

Ecology and Natural Resource Management (2017)

EXPLORE NATURAL RESOURCE SCIENCE AND MANAGEMENT 1.0

1 Investigate the Relationship Between Natural Resources and Society, Including Conflict Management 1.1

- 1 Define natural resource management. 1.1.1
- 2 Summarize the history of natural resource conservation and policies. 1.1.2
- 3 List and compare major natural resource management agencies, industries, and organizations. 1.1.3
- 4 Describe human dependency and demands on natural resources. 1.1.4
- 5 Explain natural resource conservation. 1.1.5
- 6 Investigate the effects of multiple uses of natural resources (e.g., recreation, mining, agriculture, forestry, public lands grazing). 1.1.6
- 7 Explore societal issues and conflicts related to natural resource management. 1.1.7

2 Explain Interrelationships Between Natural Resources and Humans in Managing Natural Environments 1.2

- 1 Identify the demands of population growth on natural resources and the environment. 1.2.1
- 2 Examine the use and management of renewable and nonrenewable resources. 1.2.2
- 3 Describe the role of individuals in stewardship of the environment. 1.2.3
- 4 Research and debate current issues related to the conservation or preservation of natural resources. 1.2.4

INVESTIGATE ECOLOGICAL CONCEPTS AND SCIENTIFIC PRINCIPLES RELATED TO NATURAL RESOURCE SYSTEMS 2.0

1 Explore Ecological Principles in Natural Resource Management 2.1

- 1 Define ecosystems and biomes and identify ecoregions of Idaho. 2.1.1
- 2 Identify natural processes that govern ecosystems over time. 2.1.2
- 3 Describe the interdependence of organisms within an ecosystem (e.g., food chains and webs). 2.1.3
- 4 Investigate the processes associated with ecological succession. 2.1.4
- 5 Explain the importance of biodiversity. 2.1.5

2 Explore Properties of Soil 2.2

- 1 Summarize soil formation factors. 2.2.1
- 2 Identify soil texture. 2.2.2
- 3 Describe soil conservation practices. 2.2.3
- 4 Analyze and interpret soil data. 2.2.4

3 Explore Principles of Hydrology 2.3

- 1 Define watersheds and explain their hydrological and ecological function. 2.3.1
- 2 Discriminate between point and nonpoint pollution sources. 2.3.2
- 3 Analyze and interpret water quality data. 2.3.3
- 4 Describe the function of wetlands and importance of wetland management. 2.3.4
- 5 Identify laws and regulations governing water. 2.3.5

EXPLORE PRINCIPLES OF RANGELAND MANAGEMENT 3.0

1 Identify Rangeland Types and Management Practices 3.1

- 1 Define rangelands and identify key characteristics. 3.1.1
- 2 Identify major rangeland types in Idaho. 3.1.2
- 3 Compare public and private management of rangelands. 3.1.3
- 4 Identify multiple uses of rangelands. 3.1.4
- 5 Identify laws, policies, and managing entities of rangelands. 3.1.5
- 6 Identify impacts of use on rangelands. 3.1.6

2 Understanding the Historic, Environmental, Social, and Economic Importance of Idaho Rangelands 3.2

- 1 Understand how rangelands have been important to humans throughout time. 3.2.1
- 2 Identify the ecological services provided by rangelands. 3.2.2
- 3 Recognize the value of rangelands to society. 3.2.3
- 4 Understand the importance of working rangelands for the economic livelihood of Idaho and other parts of the country and world. 3.2.4

3 Identify Common Idaho Rangelands Plants 3.3

- 1 Identify morphological characteristics of rangeland plants. 3.3.1
- 2 Use a dichotomous key to identify rangeland plants. 3.3.2
- 3 Assemble a plant collection. 3.3.3
- 4 Identify important Idaho rangeland plants and evaluate their use by animals. 3.3.4
- 5 Define native, introduced, invasive, noxious, and poisonous plants. 3.3.5

4 Apply Rangeland Management Practices 3.4

- 1 Identify key components of a management plan. 3.4.1
 - 2 Identify rangeland management tools and techniques. 3.4.2
 - 3 Use rangeland measurement tools. 3.4.3
 - 4 Conduct a rangeland inventory and interpret data. 3.4.4
 - 5 Determine stocking rates based on animal demand and forage supply. 3.4.5
 - 6 Discuss the impacts of dynamic forces of change on rangelands (e.g., fire, weather, 3.4.6
 - 7 insects, disease, people, animals, invasive species) and identify management strategies. 3.4.7
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EXAMINE FOREST RESOURCES AND MANAGEMENT 4.0

1 Identify Forest Types and Management Practices 4.1

- 1 Identify major forest types in Idaho. 4.1.1
 - 2 Assess different methods of forest management. 4.1.2
 - 3 Compare public and private management of forests. 4.1.3
 - 4 Identify multiple uses of forests. 4.1.4
 - 5 Identify laws, policies, and managing entities of forests. 4.1.5
 - 6 Identify impacts of use on forests. 4.1.6
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2 Understanding the Historic, Environmental, Social, and Economic Importance of Idaho Forests 4.2

- 1 Understand how forests have been important to humans throughout time. 4.2.1
 - 2 Identify the ecological services provided by forests. 4.2.2
 - 3 Recognize the value of forests to society. 4.2.3
 - 4 Understand the importance of working forests for the economic livelihood of Idaho and other parts of the country and world. 4.2.4
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3 Identify Common Idaho Forest Plants 4.3

- 1 Identify morphological characteristics of forest plants. 4.3.1
 - 2 Use a dichotomous key to identify trees, shrubs, and other forest plants. 4.3.2
 - 3 Assemble a plant collection. 4.3.3
 - 4 Identify important Idaho forest plants and evaluate their use by animals. 4.3.4
 - 5 Define native, introduced, invasive, noxious, and poisonous plants. 4.3.5
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4 Apply Forest Management Practices 4.4

- 1 Identify key components of a management plan. 4.4.1
- 2 Identify forest management tools and techniques. 4.4.2
- 3 Use forest measurement tools. 4.4.3
- 4 Conduct a forest inventory and interpret data. 4.4.4

- 5 Define silviculture and compare different timber harvest systems. 4.4.5
 - 6 Discuss impacts of dynamic forces of change (e.g., fire, weather, insects, disease, people, animals, invasive species) on forests and identify management strategies. 4.4.6
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EXPLORE FIRE ECOLOGY AND MANAGEMENT 5.0

1 Explore the Effects of Fire on Rangeland and Forest Ecosystems 5.1

- 1 Explain the significance of each of the components of the “fire triangle.” 5.1.1
 - 2 Discuss the fire behavior triangle (fuel, weather, topography). 5.1.2
 - 3 Interpret the factors affecting fire frequency in Idaho past, present, and future. 5.1.3
 - 4 Describe the social, economic, and ecological effects of wildland fire. 5.1.4
 - 5 Examine the role of fuel management and the relationship between fuel load and fire effects in rangeland and forest ecosystems. 5.1.5
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UNDERSTAND THE IMPORTANCE AND APPLICATION OF GPS/GIS IN NATURAL RESOURCE MANAGEMENT 6.0

1 Investigate GPS/GIS Systems and Their Applications 6.1

- 1 Define the uses of geographic information systems (GIS) and spatial analysis as it applies to natural resource management. 6.1.1
 - 2 Describe the purpose and function of a Global Positioning System (GPS). 6.1.2
 - 3 Demonstrate the ability to use a GPS unit by navigating and collecting waypoints. 6.1.3
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2 Demonstrate the Use of Land Management Maps 6.2

- 1 Use legal descriptions to identify locations and acreage. 6.2.1
 - 2 Identify symbols on topographical maps. 6.2.2
 - 3 Predict terrain based on topographical maps. 6.2.3
 - 4 Demonstrate the ability to find GPS locations on a topographic map. 6.2.4
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INVESTIGATE FISH AND WILDLIFE ECOLOGY 7.0

1 Explore the Importance and Distribution Fish and Wildlife Resources in Idaho 7.1

- 1 Identify the seven categories of wildlife. 7.1.1
 - 2 Connect the distribution of wildlife associated with private and public land. 7.1.2
 - 3 Describe the importance of wildlife, including indigenous and migratory species, their physical and behavioral characteristics, habitat and management. 7.1.3
 - 4 List impacts on wildlife habitat. 7.1.4
 - 5 Describe techniques used in harvesting of wildlife. 7.1.5
 - 6 Summarize appropriate outdoor safety practice. 7.1.6
 - 7 Describe techniques of wildlife habitat improvement. 7.1.7
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2 Understand Wildlife Management 7.2

- 1 Identify the agencies and organizations associated with wildlife management. 7.2.1
 - 2 Explore the role of USDA - Wildlife Services, DOI – US Fish and Wildlife Service, and Idaho Fish & Game concerning wildlife management. 7.2.2
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EXAMINE MINERAL AND ENERGY RESOURCES MANAGEMENT 8.0

1 Examine Mineral Resources and Management 8.1

- 1 Identify local mineral resources. 8.1.1
 - 2 Summarize the impact of mineral resources to society. 8.1.2
 - 3 Compare the various practices for obtaining mineral resources. 8.1.3
 - 4 Describe the impact of mining practices on the environment. 8.1.4
 - 5 Compare processes for reclaiming areas where minerals have been extracted. 8.1.5
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2 Recognize the Types and Importance of Energy Resources 8.2

- 1 Differentiate between renewable and nonrenewable energy resources. 8.2.1
 - 2 Investigate types of renewable resources. 8.2.2
 - 3 Compare types of electrical power generation. 8.2.3
 - 4 Analyze positive and negative impact of energy development on the environment. 8.2.4
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EXPLORE CAREER OPPORTUNITIES IN THE NATURAL RESOURCE INDUSTRY 9.0

1 Understand Employment Fields in the Natural Resource Industry 9.1

- 1 List and describe the types of employment opportunities in natural resource management. 9.1.1
 - 2 Explore education and training for different natural resource management careers. 9.1.2
 - 3 Describe the process of choosing a career path in the natural resource management industry. 9.1.3
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PARTICIPATE IN LEADERSHIP TRAINING THROUGH MEMBERSHIP IN A STUDENT LEADERSHIP ORGANIZATION 10.0

1 Recognize the Traits of Effective Leaders and Participate in Leadership Training Through Involvement in a Student Leadership Organization 10.1

- 1 Expand leadership experience by serving as a chapter officer or on a committee. 10.1.1
 - 2 Exhibit leadership skills by demonstrating proper parliamentary procedure. 10.1.2
 - 3 Participate in a career development event at the local level or above. 10.1.3
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DESCRIBE THE RELATIONSHIP BETWEEN A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) AND PREPARATION OF STUDENTS FOR A

1 Maintain a Supervised Agricultural Experience 11.1

- 1 Accurately maintain SAE record books. 11.1.1
- 2 Apply for a proficiency award related to the SAE program area. 11.1.2
- 3 Actively pursue necessary steps to receive higher degrees or recognition in a student leadership organization. 11.1.3

