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Comprehensive Conservation Planning[1]

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Introduction

Florida is experiencing rapid growth. As this growth occurs there is increasing pressure to develop natural and low intensity use areas to more intensive land uses. Effective growth management planning seeks to balance the development of a region with the protection of its natural resources. To accomplish this balance it is necessary to predict and evaluate the effects of development on the structure and function of natural water, plants and animals. The function of an ecosystem is the exchange of energy and materials between the components of the system. A comprehensive conservation plan (CCP) synthesizes and integrates efforts to protect ecosystems.

A CCP is a tool to provide better protection and management of ecological resources, while ensuring long-term economic and social well-being (Figure 1). It is not intended to be an additional level of bureaucracy, but rather a process for bringing together new and existing components of natural resource protection programs into a synthetic planning effort. A CCP brings together development interests, environmental groups, private citizens, government officials, and others to develop practical and equitable methods that achieve natural resource protection goals. Most importantly, by incorporating an array of conservation mechanisms, CCPs allow management decisions to be made in the widest context possible.

CCPs can provide a scientific basis and consistency absent from current natural resource protection efforts, and can provide increased certainty and predictability for devlopment interests. By involving various agencies and other interested parties, CCPs can streamline permitting processes, identify acquisition priorities, and most importantly, can resolve conflicts before they become intractable. A conservation strategy would:

1. Draw clear resource conservation guidelines that eliminate confusion.

2. Identify gaps and shortcomings of existing programs.

3. Dovetail with other local, regional, state and federal programs.

4. Create a coherent plan to protect natural resources tailored to meet regional needs.

CCPs provide three key elements necessary to achieve natural resource protection: a comprehensive approach, flexibility, and a regional focus. A

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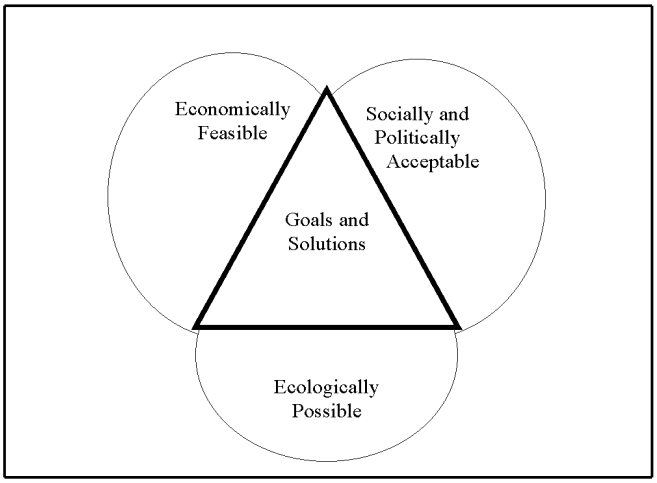

Figure 1.

comprehensive approach can address all threats to ecological integrity and mobilize an array of programs from the public and private sector. Recognizing that there are several tools for addressing biological conservation, a flexible approach does not focus on a single approach (for example, regulation). CCPs encourage a combination of programs and approaches particularly suited for a region. Regional focusing insures that maximum benefits are obtained from conservation programs at a minimum cost and provides the best opportunity for resolving conflicts between development and conservation.

Background and Approach

The incorporation of conservation biology into growth management planning (conservation planning) is becoming more common and increasingly important (Mason and Iker, 1982; Kautz, 1984; Westlake, 1986; Roberts and Roberts, 1984; Mazzotti, 1991; Scott et al., 1991). However this incorporation has been limited by lack of information, suitable scientific methods for quantifying existing regional biological resources (fish and wildlife, and their habitats), and the probable impacts on these methods by alternative scenarios for development or protection. Several authors have discussed criteria and methods for evaluating regional fish and wildlife resources (Adamus and Clough, 1978; Klopatek et al., 1981; Margules and Usher, 1981; Kautz, 1984; Scott et al., 1991). New biological inventory and habitat modeling methods based on various land and water uses, and also natural vegetation types, show great potential for furthering our ability to predict the distribution and abundance of fish and wildlife at regional levels (Clawson et al., 1984; Klopatek and Kitchings, 1985; Scott et al., 1991; Mazzotti et al., 1992).

It is becoming increasingly evident that the results from scientific studies must be integrated with economic, social, and legal factors to develop ecological conservation plans (Figure 1). Hence, adding a human dimension to natural resource management through consensus building and conflict resolution is an essential aspect of a truly comprehensive conservation plan.

Figure 2 presents a scientific framework for conservation planning studies. A clear statement of goals is necessary to focus research and can increase the chance of protecting components of the environment identified as valuable (National Research Council, 1986). Peer review and stakeholder involvement are essential components of this plan and should continue throughout the process.

The scoping process identifies important ecosystem components, significant economic and social issues, and major potential environmental effects; it should be done early in planning to guide the design of ecological studies and to begin to build cooperation and the consensus among diverse interests. The scoping process should continue throughout the course of the study to confer participants with a sense of ownership of final plans.

The first step in an inventory process is to identify, map and evaluate available wildlife habitat types (Leedy et al., 1978; Jones, 1986). A biological diversity analysis (Scott et al.,1991) combined with assessment of ecological integrity (Mazzotti et al., 1992) provides a basis for assessing conservation needs.

This inventory of baseline ecological conditions also serves as the foundation for an ecological assessment methodology. This

methodology can then be applied as a policy screening tool to evaluate the impacts of alternative conservation plans.

Since CCPs are inevitably based on incomplete information, they should be considered as untested working hypotheses of ecosystem response and must be followed by a monitoring program designed as experiments to test these hypotheses. Conservation plans should be adaptable to the results of the monitoring experiments (Holling, 1978).

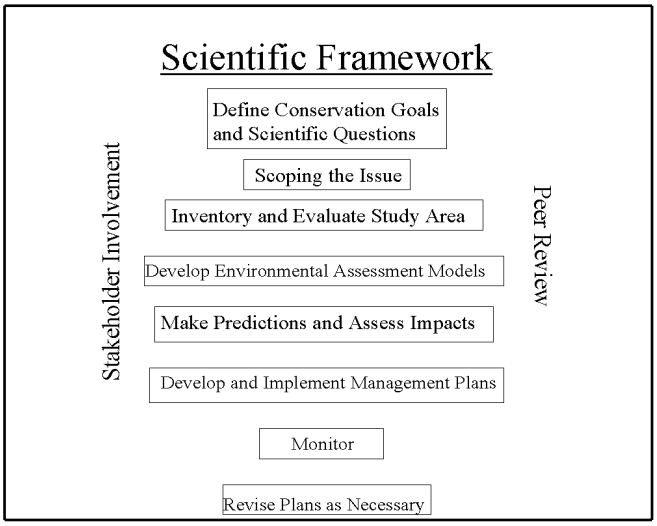

Figure 2. Scientific framework for conservation planning studies.

Application and Recommendations

This approach to conservation planning recognizes several crucial components necessary for a successful program. They are:

1. The conservation plan should have a strong scientific basis.

2. The conservation plan should consider economic, social and political factors.

3. The conservation plan should be capable of revision as additional data become available.

Conservation plans can not be better than the data upon which they are based. Also, the ability to gain public confidence and to counter negative arguments is dependent upon the quality of information used to make decisions. This is particularly important when significant economic resources are at stake.

It is clear that human activities are a major ecological force affecting the structure and function of ecosystems. Yet until recently, human activities have been considered an external force acting upon an ecological landscape. In a modern landscape ecology approach we must progress to a realization that human activities are a part of our ecosystem; they are both an important component and a driving force. Thus, a human dimension becomes an essential but too often ignored element of a conservation plan.

To be successful, an ecological conservation plan needs to expand beyond an acquisition and regulation focus. Although acquisition is still the surest way to protect habitat, funding will be increasingly limited. We can not buy all the lands that we will need to protect ecological integrity. Another problem is that once land is acquired, various interests begin to think that they have free license to do whatever they want with surrounding property. This has a tendency to only further the fragmentation and isolation of reserved areas. Regulation is similarly limited in that it can only partially protect areas. Regulations that strip land of all its economic value constitutes a "taking" by the government, requiring acquisition. Finally many species do not require habitat set aside and can coexist with reasonable amounts of land use.

The foundation for the conservation of ecological integrity with economic and social well-being will be a regional landscape that is a mosaic of different intensity land uses. This mosaic will be the result of protection and maintenance of natural and low intensity use areas, and ecologically sensitive development design. The ratio and spatial arrangement of different land uses will be of critical importance. Creating the necessary landscape conditions to meet conservation goals will require a combination of land acquisition, attractive economic and recreational incentives for private landowners to maintain natural low intensity use areas, and regulation. Literally, the establishment of a low intensity use-natural area/corridor system (wildlife habitat system) will provide the green space heritage for future generations.

Acquisition should focus on strategically located parcels essential to achieving conservation

goals. Acquired parcels can be used to protect intact systems, and provide wildlife corridors to maintain the inter-connectivity of fish and wildlife habitat. To augment acquisition efforts, private landowners can be given economic alternatives to intensive development of their land, and for incorporating undeveloped areas into development plans.

The question of how much area should be set aside will depend on goals not yet articulated for conservation of ecological integrity, and also the economic and social well-being of a region. A CCP will recommend types and locations of areas that should be set aside to meet conservation goals. Also, a CCP can discuss the role that acquisition regulation (for example, mitigation banking) and incentives to private landowners can play in achieving conservation goals.

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