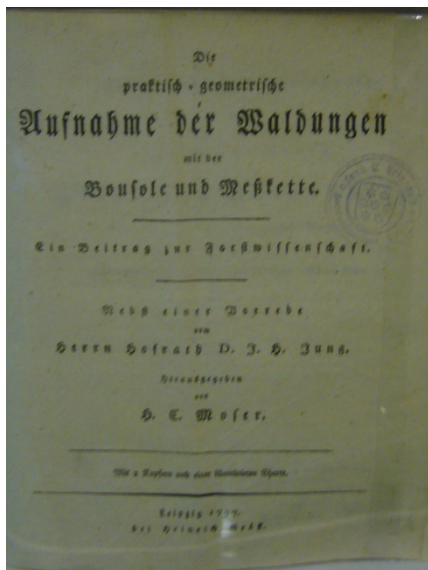
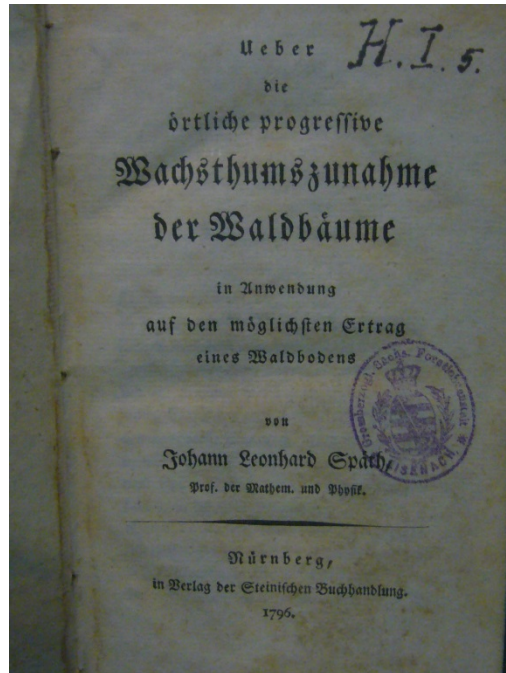


Topic 1 Origins of sustainable forest management

Many of the ideas behind sustainable forest management extend back several hundred years. However, today's ideas about sustainable forest management differ from the concept of sustained yield promoted in Germany in the 18th century, which focussed on the sustained production of timber. Sustainable forest management, as you will learn, is much more holistic approach to managing forest ecosystems.



Examples of early German textbooks on forestry dating back to the 18th century.

An example of the philosophy of early foresters is provided by this excerpt of a book by an Englishman called William Forsyth, published in 1791:

“The very great importance to this country of securing a continued succession of good, healthy, and well-growing forest trees, producing sound, unblemished timber, for supplying the various wants of the public, must be evident in every man’s reflection; nor need it be observed, that numberless large trees, in the woods, parks, and forests, of this kingdom, are, from various causes, rendered unfit for use, and the timber so much damaged as to occasion a certain diminution in its value. This evil arises, in some instances, from unskilful management, and in others, from external accidents; among which are the ruinous effects of hurricanes and high winds, when the trees are generally left, in their wounded and disfigured state, to the accelerated operations of inevitable decay. It also not infrequently happens, that the heirs of great estates, on coming to the possession of them, order great numbers of trees to be promiscuously felled, before they have reached a state of maturity, without paying the least attention to provide a succession of young trees to supply their place; and by such inexcusable negligence defeating the ends proposed by the provident care and wisdom of their ancestors, depriving the public of a valuable source of timber, either for domestic purposes or national use, and reducing their country to a dependence on foreign produce for supplying the demands of her fleets and manufactures”.

From: *Observations on the diseases, defects, and injuries, in all kinds of fruit and forest trees*, pp. 12-13.

Some of these themes were picked up by a U.S. forester called Aldo Leopold (http://en.wikipedia.org/wiki/Aldo_Leopold), and were expressed in his classic book *“A Sand County Almanac”* (http://en.wikipedia.org/wiki/A_Sand_County_Almanac). There are numerous different editions of this book available, and you should be able to find one fairly easily. One of the most important ideas proposed by Aldo Leopold was the land ethic. Simply put, this states:

“A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise”.



Aldo Leopold (this picture appears on a number of different web pages, such as <http://the-back-40.com/2012/ecologists-convert-aldo-leopolds-notes-into-1940s-soundscape/>)

The full text of the land ethic is available in the resources, and you should read it. While Leopold's ideas were emerging during the 1940s and 1950s, it was in the 1960s that many Americans finally realized that their consumer-oriented society was causing huge environmental damage. A number of publications appeared, but the most influential of these was a book published in 1962 by Rachel Carson (http://en.wikipedia.org/wiki/Rachel_Carson), called "Silent Spring" (http://en.wikipedia.org/wiki/Silent_Spring). This book documented a number of environmental issues, but focussed particularly on the effects of pesticides on birds (hence the name of the book, in a world where there were no birds left to sing).

In response to growing concerns about the environment, countries around the world started passing environmental legislation designed to protect the environment. In the USA, this included the 1964 Wilderness Act (http://en.wikipedia.org/wiki/Wilderness_Act), the 1968 Wild and Scenic Rivers Act

(<http://www.rivers.gov/wsr-act.php>), the 1969 National Environmental Policy Act (http://en.wikipedia.org/wiki/National_Environmental_Policy_Act), the 1970 Clean Air Act ([http://en.wikipedia.org/wiki/Clean_Air_Act_\(United_States\)](http://en.wikipedia.org/wiki/Clean_Air_Act_(United_States))), the 1973 Endangered Species Act (http://en.wikipedia.org/wiki/Endangered_Species_Act), and the 1976 National Forest Management Act (http://en.wikipedia.org/wiki/National_Forest_Management_Act_of_1976). Much of this legislation was directly related to forests, and strongly influenced the evolution of a number of changes in the ways in which forests were managed in the USA. Some other countries followed suit, by far the greatest amount of legislation seems to have occurred in the USA.

This period also the rise in both the interest and influence of a range of different stakeholders (people or organizations with an interest in a particular topic). These included local people, local communities, scientists, administrators, administrative agencies, non-governmental organizations and a range of others.



The town of Forks, in Washington State, USA. Decisions about forest management in the Pacific Northwest had major impacts on this town in the 1990s. Before then, little concern was given to the effects of management decisions on local people, but in sustainable forest management, the importance of consultation is stressed.

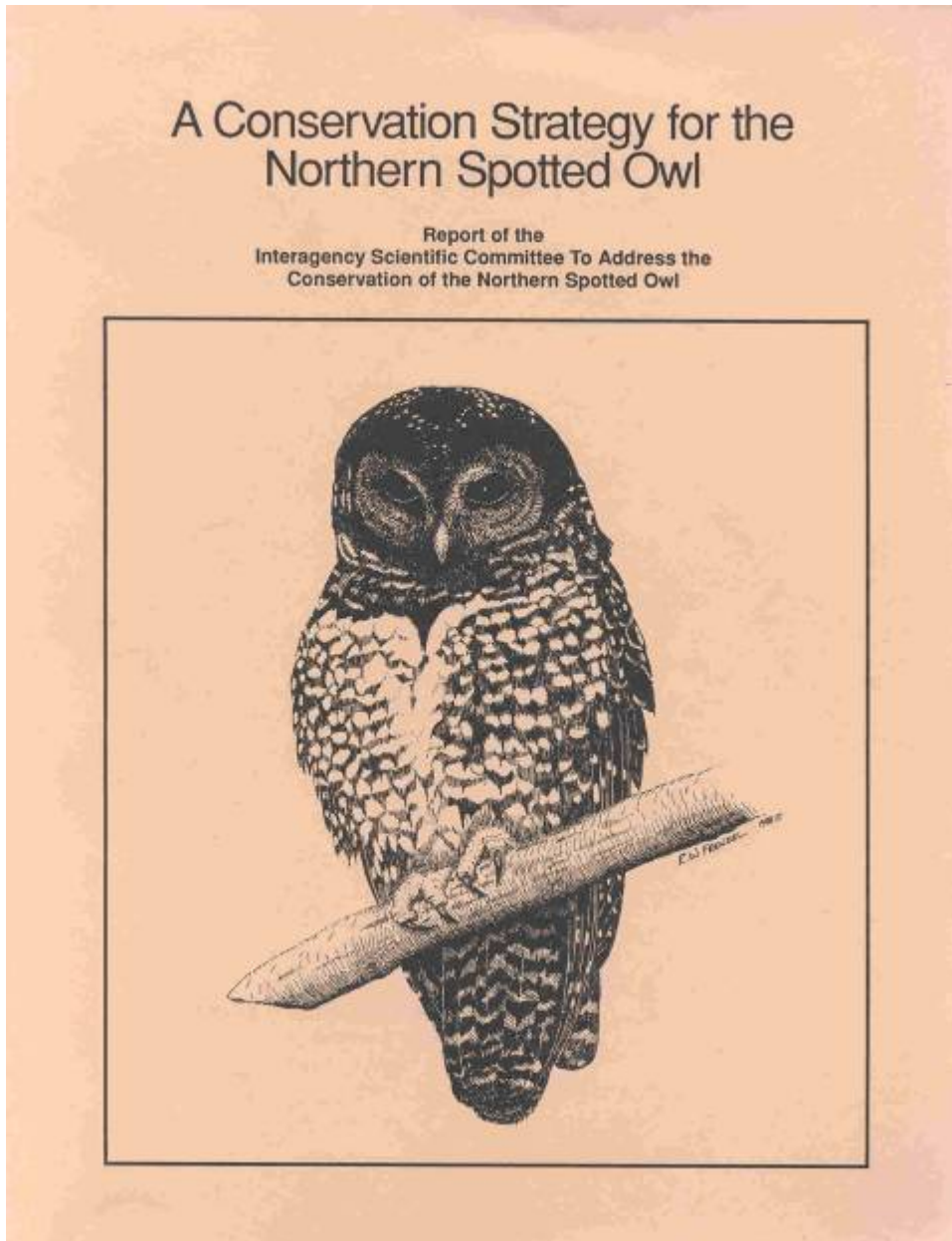
The debate about forest management in the USA came to a head in the late 1980s over concerns about a bird called the northern spotted owl (http://en.wikipedia.org/wiki/Spotted_Owl). This species (it is actually a sub species of the more widely distributed spotted owl) is closely associated with the old growth forests of the Pacific Northwest. In December 1987, the US Fish and Wildlife Service had denied

a petition to list the Northern Spotted Owl as endangered, resulting in a lawsuit against the organization. Thomas Zilly, a federal judge with the Seattle District Court ordered the Fish and Wildlife Service to reconsider their decision, and to include more evidence. They did so, and by June 1990, the owl was listed as threatened under the Endangered Species Act. This listing triggered a number of requirements: in particular the US Fish and Wildlife Service was required develop a recovery plan for the bird. This was in addition to the requirement under the National Forest Management Act for the US Forest Service to maintain viable well-distributed populations of vertebrates on National Forest System (http://en.wikipedia.org/wiki/United_States_National_Forest) lands. However, even before the listing, environmental groups had launched lawsuits against the Bureau of Land Management and the Forest Service for failing to provide adequate protection for the owl in their ten-year plans. This resulted in Judge William Dwyer of Seattle District Court imposing an injunction in March 1989 halting sales of timber from federal forest land that included spotted owl habitat. The injunction was voided in the 1990 Interior Appropriations Bill (Section 318) as a result of pressure from Oregon Senator Mark Hatfield.



Northern Spotted Owl (source: <http://photography.nationalgeographic.com/photography/photo-of-the-day/northern-spotted-owl-pod/>)

The Appropriations Bill required the Forest Service to establish an Interagency Scientific Committee was brought together to recommend a conservation strategy for the northern spotted owl.



The report of the inter-agency committee, available at http://www.fws.gov/arcata/es/birds/nso/documents/ConservationStrategyForTheNorthernSpottedOw_May1990.pdf

Typically, implementation of the recommendations of the committee were subject to major arguments and procrastination, and in May 1991, a second injunction was imposed by Judge Dwyer. This not only expanded the ban on timber sales from owl habitat, but also required the Forest Service to present a

plan to conserve the owls. When the Forest Service released an environmental impact assessment of logging on the northern spotted owl, Judge Dwyer found it inadequate and imposed a third injunction in May 1992.

With foresters and conservationists having reached a stalemate, in April 1993, President William (Bill) Clinton instructed federal agencies to work together to find a solution. He gave them five guiding principles to work with:

- Where sound management policies can preserve the health of forest lands, sales should go forward. Where this requirement cannot be met, we need to do our best to offer new economic opportunities for year round, high-wage, high-skill jobs
- We need to protect the long-term health of our forests, of our wildlife, and our waterways. They are a gift from God, and we hold them in trust for future generations
- Our efforts must be, insofar as we're wise enough to know it, scientifically sound, ecologically credible, and legally responsible
- The Plan should produce a predictable and sustainable rate of timber sales and non-timber resources that will not degrade or destroy our forest environment
- To achieve these goals, we will do our best to make the federal government work together for you. We may make mistakes, but we will try to end the gridlock within the federal government, and we will insist on collaboration, not confrontation

A Forest Ecosystem Management Assessment Team (FEMAT) was convened to "...identify [forest] management alternatives that attain the greatest economic and social contribution from the forests of the region and meet the requirements of the applicable laws and regulations". The team produced a number of recommendations and ultimately the Northwest Forest Plan was released. This plan is still in place, but has been subject to numerous lawsuits.

The events in the Pacific Northwest were not occurring in isolation, and a number of other changes were occurring elsewhere at the same time. The then Chief of the US Forest Service, Dale Robertson, had introduced the New Perspectives programme in an attempt to marry the ideas of "New Forestry" being put forward by scientists such as Jerry Franklin and Chris Maser. At the same time, the Society of American Foresters was re-examining its codes of ethics, the American Forest and Paper Association had introduced sustainable forestry principles, the Forest Stewardship Council had been established and the Montreal Process had had its first meeting in Montreal, Canada, in October 1992.

The outcome of all these activities was the evolution of a series of principles regarding the management of forest and other ecosystems. Although separate, there is considerable overlap between, for example, the basic principles of sustainable forest management and the principles of ecosystem management.

The basic premises of ecosystem management can be listed as:

- Spatial and temporal scale are critical
- Ecosystem function depends on its structure, diversity and integrity
- Ecosystems are dynamic in space and time

- Uncertainty, surprise and limits to our knowledge affect how we manage forest ecosystems

There were accompanied by a number of guiding principles:

1. Humans are an integral part of today's ecosystems and depend on natural ecosystems for survival and welfare; ecosystems must be sustained for the long-term well-being of humans and other forms of life.
2. In ecosystems, the potential exists for all biotic and abiotic elements to be present with sufficient redundancy at appropriate spatial and temporal scales across the landscape.
3. Across adequately large areas, ecosystem processes that characterize variability found in natural ecosystems should be present and functioning.
4. Human intervention should not impact ecosystem sustainability by destroying or significantly degrading components that affect ecosystem capabilities.
5. The cumulative effects of human influences, including the production of commodities and services, should maintain resilient ecosystems capable of returning to the natural range of variability if left alone.
6. Management activities should conserve or restore natural ecosystem disturbance patterns.

Although there are many different initiatives that attempt to prescribe the principles of forest management, most resemble these 4 premises and 6 guiding principles.