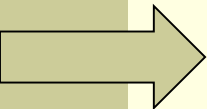


A 21st Century Vision for Sustainable Forestry

Higher Education Trends

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Changes Effecting the Future

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- Paradigm shift in natural resource management
 - Professional graduate education as an outgrowth of, and linked to, undergraduate education
 - New agenda for graduate education in 21st Century

Shifting Management Philosophy

- 20th Century
- Agricultural Model
- Utilitarian foundation
- Output oriented
- Stand level
- Timber primacy
(sustained yield)
- Multiple use
- Fundamental research
- 21st Century
- Ecosystem Model
- Biocentric orientation
- State oriented
- Landscape view
- Multi-resource
(sustainability)
- Integrated use
- Integrative research

Why a Paradigm Shift?

- Changing societal values of a growing and urbanizing population
- Growing awareness of the ecological and environmental implications of climate change
- Concern over loss of biodiversity in managed forests, invasives, endangered species, wildfire, water, and forest health (insects and diseases)

Why a Paradigm Shift?

- Recognition that we live on a human dominated planet where man greatly influences ecosystems in a complex fashion over many dimensions and scales and has done so for many years
- Ecosystems do not attain a stable equilibrium but, instead, are open systems always in flux
- Both natural and man-caused disturbances play a significant role in ecosystem health

21st Century Environment

- Reducing the risk of forest loss may replace productivity as the principal concern of managers and policy makers
- Increasing the resiliency of our forests so they are sustainable will grow more important
- Suggests that education must change to keep pace so we continue to educate the future leaders we will need

Changes Effecting Education

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Forestry Higher Education

- Basic undergraduate education in forestry started at Yale at beginning of 20th Century
- Followed the agricultural model (mensuration, fire protection, timber harvesting, economics, silviculture, soils, etc.)
- Heavy emphasis on technical field skills for entry-level positions
- Usually well structured programs (few electives)
- Curriculum content heavily influenced by employers and accrediting bodies

Forestry Higher Education

- Although basic undergraduate forestry education served society well during most of the 20th Century, most forestry schools are changing their curricula to meet the new challenges of the 21st Century

Forestry Higher Education

- Important to a 21st Century education are:
 - Educate as team member, problem solver, and integrator of information
 - Stress concepts, principles, and theories over facts (social, ecological, and economic)
 - Reduce specialization at undergraduate level
 - Prepare students for post-graduate education (if desired) and a future of constant learning
 - Include global perspective throughout the educational process

Forestry Higher Education

- Provide a broad science-based undergraduate education followed (possibly) by a professional Master's education
- Incorporate new technologies into the curriculum
- Develop more distance learning professional Master's modules for time/place bound students

Changes Effecting Education

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Future Educational Mission

- To discover and understand ecosystem processes, develop new approaches for the use and protection of natural resources and environmental services, and understand human behavior and decisions about natural resources

Source: Don DeHayes, President, NAPFSC, 2004

McIntire-Stennis Strategic Plan

- Major components
 - Foundation areas of knowledge
 - Emerging and integrative areas of knowledge
 - New science of integration
 - Forest ecosystem services
 - Human attitudes and behavior
 - Conflict, uncertainty and decision-making
 - Technology advancements and forest applications
 - New applications for forest products
 - Urban ecosystems

Source: Sustaining Healthy and Productive Forests, NAUFRP, 2007

Emerging Areas

- Landscape analysis
- Spatial analysis and information management
- Watershed science and planning
- Forest ecosystem health and restoration
- Risk analysis (ecological and economic components)
- Bio-resources science and engineering

Source: National Graduate Education Needs and Priorities, NAPFSC, 2003

Education in 21st Century

- Integrate social and ecological issues holistically
- Maintain disciplinary depth while also providing a greater breadth
- Understand how to accept rapid change in an uncertain world
- Collaborate in an interdisciplinary environment
- Support development of a new science of sustainability to integrate ecological and economic approaches in a socially acceptable manner

The End
