Idaho CTE

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

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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

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ıpply 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

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

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

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

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

      Use forest measurement tools. 4.4.3

      Conduct a forest inventory and interpret data. 4.4.4

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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

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

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

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

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

Inderstand Wildlife Management 7.2

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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

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

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

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

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

DESCRIBE THE RELATIONSHIP BETWEEN A SUPERVISED AGRICULTURAL EX PR ST

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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

Actively pursue necessary steps to receive higher degrees or recognition in a student leadership organization. 11.1.3

CAREER IN AGRICULTURE 11.0