

DEFINITION AND PRINCIPLES OF ECOSYSTEM-BASED CONSERVATION PLANNING

Silva's definition

Ecosystem-based conservation planning is a method of ecosystem protection, maintenance, restoration, and human use that, as the first priority, maintains or restores natural ecological integrity—including biological diversity—across the full range of spatial (*from very large to very small areas*) and temporal (*from short to long periods of time*) scales. At the same time, it provides for ecologically and culturally sustainable communities and their economies. In other words, ecosystem-based conservation planning provides a picture of the **ecological framework** that is necessary to protect, and the **ecological limits** within which human uses need to be carried out, in order to be sustainable.

Major goal & important underpinnings

The major goal of ecosystem-based conservation planning is first to protect, maintain, and, where necessary, restore fully functioning ecosystems at all spatial and temporal scales, and then to design human activities that fit within those constraints.

Ecosystem-based conservation planning seeks to identify and understand the important ecological characteristics of a landscape or region, and then to design plans to guide the development of ecologically responsible human activities. This approach is based on the understanding that inappropriate human use of ecosystems and landscapes can have serious and long-term negative ecological, cultural, social, and economic impacts.

Ecosystem-based conservation planning is also based on the understanding that ecological landscapes and patches are not static and unchanging—they contain a variety of ecosystem types and successional patterns through time that are tied to natural disturbance regimes. Natural changes diversify and maintain ecosystem composition, structure, and function at all scales; are unpredictable in frequency and character; and focus on sustaining the whole, not on producing any one part. In other words, change due to succession and natural disturbance is part of natural ecosystem functioning. Natural patterns of ecological succession and disturbance interact in unpredictable ways that sustain ecosystem functioning and provide a diverse range of habitat for plants, animals, and other organisms.

Within Silva's definition, several concepts need clarification

- **Natural** is defined as the composition, structure, and function of ecosystems and landscapes prior to industrial development. In North America this generally describes conditions *pre-European contact*, and, therefore, *natural* conditions include Indigenous peoples' management systems.

In contrast, change and disturbance due to industrial development is often chronic and predictable, and results in the loss of natural ecosystem functioning at a variety of scales. Some types of industrial development fundamentally alter ecosystem

functioning, and are neither conservational nor part of an ecosystem-based conservation plan.

- **Maintaining ecological integrity** includes protecting, maintaining, or restoring natural ecosystem composition, structure, and function—the parts, the arrangement of the parts, and the processes of ecosystems.
- **Protecting** means the maintenance of ecological integrity, but protected areas may include Indigenous cultural activities and soft human uses such as ecotourism and wildcrafting.
- Ecosystem-based conservation planning is **inclusive** of a wide range of human activities and recognizes that **healthy human communities** provide the necessary human resources to implement ecosystem-based conservation planning.
- The sum of **community economies** is the global economy. Therefore, ecosystem-based conservation planning recognizes that the starting point for the development of sustainable economies needs to be at the community level.
- The definition may be applied to the **spectrum of ecosystems**, from terrestrial ecosystems to marine ecosystems, and to the **range of conditions**, from unmodified landscapes to urban landscapes.
- Moving into ecosystem-based conservation planning from conventional management systems requires a **transition** that provides for development of diverse inclusive community-based plans and economies.

Interdependent Principles of Ecosystem-Based Conservation Planning

Important principles that underlie ecosystem-based conservation planning include:

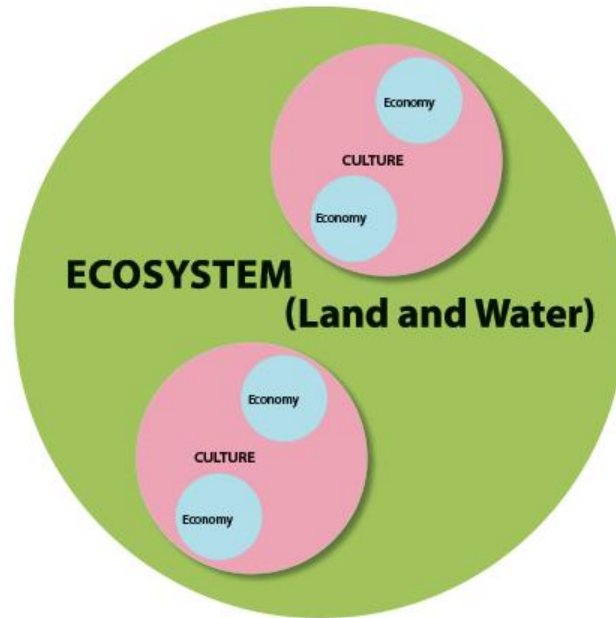
1. Focus on what to *protect*, then on what to use.

An ecosystem-based approach maintains or restores fully functioning ecosystems at all spatial scales through time. That is, it maintains ecological integrity. Biological diversity is protected, including genetic, species, community, landscape, and regional diversity. Natural composition, structure, and function of ecosystems are maintained, ranging from small patches of trees or wetlands, to large river basins or regions.

2. Recognize the *hierarchical relationship* between ecosystems, cultures, and economies.

Economies are part of human cultures, and human cultures are part of ecosystems. Therefore, protecting ecosystem functioning provides for healthy human cultures and the economies that are part of these cultures. This intuitive relationship (see figure below) is well grounded in both Indigenous knowledge and western science.

**AN ECOSYSTEM-BASED CONSERVATION PLAN IS
BASED UPON A HIERARCHIAL RELATIONSHIP**



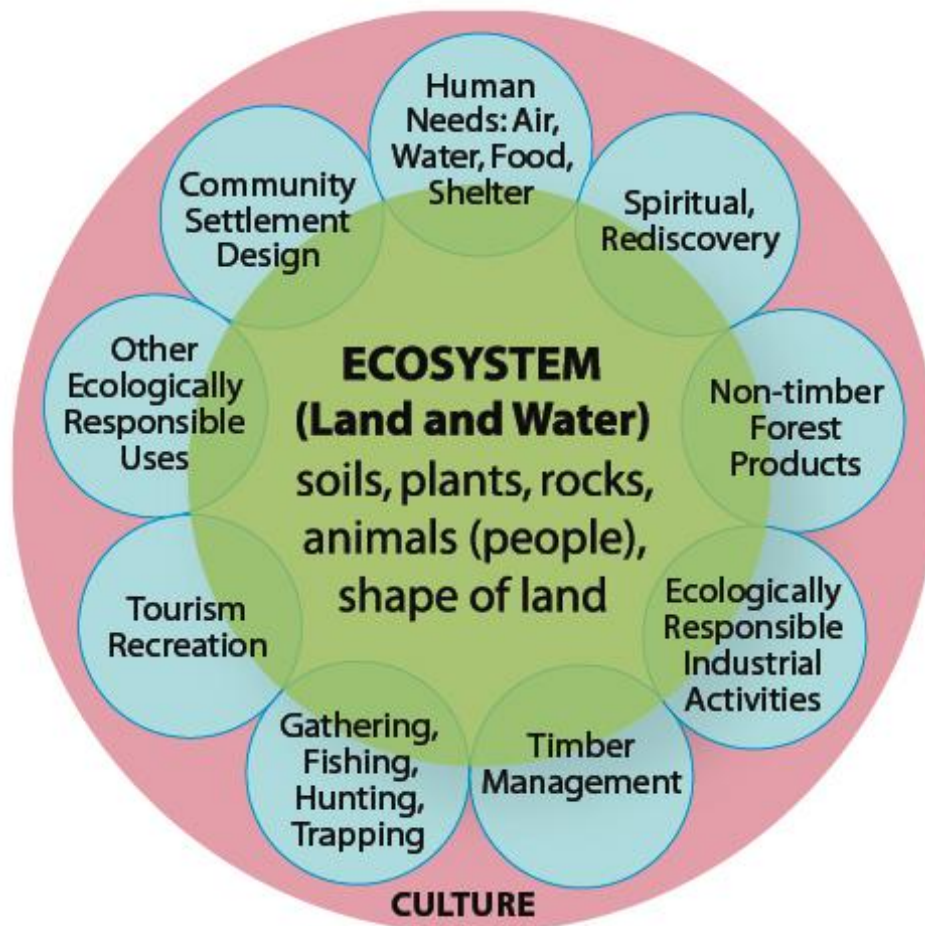
Economies are part of human cultures, which are part of ecosystems. Therefore, maintaining the integrity of ecosystems provides the basis for sustainable cultures, including their economies.

CONCEPTUAL VIEW OF AN ECOSYSTEM-BASED CONSERVATION PLAN

— a framework for making decisions —

First, protect the land and water—ecosystem.

Second, use the land and water—ecosystem in ways that maintain all of the parts and processes.



Ecosystem-based conservation plans are community-based.

Healthy communities have place, are diverse, and take responsibility for their actions, ensuring that the needs of future generations guide their actions in the present.

Community-based plans share decision-making power, are inclusive of most interests, and develop clear lines of accountability for activities.

3. Apply the precautionary principle to all plans and activities.

The precautionary principle deals with uncertainties by directing that decisions, interpretations, plans and activities must err on the side of protecting ecological integrity, as opposed to erring on the side of protecting resource exploitation. In other words, if you are not sure that an activity will protect, maintain, or restore ecosystem functioning, then modify the activity so that it occurs within ecological limits, or do not do it.

APPLYING THE PRECAUTIONARY PRINCIPLE

PRECAUTIONARY ACTIONS
— Common Sense —

- Look before you leap
- An ounce of prevention is worth a pound of cure
- Better safe than sorry

PRECAUTIONARY ACTIONS
are taken because of a lack of information and uncertainty about the impacts of human activities.

PRECAUTIONARY ACTIONS
are characterized by ...
cautious, conservative approaches, including ... doing nothing.

PRECAUTIONARY ACTIONS include:

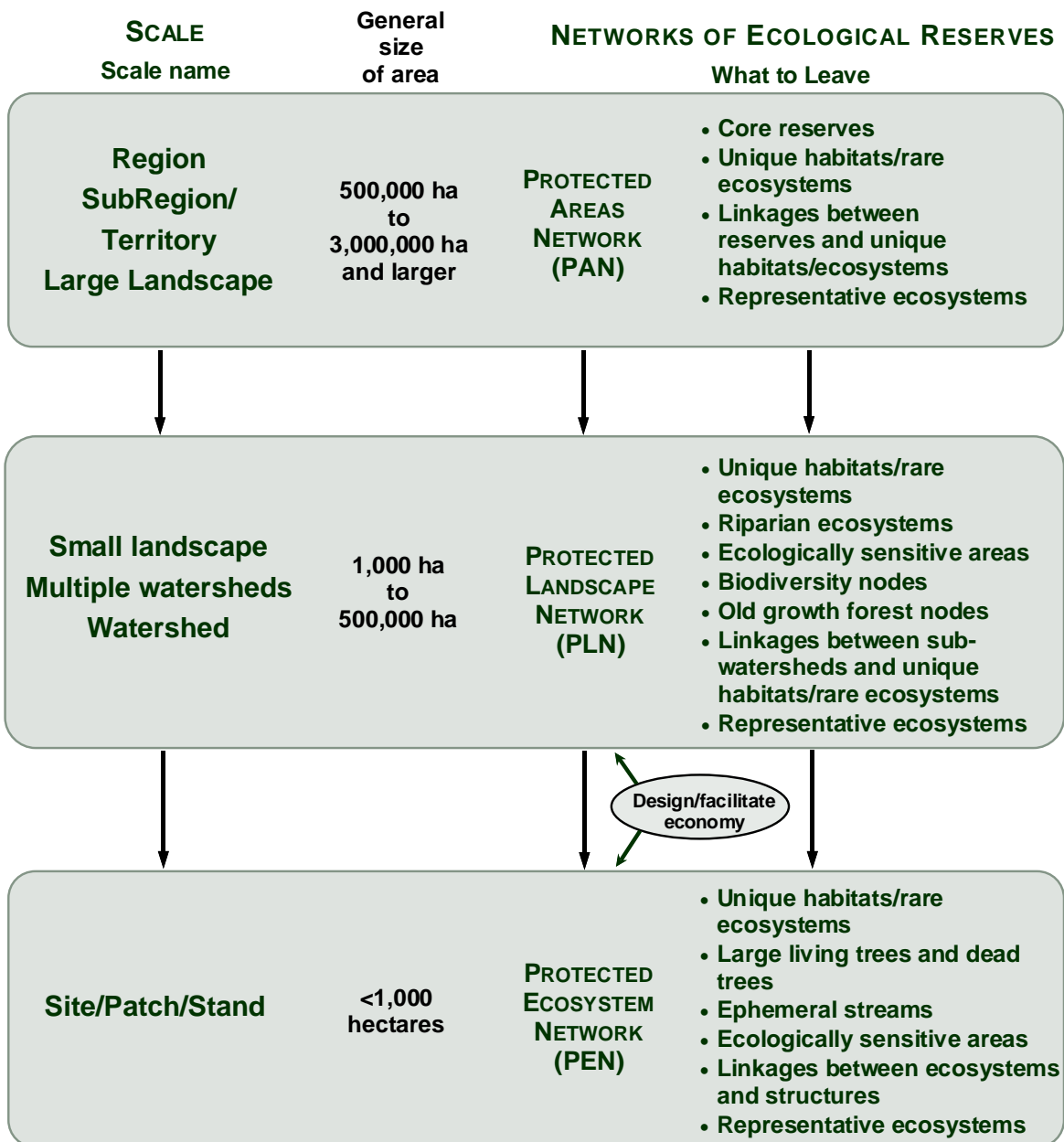
- **Preventing harm** ... cautious evaluation and decision making that focus on intergenerational equity
- Requiring **burden of proof of no harm** from proponent
- Examining the **full range of alternatives**, including ... doing nothing
- Providing for **participatory decision making** ... open, informed, democratic, and includes all parties

4. Protect, maintain, and, where necessary, restore ecological connectivity, and the full range of composition, structure, and function of enduring features, natural plant communities, and animal habitats and ranges.

This principle is implemented by establishing nested, interconnected networks of ecological reserves at multiple spatial scales (see **Error! Reference source not found.**):

- *Protected areas networks (PANs)*, consisting of large core reserves and linkages, are established at the regional, territory/subregional, and large landscape levels.
- *Protected landscape networks (PLNs)* are nested within PANs at the small landscape and watershed levels. These consist of representative ecosystems, unique habitats, rare ecosystems, biodiversity nodes, old growth nodes, ecologically sensitive areas, riparian ecosystems, and cross-valley linkages. Regional and community economies that are based on human use areas are designed as PLNs are established.
- *Protected ecosystem networks (PENs)* are nested within PLNs at the site level in areas that are selected for consumptive human activities (the *matrix*). PENs consist of a finer scale version of PLNs and include protection for ephemeral riparian ecosystems; live and dead tree structures; and small areas of ecologically sensitive areas, representative ecosystems, rare ecosystems, unique habitats, and old growth forest.

The Multiple Spatial Scales of an Ecosystem-based Conservation Plan
 - detailed overview -



Indigenous cultural activities and soft human uses may occur in ecological reserves at all scales.

At each scale, networks of ecological reserves are tested for:

- * Rare, threatened, and endangered species and ecosystems.
- * Habitat needs of an appropriate group of species.



5. Facilitate the protection and/or restoration of Indigenous land use.

Ecosystem-based conservation planning encourages Indigenous people to map and describe their land uses or cultural activities. Under the guidance and control of Indigenous people, this information may be combined with ecological reserve design (*see Principle 4*) to ensure the protection and/or restoration of Indigenous land uses through the establishment of protected networks of cultural areas, or used in other ways appropriate to the Indigenous culture(s) in the plan area.

6. Ensure that the planning process is inclusive of the range of values and interests.

Ecosystem-based conservation planning provides for full discussion and debate of issues, based upon the best available information, by participants who represent the spectrum of values and interests that may be affected by the plan. Those representing various interests assume responsibility and accountability for accurately representing their interest, consulting with their constituencies, and assuming responsibility for the outcomes of an ecosystem-based conservation plan. Shared decision-making by all participants characterizes an ecosystem-based conservation planning process and provides an egalitarian approach to planning.

An inclusive, community-based approach to planning ensures that people affected by the plan are active, full participants in the development and implementation of the plan. The primary purposes of an ecosystem-based conservation plan are to ensure the maintenance or restoration of ecological integrity, and to provide for healthy communities within the plan area. These goals can only be achieved when affected communities develop, and take ownership in, a plan. Because ecosystem-based conservation planning, including the development of community economies, is often a shift from the status quo, public education and community acceptance of the definition and principles of ecosystem-based conservation planning are necessary for the success of a plan.

7. Provide for diverse, ecologically sustainable, community-based economies.

To be sustainable and provide for social equity, economies need to facilitate a diverse range of activities that focus on fulfilling individual and community needs, and on protecting and maintaining natural capital—ecological integrity. Healthy communities both depend upon and sustain healthy and diverse ecosystems.

A healthy global economy is built upon development of healthy local or community-based economies. Hence, ecosystem-based conservation plans for local landscapes constitute the foundation for healthy global economies that both maintain ecological integrity and provide for human well-being.



8. Practice adaptive management.

Within the constraints of the precautionary principle and ecologically responsible actions, a variety of activities may be included as part of an ecosystem-based conservation plan. However, all activities are continuously evaluated for their success in maintaining or restoring ecological integrity, including biological diversity, and in providing for healthy communities. The results of evaluations are incorporated into future plan modifications and activities.

Adaptive management is a systematic approach to improving management and accommodating change by learning from the outcomes of human activities. It involves gathering and incorporating new information. It is more than trial and error, or learning by our mistakes, because it involves careful design, monitoring, evaluation, and feedback in order to improve management. Adaptive management can be practiced in a variety of

ways, on a continuum from passive to active approaches that differ in their intensity, commitment, and cost.