

NATURAL RESOURCES CAREER PATHWAY CORE STANDARDS (Approved May 24, 2005)

CORE STANDARD	Concept(s)	Performance Indicators
<p>NC1.0 SCIENTIFIC PROCESSES AND SYSTEMS: Use the scientific method to analyze natural resource systems and subsystems.</p>	<p>Inquiry process and Investigative Skills</p>	<ul style="list-style-type: none"> • <u>NC1.1–Apply knowledge of systems of biological and physical processes to demonstrate how dependent organisms are on one another and their environments using the inquiry process.</u> <ul style="list-style-type: none"> The following steps are included in the inquiry process: <ol style="list-style-type: none"> 1. Determine the problem 2. Formulate a hypothesis 3. Determine what materials and equipment will be needed for testing the hypothesis 4. Design and conduct the experiment to test the hypothesis 5. Record the data 6. Analyze the data 7. Evaluate the entire process and make a conclusion ○a. Explain fundamental concepts of communities (e.g., limiting factors such as habitats, food, population dynamics, population and community interactions and others). ○b. Illustrate biogeochemical cycling (e.g., nutrient and materials cycling; hydrologic cycle). ○c. Explain the importance of biodiversity, interdependence of organisms, and ecosystems for life. ○d. Describe basic population dynamics and the importance of diversity in living systems. ○e. Describe the major physical processes that shape the Earth and relate these processes to characteristics of the Earth. ○f. Account for environmental characteristics based on how matter and energy interact in living systems.

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<p>NC2.0 TECHNOLOGY AND BIOTECHNOLOGY: Apply appropriate technology to maintain or improve natural resource systems.</p>	<p>Interdependence and Impacts of Technology on society and the environment.</p>	<ul style="list-style-type: none"> • <u>NC2.1 Investigate technologies in the context of larger systems that have shaped the course of human history as well as human relationships with the environment (e.g., agriculture, industry, transportation, communication, etc.).</u> <ul style="list-style-type: none"> ○a. Describe how past and present technologies and innovations have been used to change environments or the use of natural resources throughout history. ○b. Illustrate the use of biotechnology, chemical technology, mechanical and electrical technology, and environmental technology are used in a natural resource industry (e.g., agriculture, enhancement of crop production and resistance; genetic manipulation; micropropagation of rare/endangered species). ○c. Analyze issues related to technology such as biotechnology from various points of view (e.g., economic, political, governmental, social, religious, local/global, generational, etc.) ○d. Evaluate the social, economic, and environmental costs, benefits, risks, and possibilities associated with technologies through which humans shape and/or control their environment.
	<p>Information and Communication Technology</p>	<ul style="list-style-type: none"> • <u>NC2.2 Identify and apply ways in which information technology helps, or has helped expand knowledge, values, and behavior patterns/practices in relation to natural resource systems.</u> <ul style="list-style-type: none"> ○a. Use technology and various methods to access, collect, analyze, organize, control, process, transmit, and communicate information.

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<p>NC3.0 NATURAL RESOURCE MANAGEMENT: Assess for balanced management of natural resources.</p>	<ul style="list-style-type: none"> • Effective Management Practices. 	<ul style="list-style-type: none"> • <u>NC3.1 Evaluate management practices for the use, maintenance, and restoration of natural resources.</u> <ul style="list-style-type: none"> ○a. Analyze the status of natural resource(s), its distribution, management, and consumption patterns and appraise the strategies for the conservation of natural resources (e.g., sustainable approaches, value-added, farmland enhancement, waste management, energy sourcing, forest fire control, etc.). ○b. Evaluate the conditions and motivations that lead to conflict, cooperation, and change among individuals, groups, and nations on the control of natural resources (e.g., urban development or habitat for local endangered species or lumber industry; restoration versus preservation; organic versus non-organic controls, etc. ○c. Develop and defend a cooperative strategy for appropriate action to change a current relationship between ecological/ cultural preservation and economic development.

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<p>NC4.0 ENVIRONMENTAL PROTECTION: Analyze and develop strategies to protect natural resources in accordance with environmentally sound practices and policies.</p>	<ul style="list-style-type: none"> • Issue Analysis 	<ul style="list-style-type: none"> • <u>NC4.1 Investigate local, regional, and global environmental issues</u> <ul style="list-style-type: none"> ○ a. Define and clearly articulate an issue or concern and its connection with other issues (e.g., length of time, breadth of applicability, the pervasiveness of its effects). ○ b. Discuss the social, political, economic, and ethical implications of an issue and alternative courses of action.
	<ul style="list-style-type: none"> • Decision Making 	<ul style="list-style-type: none"> • <u>NC4.2 Defend a position on an environmental concern and decide on action needed .</u> <ul style="list-style-type: none"> ○ a. Evaluate viewpoints that differ and information that challenges the position taken. ○ b. Assess alternatives such as potential for success; legal, social, economic, and ecological consequences; and skills and resources needed. ○ c. Select an action based on research/analysis and develop plans to implement the action to address the concern or issue. ○ d. Evaluate the effects of the action, identifying intended and unintended effects.
	<ul style="list-style-type: none"> • Protection 	<ul style="list-style-type: none"> • <u>NC4.3 Explain the need for protective measures to sustain environments.</u> <ul style="list-style-type: none"> ○ a. Describe elements in various environments that are affected by human actions or natural phenomena. <ul style="list-style-type: none"> • Physical environment (e.g., geological features, air, water). • Biological environment (e.g., flora, fauna, biodiversity, local and non-local species). • Social environment (e.g., natural/man-made artifacts, incursions, impact,

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		<p>scale).</p> <ul style="list-style-type: none"> ○ b. Provide examples of long-ranged impacts of negative effects when they are not prevented, corrected, or resolved/remediated. ○ c. Explain the role of government, environmental organizations, and community groups in protecting the environment.

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<p>NC5.0 ETHICS AND LEGAL RESPONSIBILITY: Evaluate ethics, legal responsibilities and practices in the natural resources environment.</p>	<ul style="list-style-type: none"> • Political Processes, Compliance and Enforcement 	<ul style="list-style-type: none"> • <u>NC5.2 Assess how citizens influence natural resources through the political process.</u> <ul style="list-style-type: none"> ○ a. Analyze the process of creating, enacting and changing laws, and give examples of local and national laws that impact the sustainability of natural resources/environments. ○ b. Compare and contrast current and/or historical environmental issues from cultural, economic, and political perspectives to formulate long-term and short-term solutions. ○ c. Describe the individual’s responsibility in complying and/or implementing the expectations of laws or ethics (e.g., professional conduct, decision making, work ethic).
	<ul style="list-style-type: none"> • Ethics and Behaviors 	<ul style="list-style-type: none"> • <u>NC5.1 Examine how ethics and behaviors impact natural resources.</u> <ul style="list-style-type: none"> ○ a. Evaluate and discuss how own beliefs about the environment were developed (e.g., learning, culture, economic vitality, experiences, personal well-being, social and environmental welfare). ○ b. Compare and contrast personal ethics and behavior. ○ c. Evaluate how personal behavior affect the environment, humans, and other living things. ○ d. Debate conflicting viewpoints and discuss alternatives for conflict resolution.

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<p>NC6.0 SOCIOECONOMIC AND CULTURAL AWARENESS AND RESPECT: Analyze the effects of economic, social, and cultural systems on natural resources.</p>	<p>Economic Systems:</p>	<ul style="list-style-type: none"> • <u>NC6.1 Explain the concepts of scarcity and uneven distribution of resources.</u> <ul style="list-style-type: none"> ○a. Illustrate the relationship between supply and demand. ○b. Examine the uneven distribution of natural resources and its economic implications.
	<p>Cultural Systems:</p>	<ul style="list-style-type: none"> • <u>NC6.2 Describe how people’s culture (e.g., religious, economic, political, social, and other) influence the environment.</u> <ul style="list-style-type: none"> ○a. Explain how the environment is perceived in various cultures. ○c. Use a familiar (e.g., Hawaiian) culture and discuss its core values and practices in relation to the use and protection of natural resources. ○b. Identify ways different cultures develop practices/policies related to the management of natural resources. ○d. Compare and contrast the impacts of traditional and contemporary cultural practices on the environment.
	<p>Social Systems:</p>	<ul style="list-style-type: none"> • <u>NC6.3 Analyze how social systems account for, manage, and affect natural resources and environmental quality.</u> <ul style="list-style-type: none"> ○a. Analyze how social institutions (e.g., educational, religious, financial, business, non-profit, lobbying, government, and legal) perpetuate societal values and impact the environment. <p>NC6.4 <u>Discuss the interconnectedness of present world political, economic,</u></p>

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		<u>environmental, and social issues.</u> a. Identify a variety of local, regional, national and international environmental issues and the ecological and cultural implications of these.