

Principles and Processes of Ecosystems

Question

Define the ecosystem approach and its underlying principles. Discuss, with examples, how this approach differs from the historic approach of classical nature conservation.”

Remarks

Green: Things to learn by heart.

The essay

The ecosystem approach (EA) was first embraced by the Convention on Biological Diversity (CBD). It was defined as the following:

The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.

The approach considers ecological, economical and societal dimensions within a framework and recognizes that humans are an important part of the ecosystem. As the principles will show it requires the participation of all stakeholders in order to consider all the consequences of a management action.

Besides 5 operational guidelines the ecosystem approach is based on 12 principles:

1. **The objectives of management of land, water and living resources are a matter of societal choice.** This simply means that different sectors of society see ecosystems differently and this should be taken into account.
2. **Management should be decentralized to the lowest appropriate level.** Local authorities normally know the local circumstances better than some national institution. This can result in an increased efficiency. Also they are affected directly and hence more interested in sustainable solutions.
3. **Ecosystem managers should consider the effects of their activities on adjacent/other ecosystems.** It's important to consider interlinkages between different ecosystems and to find ways of organization to cope with it.
4. **There is usually a need to understand and manage ecosystems in an economic context.** The greatest threat to ecosystems lies in its replacement by other forms of land use. It is therefore important to internalize costs of conservation as well as of environmental stress. This makes it much easier to show the consequences of ecosystem destruction to profit oriented sectors of society.
5. **Conservation of ecosystems structure and functioning, in order to maintain ecosystem services, should be a priority target.** This principle emphasizes the idea that keeping the ecosystem running its services is more important than the protection of some species.
6. Ecosystems must be managed within the limits of their functioning. Ecosystems are limited in productivity, structure, diversity and so on. Those limits must be respected during the management process.

7. **Adopt appropriate spatial and temporal scales.** The boundaries of the ecosystem should be well defined by all the stakeholders and respect interlinkages between sites.
8. **Objectives for ecosystem management should be set for the long-term.** Humans tend to prefer short-term over long-term gains. Ecosystems on the other hand are characterized by a lag between action and reaction which could be quite long. This should be respected and managers must overcome short-term thinking.
9. **Management must recognize change is inevitable.** Ecosystems change and contain many uncertainties and surprises. The management must hence be prepared to face changes and react to them appropriately. Foreclosing options must be prevented as well.
10. **Seek appropriate balance between, and integration of, conservation and use of biodiversity.** Biodiversity has an intrinsic value and should therefore be conserved. On the other hand it also is crucial for many ecosystem services and uses by humans and hence an equilibrium between use and conservation must be found.
11. **Consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.** If ecosystems are a matter relevant to all (see principle 1). Hence everybody should be heard. Information from all sources is critical and should not only be gathered but also shared among all stakeholders.
12. **Involve all relevant sectors of society and scientific disciplines.** Problems concerning ecosystems are complex and cannot be solved without the involvement of all relevant stakeholders and experts.

The ecosystem approach was brought up because the historic approach of classical nature conservation had and still has several shortcomings. First the nature conservation approach lacks the recognition of the importance of ecosystem functioning and is all about preserving something due to its intrinsic value. The EA is paying attention to all the known consequences of management action e.g. political, ecological, economic, social or cultural consequences. To do so it has to be based on integrated, flexible and broad based methodologies. With a focus not only on ecological aspects a different handling of resources is possible. Let's have a look at a forest for example. While a conservationist would emphasize the intrinsic value of the plants and animals living in it, a ecosystem manager respects not only the needs of the nature – not disrespecting them though – but other mostly economic values hidden in the forest as well. E.g. the forest provides wood for the logging industry and with it creating jobs. Or the forest can be used for recreational purposes and value can be generated with tourism. It might therefore happen that, instead conserving the whole forest as it is, parts of the forest are cut selectively while other parts are protected. A concept to do this is for example the Buffer Zone concept. To do so the participation of different stakeholders, e.g. the logging industry, local tourism, nature, must be integrated in the ecosystem management process. This also helps create acceptance for the project because nobody is left out and all the claims are considered.

In general it can be said that the EA demands a paradigm shift from preservation to an adaptive management. To do so the view must be expanded from nature to the complex social and environmental well-being. This will not be easy but it's worth trying :-)

The essay in keywords:

- > Definition
 - >> CBD
 - >> 3 dimensions
 - >>> Humans place
 - >> Stakeholders
- > 12 principles
 - >> Objectives → societal choice
 - >> Management → decentralized
 - >> Consider effects
 - >> Economic context
 - >> Structure & functioning → priority target
 - >> Limits
 - >> Spatial & temporal scales
 - >> Long-term objectives
 - >> Change
 - >> Conservation & use
 - >> All relevant information
 - >> All relevant sectors
- > EA vs. Conservation
 - >> Shortcomings
 - >>> Ecosystem services vs. ecological aspects
 - >> Consequences
 - >> Methodologies
 - >> E.g. forest
 - >>> Intrinsic value
 - >>> Economic values
 - >>> Buffer zone concept
 - >> Paradigm shift
- > Conclusion ??