FOREST HEALTH AND PROTECTION

Second Edition

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PhD. Dr. Zana Ahmed Lak. Forest Ecophysiology

Introduction

✓ Forest protection is one of the forestry Sciences that study how to protect forests, which are injuries by abiotic and biotical factors.

✓ Forest protection combines knowledge from forest ecology, entomology, botany and others .

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One of the first questions that come to mind may be: Why are some forest ecosystems unstable and why is really necessary to protect forest?

✓ Natural disturbance agents such as pathogens, insects, fire, wind, drought, ice storms, flooding, air pollution; cutting, and climate change strongly influence forest ecosystem health.

✓ There are many factors that influence forest, but the most important thing is man. People affect forest from the very beginning of humankind.

✓ **The Montreal C&I were designed to evaluate sustainable forest management at the national level and consist of the seven criteria and 64 indicators listed below.**

One: Conservation of biological diversity

Two: Maintenance of productive capacity of forest ecosystems

Three: Maintenance of forest ecosystem health and vitality

Four: Conservation and maintenance of soil and water resources

five   Maintenance of forest contribution to global carbon cycles

Six: Maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of society

seven   Legal, institutional, and economic framework for forest conservation and sustainable management.

The various damaging agencies can be broadly divided into two categories:

One: Damage by Biotic component i.e., organic nature

- Man
- Animals (Harmful insects, domestic animals, wild animals)
-Harmful plants (fungi, mistletoes and weeds)

Two: Damage by abiotic components i.e., inorganic Nature

- Damage by adverse atmospheric agencies and climate (Heat, Frost, Snow)
- Protection against storm, erosion, sand drifts, noxious gases, forest fires

Characteristics of a Healthy Forest

To evaluate forest health we need good indicators, and the following list may indicate healthy conditions:

- ✓ Trees and understory plants should be vigorous and healthy in appearance. Species, age class distributions, and stand densities should be within historical ranges for the site, and growth and mortality should be consistent with the ecosystem type and the age of dominant trees.

- ✓ Soil erosion should be minimal, Clean water should flow from streams except during extraordinary runoff events, and stream banks need to be stable and riparian vegetation ample.

- ✓ Insect, disease, and fire frequencies should be within the normal ranges for the ecosystem.

Symptoms of Forest Health Problems

Symptoms of forest health problems or potential problems usually can be recognized:

✓ If trees appear stressed or sickly under normal weather conditions (including periodic droughts) and have high mortality rates with a lack of regeneration, then a forest health problem is suspected.

✓ Other symptoms of problems include: tree density higher or lower than the historical range for the ecosystem involved; significant species of trees, understory plants, fish, or wildlife either missing or present in higher proportions than historical ranges suggest