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What Is It That Is Being Referred to As Ecosystem Management?

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Abstract

The wide range of definitions of ecosystem management depend upon the values of the persons defining it. While many of the speakers did not provide an explicit definition, four themes common to their presentations were ecological, social, political, and economical. We distilled from these presentations the following: ecosystem management is the manipulation of an ecosystem with all its species and functions to achieve specified social goals, and policed by the political system for some specified, sustainable economic return. A major source of contention is whose values should prevail. Since societal values change over time, EM must be flexible. Ecologically clear-cut boundaries do not necessarily provide socially and politically optimum results.

The general consensus currently being voiced by the public and natural-resources managers is that the techniques of land and species management used to date have not been meeting the needs of the public or the natural resources. A shift in ideology to embrace a new method referred to as ecosystem management is being advocated. The move by land-management agencies and the scientific community to convert to ecosystem management includes consideration for differing social values, adjustable spatial scale, and a heavy reliance upon scientific methodology. The prevailing attitude throughout the natural-resources field is that ecosystem management is a better strategy for accommodating demands upon the environment. However, there is a wide range of definitions applied to the term "ecosystem management" which depend upon the values of the persons defining it. With so many definitions for ecosystem management, what exactly is it to which people are referring? This symposium and similar meetings have been designed to illuminate the issues of ecosystem management and come to a greater consensus on definitions and policies. Our group's task has been to differentiate how well the orators addressed the definition of ecosystem management.

We thought that the majority of speakers tended to avoid giving an exact definition of ecosystem management. Rather, we found that their definitions could be inferred from their description of how ecosystem management should be achieved. As we synthesized the common aspects of each individual's presentation, we found four common themes associated with the term. These themes are: ecological, social, political, and

economical. Although each speaker may not have addressed each of the four themes specifically, most did in some manner.

The ecological theme collectively refers to the earth's natural environment without human influence. Ecosystems are presumed to manage themselves with or without human influence. Considerations for human influence are subsumed in the social theme and consist of both human effects on the environment and societal values. The social aspect is the driving force behind ecosystem management because it is societal values that drive human actions which modify the environment and determine the desired outcomes of the management approach. Economics measures the value of what society expects to derive from the environment and may be classified as a subcategory of the social aspect. The economic theme includes both monetary and aesthetic values. The political mechanism regulates the social demands upon the environment by enacting laws, and enforcing them through the judicial system.

The speakers did not agree on which theme or themes were the most important, but they did agree that all impinged upon the management of resources. Any procedure for managing an ecosystem must therefore consider each of the themes in order to be effective. How large a role each theme is allotted will depend upon the background of the local administrator and the management goal. The management goal depends upon social values and economic importance.

Agreeing upon a concrete definition of ecosystem management is as difficult as finding a common set of goals and

objectives in an ecosystem-management plan due to contrasting societal values. Chris Risbrudt opined that ecosystem management will never be explicitly defined or universally accepted. Dave Roberts added to this insight by stating that there are multiple definitions, each one varying in emphasis. It is crucial to identify the emphasis and work for a consensus rather than argue over a definition. Roberts equated the definition of ecosystem management to a cookbook: just like a cookbook, a definition is nice, but one cannot eat it. We need a cookbook when we have limited cooking knowledge, but after we become comfortable at cooking, we can 'wing it' and the cookbook is no longer necessary. He was implying that a set of parameters is needed to implement ecosystem management in the beginning, but will become less necessary as the level of knowledge increases.

In formulating a group definition of ecosystem management, we collectively used the speakers' descriptions of methodology. From analyzing the context of the speakers' talks, we define ecosystem management as manipulation of an ecosystem with all its species and functions to achieve specified social goals, and policed by the political system for some specified economic return. The ecological component is independent of the other themes. The ecosystem does not need humans to manage it in their absence. However, when humans enter the picture, the process becomes anthropocentric.

What is considered good ecology is in the eyes of the observer. Different value-driven uses of the land have different ecological effects. Therefore, humans not only determine the social, political, and economic factors of ecosystem management, but in doing so they also determine the ecological ones. Social values dictate what objectives are set for ecosystem management. Then, political entities are needed to regulate and enforce the use of the environment. All of this human activity centers around the ecological motivation of managing limited resources, and at the same time trying to provide economic return. Once again, what is considered satisfactory economics depends on the underlying social values.

The speakers addressed certain issues associated with ecosystem management from their perspective. These issues were ecological by nature, but implicitly anthropocentric. Whose values should be used tends to be a problem. This constitutes the largest challenge to those involved with ecosystem management. Louisa Wilcox pointed out that the idea of ecosystem management in the abstract is mostly non-controversial since its importance is evident. However, what the goals and policies of ecosystem management should be in actual situations is hotly contested. While Louisa was advocating a large, protected ecosystem in the Yellowstone area, Doc and Connie Hatfield were stressing sustainable utilitarianism for Oregon ranchers. While both were agreeing that ecosystem management is important, the means to achieve the desired ends differed considerably.

More important than defining ecosystem management is implementing it. Much of the conference was devoted to discussion on how to reconcile the differing public demands placed on ecosystems. Risbrudt commented that government policies associated with natural-resources management (NEPA, ESA) have created a "polarized public." There are those who want full utilization and those who want full

preservation. Part of this problem is associated with the fact that private land owners do not like the government telling them what to do with their land. What is really needed is compromise.

Steve Daniels introduced a process of compromise known as "collaborative learning" which helps advocates of opposing viewpoints come to a decision that all find acceptable. He stated that the paradox of ecosystem management is the fact that it should be based on the best science which at the same time may not be understood by the lay public. In other words, the management plan needs to be based on what the ecologists feel would be the best science but this poses a real challenge for the communication that Louisa Wilcox stresses the importance of.

Among the items of controversy, scale is one of the primary concerns. Part of the difficulty in implementing ecosystem management is trying to define the system to be managed. Ecologically clear-cut boundaries do not necessarily provide socially and politically optimal results.

Dave Roberts said that ecosystems have their own spatial and temporal scales, and should be managed as processes rather than areas. The practical application of this is difficult. If the scale is made too large, it can damp out local variability. If the scale is made too small, it can lose context. Some of the selected scales in delimiting ecosystems have been watershed boundaries, largest mammal (indicator species) home ranges, and political delineations. All of these have proven unsatisfactory in addressing all of an ecosystem's functions. In fact, since ecosystems are multiple-scaled, any set scale will have limitations. However, the general consensus in the symposium was that there is a need to utilize larger areas and scales than have previously been used.

Chris Risbrudt commented on a need to look at larger scales 90% of the time. In this country, policy is often made by the courts. George Coggins pointed out that if we are going to be successful in managing at larger scales, it will be necessary to work against the judicial tendency of legal fragmentation.

Another issue affecting the definition of ecosystem management is that of sustainability. Most speakers stated that sustainability over time is the primary objective of ecosystem management. The first problem with this concept is defining it. It can be used as a goal anywhere in the management spectrum between utilization and preservation. So, once again, this concept is governed by the underlying social values attached to an ecosystem. Jack Stanford said that the goal should be ecosystem conservation rather than sustainability because ecosystems are dynamic, and not static. The goal of sustainability may not be realistic when taking global-change factors into consideration. The influence of humans in global change will never be fully understood because there is no way of knowing how the earth would have changed without man's influence. In order to be successful in ecosystem management, we need to concentrate on placing the ecosystem on the right trajectory rather than trying to control it completely.

If human values dictate what will constitute ecosystem management, the goals of ecosystem management will change as human values change. The important aspect of this is recognizing that it will happen, and being prepared for it. A

number of speakers in the symposium stressed the importance of being flexible enough to allow change in management programs. Steve Daniels stated that ecosystem management must be adaptive to future conditions. Adaptability is essential because changes in management objectives are bound to occur. Cooperation among involved parties will be just as important in the future as it is now. Also, ecosystem management must be able to survive the governmental, administrative, and policy changes that are certain to come in the future. Ecosystem management needs to be flexible if it is to become the management force of the 21st century, rather than another 20th-century buzzword.

In conclusion, ecosystem management will be an important resource-management approach in the future. While

everyone agrees that ecosystem management is a good thing, there are many different definitions of it. This symposium was held to help clarify some of the important underlying issues involved with ecosystem management. During the symposium, no definite, clear-cut definition was given. Therefore, we used the contextual information to break down ecosystem management into four entities: ecological, social, political, and economic. Ecosystems can exist apart from humans. However, the other entities are determined by humans and their underlying social values. We noted and discussed certain controversial issues surrounding ecosystem management. It became evident that ecosystem management needs to be flexible enough to survive the winds of change if it truly fulfills its destiny in the future.