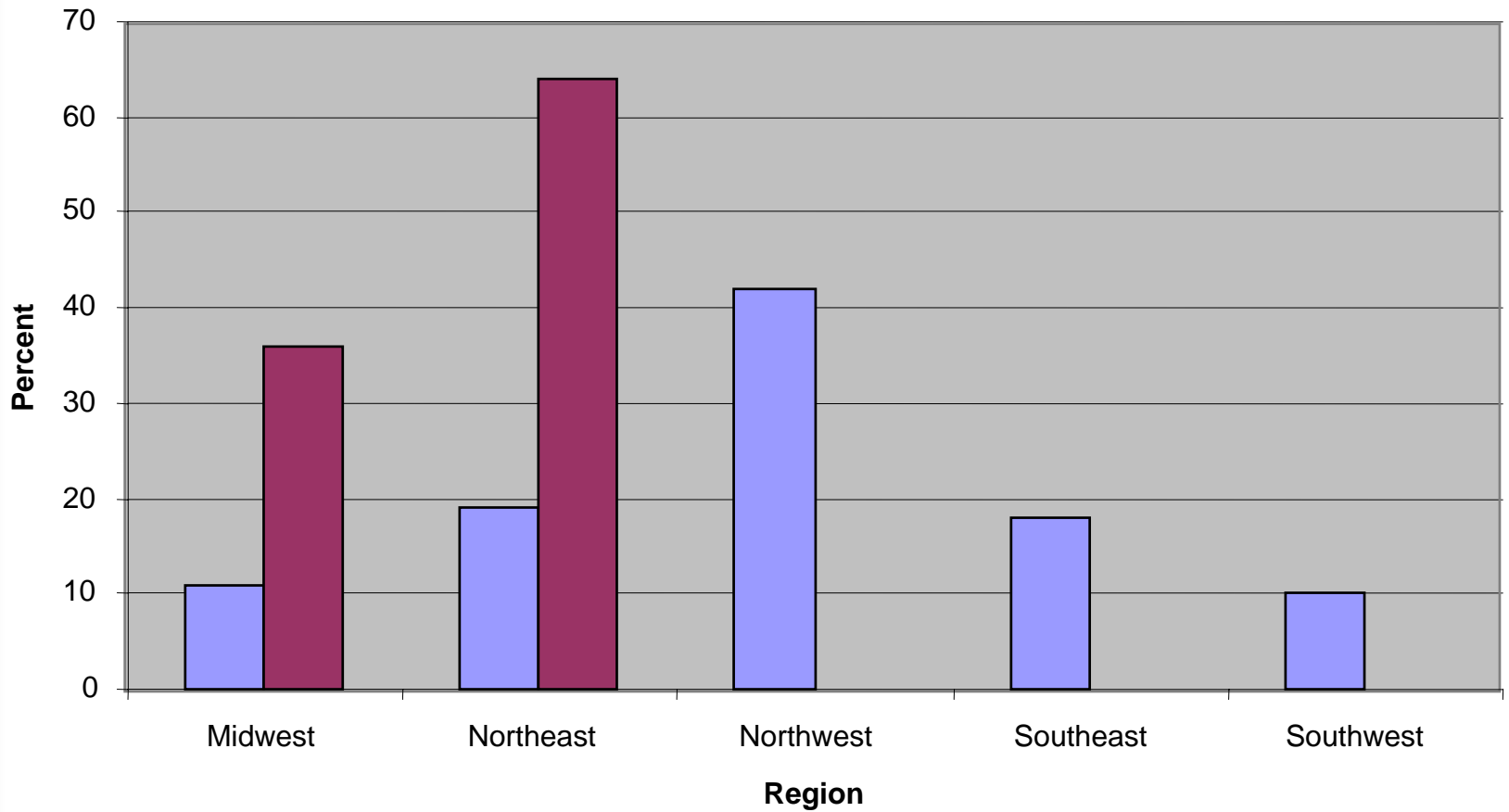
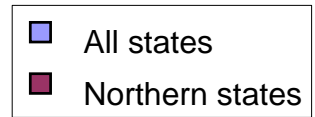
Size Distribution of Respondents



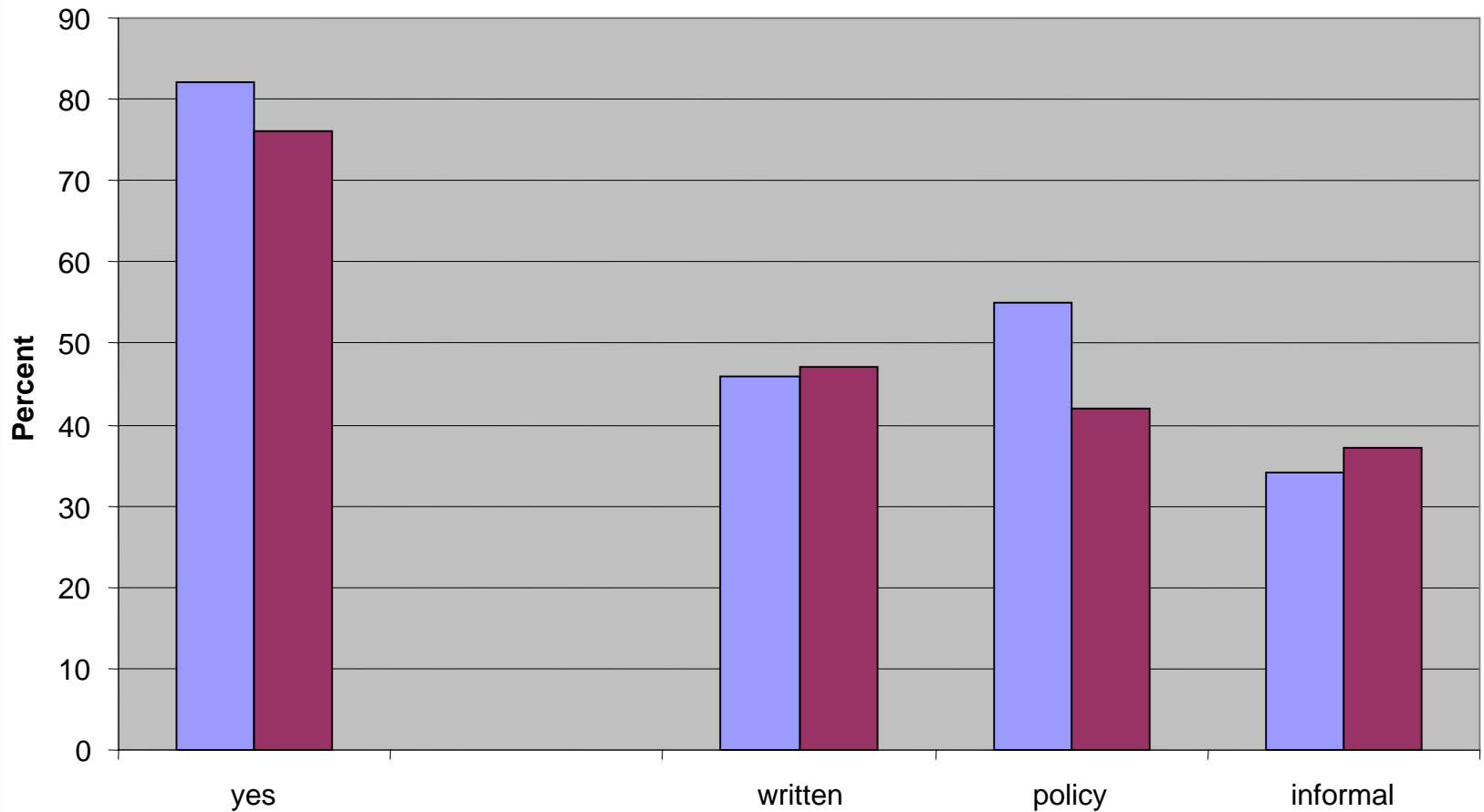
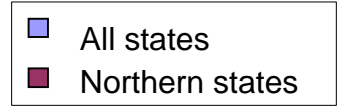
Type of ownership



Distribution of lands



An approach or plan to address biodiversity





Most important considerations for managing land

■ Top Five

- Economic viability
 - Conserve biodiversity
 - Wood products
 - Multiple uses
 - Wildlife habitat
- Laws, water, aesthetics also important



Most important considerations for managing land

- Individually
 - Water (93, 92)
 - Conserve biodiversity (87, 85)
 - Comply with laws (82, 80)
 - Aesthetics (81, 80)
 - Public image (81, 81)



Most important considerations for managing land

- Those with a written plan for BD significantly more likely to consider:
 - Public image, conservation of BD, community input, laws, multiple uses, recreational demands, aesthetics, NTFPs, community relations, water quality
 - NOT economic viability, timber production, real estate investment, and hunting/fishing



Other observations on property ownership

- Community input more important nationally than in the north
- Higher interest in real estate investment in north
- Hunting more important in north



Considerations in managing land

- Most encouraging
 - Stewardship ethic/company mission (32, 30)
 - Scientific information (11, 13)
 - Current forest conditions (10, 9)
 - Best Management Practices (8, 11)



Considerations in managing land

■ Most discouraging

- Pressure from interest groups (35, 41)
- Legislative, legal compliance (16, 9)
- Organizational capabilities (14, 13)
- Financial viability (14, 10)
- Attaining market advantage (9, 9)



Importance of guidelines, laws, regulations

■ Most important

- Organizational plans (21, 21)
- State regulations (16, 11)
- Certification guidelines (14, 16)
- NEPA (13, 5)
- Endangered Species Act (12,14)
- Land use regulations/zoning (11,15)
- BMPs (2,13)



Importance of guidelines, laws, regulations

- Those that find NEPA, and organizational plans important are significantly more likely to have a written management plan
- Those that find BMPs and land-use/zoning regulations important are significantly less likely to have a written management plan



Most important approaches for addressing biodiversity

- Organizational mission (22, 22)
- Sustaining timber yields (19, 20)
- Promoting restoration (13, 7)
- Landscape diversity (12, 11)
- Ecological diversity (6, 9)



Most important BD indicators

- Tree species composition (17, 20)
- Forest age-class distribution (12, 11)
- Stream protection/water quality (11, 11)
- All species richness (14, 9)



Most important BD indicators

- Tree species composition twice as important as age class distribution
- Water quality more important in north



Most important stand level indicators

- Habitat diversity (24, 22)
- Tree age-class distribution (17, 10)
- Mix of age and structure (13, 16)
- Endangered and threatened species (10, 10)
- Riparian buffers (7, 7)



Most important landscape level indicators

- Habitat type distribution (19, 21)
- Forest age class distribution (18, 20)
- Age and structure mix(10, 10)
- Hydrology (9, 6)



Most important tools to assess forest biodiversity

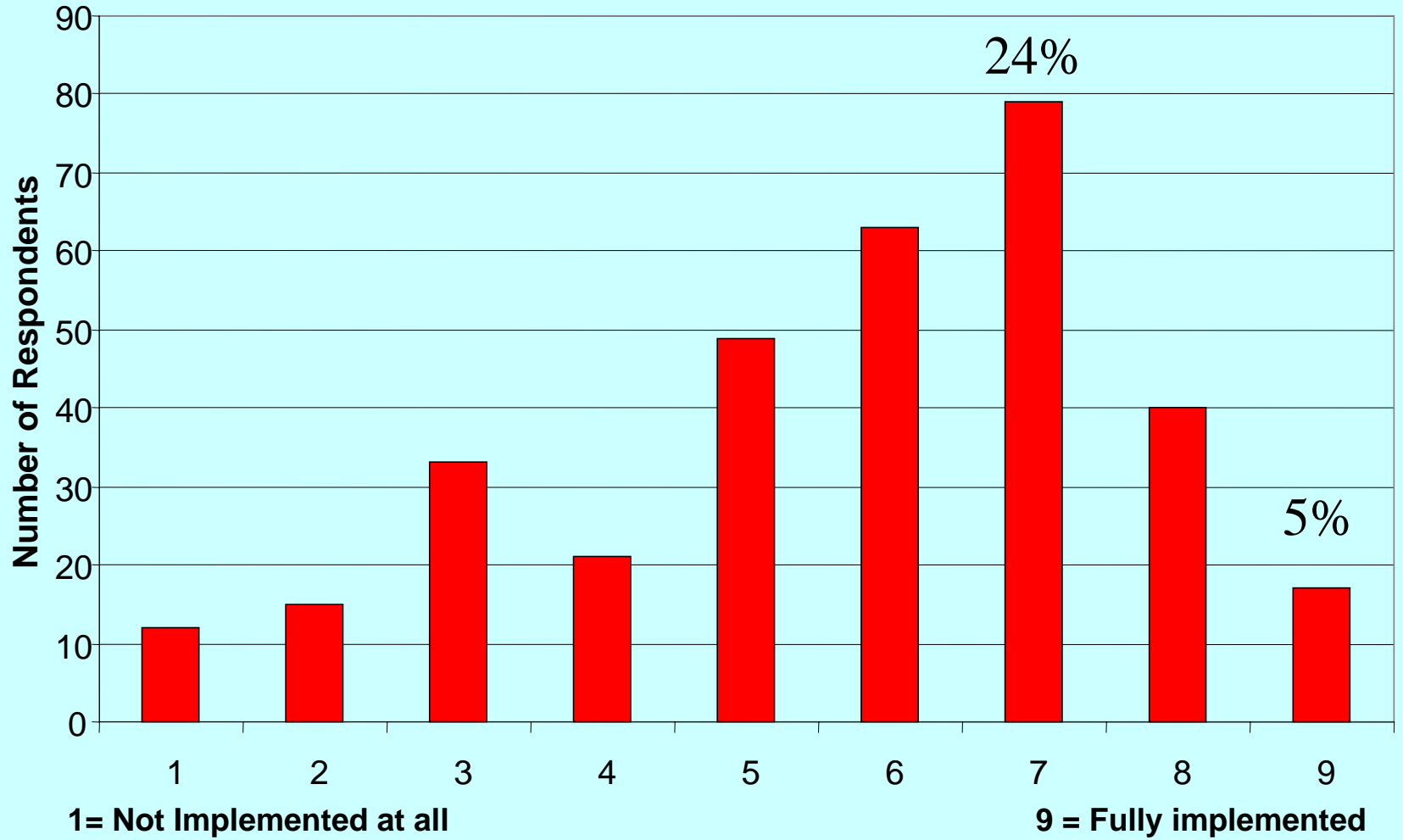
- Timber inventory (35, 37)
- GIS/remote sensing (16, 11)
- Forest Inventory and Analysis (FIA) data (13, 13)



Most useful indicators for managing species diversity

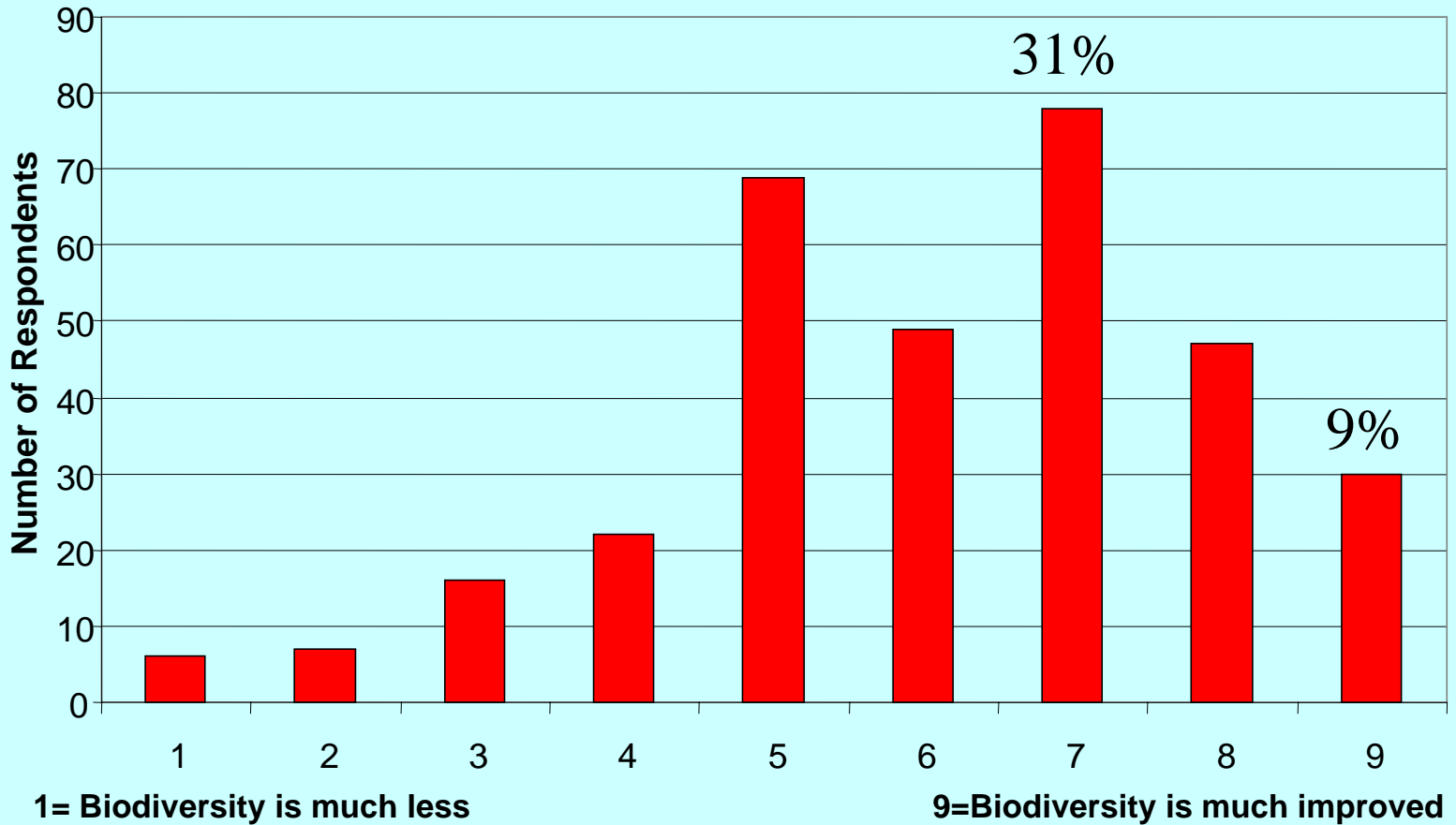
- Species abundance (33, 30)
- Habitat diversity (24, 21)
- Population distribution (17, 18)

Degree of Biodiversity Program Implementation



Mean 5.7 (5.4)

Perception of Success



Mean 6.1 (6.1)



Future Work:

- Regression Models
 - Dependent Variables
 - Program Success
 - Implementation Success
 - Independent Variables
 - Organizational Goals
 - Regulations
 - Economic Opportunities
 - Societal Impacts
- Cluster Analysis