



## **Standard 2: Forest to Landscape, Structure and Function**

### **Principle**

Canada's forested ecosystems are diverse and complex systems arising out of the interaction between living and non-living components over time. Knowledge of composition, structure and function of forested ecosystems at scales ranging from aggregates of stands to landscapes is essential to describe and evaluate current conditions, predict the effects of environmental change, and practice conservation and management.

### **Relevant Components**

- Appreciation of the forest health agents (fire, insects, disease, harvest etc.) and the effects of such agents to silviculture.
- Biological diversity, genetic diversity.
- Components and processes of ecosystems.
- Climate patterns and processes, causes and effects of climate change.
- Ecological concepts and principles.
- Habitats and living organisms related to the forested ecosystem.
- Interdependency and interaction between biotic and abiotic, forest and non-forest components of ecosystems.
- Natural disturbance processes and agents.
- Principles and applications of ecological classification.
- Role of agents of forest change in forest ecosystems.
- Resource cycles and their storage (e.g. Carbon, water, biogeochemical, etc).
- Soil properties, productivity, and applications for forest management.
- Watershed patterns, processes and classifications.

### **Demonstrable Competency Requirements**

A candidate for certification shall be able to:

- 1. Describe the components, characteristics and processes of forest ecosystems and how they interact.**
  - a. Describe living and non-living components.
  - b. Identify and describe major ecosystem conditions, cycles and processes within forests and landscapes.
  - c. Explain how the ecosystem conditions can be characterized across a variety of scales.
  - d. Discuss ecosystem dynamics and ecological sustainability.
  - e. Explain forest productivity and how it is determined.

- 2. Describe and apply classification schemes using vegetative, climatic and edaphic characteristics.**
  - a. Describe how a classification scheme is developed and applied.
  - b. Be able to identify soils and vegetation to the degree necessary to be used in an ecological classification scheme.
  - c. Describe and apply an ecological site classification system.
  
- 3. Explain the influences and outcomes of agents of change on forests and landscapes.**
  - a. Recognize and explain the dynamics and roles of insects and disease on forests and landscapes.
  - b. Explain how integrated pest management can modify change on forests and landscapes
  - c. Explain the role of fire and weather factors on forests and landscapes.
  - d. Recognize the impact of changing climate on forests and landscapes.
  - e. Discuss the influence of human activities on forests and landscapes.
  
- 4. Explain and apply the concept and measures of diversity.**
  - a. Describe the relationship between diversity and ecosystem structure and function.
  - b. Describe the interaction between forests, fish and wildlife.
  - c. Describe the various measures of diversity at different spatial scales.
  
- 5. Demonstrate the integration of the individual elements of Standard 2.**
  - a. Apply the knowledge of forest composition, structure and function to predict forest and landscape conditions under natural and human-caused disturbances.
  - b. Identify and discuss the strengths and weaknesses of predictive tools/models at the landscape level and the implications of each in application.