

INTENSIVE FOREST MANAGEMENT AND ENVIRONMENTAL ISSUES

Boris Zeide

Professor of Forestry

School of Forest Resources, University of
Arkansas at Monticello. Monticello, AR
71656-3468. zeide@uamont.edu

Contents

- GLOBAL VIEW: INTENSIVE MANAGEMENT AS THE WAY TO PRESERVE THE ENVIRONMENT
- LOCAL VIEW: SHOULD INTENSIVELY MANAGED STAND BE BIODIVERSE?
- CONCEPTUAL VIEW: WHAT IS BIODIVERSITY?
- LESSONS FOR MANAGEMENT

GLOBAL VIEW: INTENSIVE MANAGEMENT AS THE WAY TO PRESERVE THE ENVIRONMENT

Two goals of forest management:

- (1) preserving the environment, and
- (2) meeting current and future needs of an increasing human population in wood products.

All the diversity of forest management is made of various combinations of these two goals.

Question

Is it possible to both

- preserve biodiversity and
 - destroy organisms to satisfy growing human needs and wants?
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- Much confusion around ecosystem management results from ignoring the contradiction between its goals.

Solution: spatial separation

- Contradictory goals cannot be satisfied at the same time and at the same place, but they can at different places.
- Spatial separation of biodiversity management from productive forestry removes the contradiction.
- This solution–zoning, reverses the conflict and makes intensive management for wood products a prerequisite for the existence of undisturbed forests. The more wood products can we extract, on a sustainable basis, from a part of the land, the more land can be devoted to preservation and maintenance of biodiversity.

LOCAL VIEW: SHOULD INTENSIVELY MANAGED STAND BE BIODIVERSE?

Biodiversity is associated with:

- higher productivity of forests
- beauty of forests and
- stable dynamics and
- superior ethics that involves the concern for all species.

If biodiversity is so good, we should not spray weeds, kill hardwoods, and plant monocultures.

Species diversity and productivity

- Some ecologists believe that forests composed of many tree species are more productive because they utilize resources of various niches of a given ecosystem.
- The view that associates diversity and productivity overlooks a chief outcome of diversity: large differences among species in their adaptive strategies and growth rates. On the same site, loblolly pine produces much more biomass than dogwood.
- In each area only one species can be superior to others with respect to the main objective such as growth rate or wood quality.
- This fact justifies growing monocultures of those outstanding species.

Ecosystem functioning

- The most important, defining characteristic of green plants is photosynthesis, the process of transforming light into chemical energy stored in carbohydrates. In forest stands, they are represented primarily by tree biomass, which sustains all other creatures.
- Therefore, the best indicator of ecosystem functioning is easily measurable growth of trees. It naturally integrates all ecosystem functions and processes, including still unknown to us.
- According to this indicator, intensively managed forest plantations with their high and sustained productivity function well, better than undisturbed stands.

Diversity and stability of forests

- Ecologists ascribe everything good to pristine environments and believed that diversity (number of species) enhanced ecosystem stability.
- It is not clear how to square this view with two facts:
 - tropical ecosystems are incredibly rich in number of species
 - tropical ecosystems are extremely fragile.
- Equally puzzling is the stability of northern forests with their low species diversity.
- Most likely, diversity is not connected with stability. In models of population dynamics, diversity is presented as nonzero terms in a certain matrix, while stability is reflected by the matrix invariants.

Diversity and aesthetics

- Beauty is a subjective criterion; it is in the eyes of the beholder. For some, uniform well-spaced pure stands of stately pines or oaks are more attractive than the clutter of a diverse stand.
- Actions speak louder than words about people's environmental preferences. By far the most common kind of environmental management is maintenance of lawns by private homeowners. It consists in the eradication of the natural diversity of freely grown vegetation (so-called weeds).
- Apparently, people consider the monocultures of grass, mutilated by close cut, as an epitome of environmental beauty.

Interconnectedness of life

- What is referred to as "ecological laws" usually means that everything is connected with everything else. This is why all of biodiversity is indispensable; it is indivisible like a living organism.
- If indeed everything was interconnected, the loss of a species would destroy an ecosystem. Facts show something else: while an organism disintegrates or becomes dysfunctional with the loss of a single limb, the eradication of competing vegetation is a prerequisite for growing agricultural crops and forest plantations.
- The belief that "everything is connected with everything" is as valid as its opposite "everything is independent from everything else." Real communities of plants and animals are in between these opposites.

Superior ethics

- Ethical considerations for preserving life in its entirety are expressed by ecocentrism.
- Its two main propositions are:
 - (1) all species and organisms have inherent value and various rights of which the right to exist is paramount; and
 - (2) as the only species capable of formulating and recognizing these rights, we, humans, have the obligation to respect them.
- These two propositions are contradictory. To exercise our right to exist, we have to eat and defend ourselves, which means killing or exploiting other organisms—the actions prohibited to us by the second proposition.

Diluted ecocentrism

- In its diluted form, ecocentrism recognizes the rights of species rather than individual members. As any equivocal position, it brings too many awkward questions such as:

Is it ethical to love an abstract species and to kill tangible individuals?

What proportion of a target species can be consumed without transgressing ecocentrism?

Whatever answers are given to these questions, diluted ecocentrism sounds more like hypocrisy than ethical teaching.

- The only viable position for us is anthropocentrism. It does include care and responsibility for other creatures, except fleas, ascarides, and the like.

CONCEPTUAL VIEW: WHAT IS BIODIVERSITY?

Is it possible to define biodiversity?

- To use biodiversity in management, we have to know what it is. Here we have a problem: despite many attempts, there is no satisfactory definition of biodiversity.
- We can easily understand why. Any definition pigeonholes and restricts the defined term. Biodiversity defies any restriction and embraces everything.

Biodiversity as everything

If biodiversity is everything then

- we should not worry about biodiversity because, being everything, it cannot be lost. It could only change form. When one species disappears, others thrive.
- biodiversity cannot be defined in principle.

Is it possible to preserve biodiversity?

If we are serious about maintaining biodiversity, we should avoid

- killing blood-sucking insects,
- taking medicine intended to exterminate bacteria,
- eating meat and vegetables, and
- even breathing because every minute our immune system destroys billions of the inhaled microbes.

Two sides of biodiversity

- One thing is clear about biodiversity: it has two sides. For us, species and individuals can be useful and harmful.
- It is true that biodiversity is our greatest treasure; equally true, it is our greatest enemy.
- Biodiversity is beneficial as a whole only when it is dead. All oxygen, oil, coal, and many soil nutrients are remnants of the departed organisms. While alive, they are less willing to sacrifice their livelihood for us.
- Forest management as well as life of any organism is a constant struggle to separate the good side of nature from its bad side.

LESSONS FOR MANAGEMENT

Species composition

Both experience and ecological reasoning indicate that

interspecific competition is one of the deadliest factors of tree existence.

Inefficiency of mixed management

Many possibilities are available between these extremes but mixing management with curtailed preservation on the same area would detract from both financial returns and environmental quality.

Ecosystem functioning

Excellent growth of planted forests proves that they function well and capture the sun energy better than unmanaged stands.

Forestry and environmentalism

We, foresters, are true environmentalists because by helping productive tree species to attain their growth potential on a part of the land we make it possible to keep the rest in a pristine state.