



Introduction to Ecosystem Services

Ecosystem services are the benefits that humans derive from functioning ecosystems, including provisioning services such as food and water, regulating services such as climate regulation and air filtration, cultural services such as recreation and tourism, and supporting services such as soil formation and nutrient cycling.

Activity 1: Ecosystem Services Sorting Game

Sort the following ecosystem services into the correct category: provisioning, regulating, cultural, or supporting services.

- Pollination
- Climate regulation
- Soil formation
- Recreation
- Water filtration

Answer key:

- Provisioning services: pollination, soil formation
- Regulating services: climate regulation, water filtration
- Cultural services: recreation
- Supporting services: soil formation

Human Impact on Ecosystem Services

Human activities, such as deforestation, pollution, and climate change, can have significant impacts on ecosystem services, leading to degradation or loss of these services.

Activity 2: Human Impact Case Study

Read the following case study and answer the questions:

A local community is planning to build a new development on a nearby wetland. What are the potential impacts on ecosystem services?

How can the community mitigate these impacts?

Answer key:

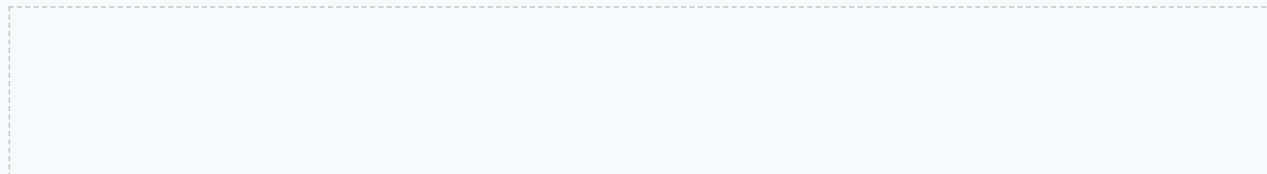
- Potential impacts: loss of biodiversity, decreased water quality, increased risk of flooding
- Mitigation strategies: conservation of the wetland, implementation of sustainable development practices

Ecosystem Services and Human Well-being

Ecosystem services are essential for human well-being, providing benefits such as clean air and water, food security, and mental health.

Activity 3: Ecosystem Services Mapping

Create a map of a local ecosystem, labeling the different ecosystem services provided.



Example map: a forest ecosystem with labels for provisioning services (timber, food), regulating services (climate regulation, air filtration), cultural services (recreation, tourism), and supporting services (soil formation, nutrient cycling)

Conservation and Restoration of Ecosystem Services

Effective conservation and restoration of ecosystem services require a comprehensive understanding of the complex relationships between human societies and the environment.

Activity 4: Conservation and Restoration Strategies

Develop a plan to conserve and restore ecosystem services in a local ecosystem.

Consider the following factors:

- Identify the ecosystem services provided by the ecosystem
- Assess the impacts of human activities on these services
- Develop strategies to mitigate these effects

Case Studies

Case Study 1: Deforestation and Ecosystem Services

Read the following case study and answer the questions:

Deforestation has led to the loss of biodiversity and decreased water quality in a local ecosystem. What are the potential impacts on human well-being?

How can the community mitigate these impacts?

Answer key:

- Potential impacts: decreased food security, increased risk of water-borne diseases
- Mitigation strategies: reforestation, implementation of sustainable land-use practices

Glossary

Ecosystem services: the benefits that humans derive from functioning ecosystems

Provisioning services: ecosystem services that provide tangible products, such as food and water

Regulating services: ecosystem services that regulate natural processes, such as climate regulation and water filtration

Cultural services: ecosystem services that provide recreational, spiritual, and aesthetic benefits

Supporting services: ecosystem services that maintain the health and resilience of ecosystems, such as soil formation and nutrient cycling

References

National Geographic. (2022). Ecosystem Services.

IPCC. (2022). Climate Change and Ecosystem Services.

Appendix

Ecosystem Services Diagram

Human Impact on Ecosystem Services Diagram

Conclusion

In conclusion, understanding ecosystem services and human impact on the environment is essential for developing effective strategies to preserve ecosystem services and promote sustainable development.

Reflection and Conclusion

Reflect on what you have learned about ecosystem services and human impact on the environment.

Consider the following questions:

- What are the most important ecosystem services provided by local ecosystems?
- How can human activities impact these services?
- What strategies can be implemented to mitigate these impacts?

