

Conservation Education Strategy Foundations

Introduction, Conservation Core Concepts and Benchmarks



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A Project of the Association of Fish and Wildlife Agencies'
North American Conservation Education Strategy

Funded by a Multistate Grant
of the Sport Fish and Wildlife Restoration Program

November 2011



Core Conservation Concepts

These Core Concepts reflect the knowledge, actions and values that further the North American Model and were developed as part of the Conservation Education Strategy.

Conservation Education Strategy Mission

To unify and strengthen conservation education efforts of the Association of Fish and Wildlife Agencies (AFWA) member agencies and partners in a manner that effectively advances the AFWA Strategic Plan and the North American Model of Fish and Wildlife Conservation.

Conservation Education Strategy Vision

Conservation Education becomes an effective, dynamic means for the Association of Fish and Wildlife Agencies (AFWA), its members and partners to achieve the AFWA Strategic Plan through an informed and involved citizenry that:

- I. Appreciates that conservation and management of terrestrial and water resources are essential to sustaining fish and wildlife, the outdoor landscape, and the quality of our lives
- II. Understands and actively participates in the stewardship and support of our natural resources
- III. Understands the value of our fish and wildlife resources as a public trust
- IV. Understands and accepts and/or lawfully participates in hunting, fishing, trapping, boating, wildlife watching, shooting sports, and other types of resource-related outdoor recreation
- V. Understands and actively supports funding for fish and wildlife conservation

Core Concepts for Conservation Education

I. Appreciates that conservation and management of terrestrial and water resources are essential to sustaining fish and wildlife, the outdoor landscape, and the quality of our lives

A. The health and well-being of fish, wildlife, and humans depend on the quality of their environment.

1. All living things depend on habitat that includes adequate and suitably arranged food, water, shelter, and space
 - a. Fish and wildlife numbers and species compositions are constantly changing based on a variety of natural and human-caused conditions
 - b. Loss and degradation of habitat are the greatest problems facing fish and wildlife; therefore, enhancing and protecting habitat is critical to managing and conserving them
 - i. Human changes to the landscape alter fish and wildlife habitat, changing the amount and type available
 - ii. Natural events alter the landscape, changing the amount and type of fish and wildlife habitats available. The effects of these events can be exacerbated by human changes to the landscape
 - iii. Fragmentation of habitats alters fish and wildlife distribution, movement, and composition
2. The carrying capacity of an area determines the size of the population that can exist or will be tolerated there
 - a. Biological carrying capacity is an equilibrium between the availability of habitat and the number of animals of a given species the habitat can support over time
 - b. Cultural carrying capacity is the number and type of a given species that people will tolerate over time
 - c. Carrying capacity is dynamic and can change from season to season and from year to year
 - d. Regulated hunting, fishing, and trapping are important tools for preventing populations of certain species from exceeding the carrying capacity of their habitat

3. Living things tend to reproduce in numbers greater than their habitat can support. The populations are limited by factors such as quantity and quality of food, water, shelter, and space. Other limiting factors may include disease, predation, and climatic conditions
 - a. When a population becomes too large it may damage or destroy its habitat as well as habitat for many other species
 - b. When a population exceeds the carrying capacity for an area, individuals of that population must out-compete others, emigrate, or die
4. Fish and wildlife are present in nearly all areas of the earth. Each ecosystem has characteristic species
 - a. Climate, topography, and habitats influence species diversity
 - b. All living things are connected to each other and their environment
 - i. Plants and animals in ecological systems live in a web of interdependence in which each species contributes to the function of the overall system
 - ii. Energy from the sun is captured by plants and enters the animal world primarily through animals that eat plants
 - iii. Interactions between different fish and wildlife populations include competition, predation, and symbiosis
 - c. Each species occupies a niche within its environment
5. Ecological succession is a process involving continuous replacement of one community by another
 - a. As succession occurs fish and wildlife found in that community will change
 - b. Natural events and human activities affect the rate and direction of succession
6. Species differ in their ability to adapt
 - a. Fish and wildlife are adapted to their environment in ways that enable them to compete and survive
 - b. The more adaptable a species is, the more likely it is to thrive
 - c. Most species that are endangered or threatened in North America became so as a result of natural or human-caused changes in their habitat and their inability to adapt or adjust to such changes

7. Conserving biodiversity is important

- a. Isolated ecosystems and populations are more vulnerable to environmental change than well connected ecosystems
- b. Native species are important to the stability of an ecosystem
- c. Exotic/non-native species introduced into a community can change the dynamics of that community
- d. Reintroduction of fish or wildlife into its former range may be possible if conditions such as suitable habitat and social acceptance exist

8. Many species are indicators of environmental health

B. Fish and wildlife can be conserved and restored through science-based management which considers the needs of humans as well as those of fish and wildlife

- 1. Fish and wildlife management practices are based on natural, physical, and social sciences
- 2. Wildlife management practices involve population and habitat inventory and monitoring, research, manipulation of populations, protection and manipulation of habitat, regulation, and education
 - a. Wildlife populations are managed through such practices as regulated hunting, fishing and trapping; artificial propagation; stocking; and transplanting as well as predator and damage control
 - b. Enhancing and protecting healthy habitat are critical to managing and conserving fish and wildlife
 - c. Management of one species may affect other species within the same ecosystem
- 3. Fish and wildlife management decisions consider biological, economic, social, and political factors
- 4. Conservation of fish and wildlife habitats provides human health, recreation, aesthetic, and economic benefits



II. Understands and actively participates in the stewardship and support of our natural resources

A. A person's culture affects his or her view and use of fish and wildlife and their habitats

1. People use fish and wildlife resources for food, shelter, clothing, and other products; practices that have continued throughout history
2. Fish and wildlife provide a recreational focus for millions of people in North America

B. The distribution and abundance of fish and wildlife provide significant economic benefits

C. Everyone impacts fish and wildlife and their habitats and as human populations grow, impacts on natural resources increase

1. Conversion of fish and wildlife habitat for human uses has altered the amount of land and water available for fish, wildlife, and associated recreation
2. Humans are agents in the spread of invasive species and fish and wildlife diseases; and therefore, must take steps to avoid associated problems

D. Unlike other organisms, only humans have the capacity and responsibility to consider the effects of their actions on their environment

1. People make decisions collectively and individually each day that directly and indirectly impact fish and wildlife and their habitats
2. Decisions people make relative to fish and wildlife are based on their values, as well as knowledge of and experiences with those resources

III. Understands the value of our fish and wildlife resources as a public trust

A. In North America fish and wildlife are public trust resources managed by governmental agencies

1. Ownership of land does not convey ownership of wildlife
2. Primary responsibility for most fish and wildlife management programs in North America is delegated to governmental agencies
 - a. State, provincial, and tribal fish and wildlife agencies are responsible for managing most fish and wildlife on public and private lands and water within their geographic jurisdictions



- i. In Mexico, only the six northern border states have been given authority over resident wildlife. In other parts of Mexico, the federal government maintains jurisdiction over resident wildlife and all inland fisheries
 - b. Federal agencies, in cooperation with state and tribal agencies, are responsible for managing migratory fish and wildlife and federally listed threatened and endangered species, and for regulating wildlife trade. (In Canada, federal provincial and territorial agencies share responsibility for federally listed endangered species)
3. Non-government organizations, businesses, and individuals play important roles as advocates and conservation partners with fish and wildlife agencies
 4. Since most wildlife live on private lands, private landowners play an important role in sustaining and improving habitat
 5. Many species move across state, provincial, and national boundaries, requiring interstate and international agreements and partnerships to manage these species

B. Sustainable natural resources depend on the support of an informed and responsible citizenry

C. Regulations are necessary for natural resources conservation

1. The adoption and enforcement of regulations help conserve fish and wildlife resources
2. Regulations allow for sustainable human use of fish and wildlife resources
3. Regulations combat illegal trafficking and exploitation of fish and wildlife resources

IV. Understands and accepts and/or lawfully participates in hunting, fishing, trapping, boating, wildlife watching, shooting sports, and other types of resource-related outdoor recreation

A. Regulated hunting, fishing, and trapping are important tools for managing some wildlife populations and habitats

B. Fish and wildlife-based resources provide recreational benefits directly to participants and increase advocacy for conservation

C. Responsible users of fish, wildlife, and the outdoors respect the rights and property of others



V. Understands and actively supports funding for fish and wildlife conservation

A. Within the U.S., state fish and wildlife management is funded primarily through hunting, fishing and trapping licenses and through federal excise taxes collected from the sale of hunting, target shooting, and fishing equipment and motor boat fuels

1. Wildlife Restoration—Federal Aid in Wildlife Restoration (Pittman-Robertson Act [1937]) provides funding in the U.S. for the protection, restoration, rehabilitation and improvement of wildlife habitat, wildlife management research, hunter education, and the distribution of information produced by the projects
2. Sport Fish Restoration—Federal Aid in Sport Fish Restoration (Dingell-Johnson [1950] and Wallop-Breaux amendment [1984]) is a parallel program to Pittman Robertson for management, conservation, restoration of fishery resources, access and boating and aquatic resource education

B. Wildlife-based activities, such as hunting, fishing, viewing, and photography provide people with millions of days of outdoor recreation each year and generate billions of dollars for the economy

C. The future of fish and wildlife conservation requires additional funding from a broad-based constituency





Benchmarks for Conservation Literacy

CONCEPTS OF LEARNING THAT ALL STUDENTS SHOULD KNOW AND BE ABLE TO DO.	CONSERVATION BENCHMARKS		
	5 th GRADE	8 th GRADE	12 th GRADE
Ecological systems are dependent upon the interactions between living and nonliving systems. <i>Conservation Literacy and Systems</i>	Identifies the basic needs of plants and animals. Describes how the basic needs of plants and animals are met. Describes a local ecosystem and identifies its living and nonliving components.	Examines the environmental factors that influence the number and diversity of species in an ecosystem. Examines energy flow through the food web in each ecosystem.	Predicts how a change in an environmental factor can affect diversity of species in an ecosystem. Investigates the health of a local ecosystem by researching, gathering and analyzing the biological, geological, chemical, and physical data of that system.
The health and well-being of humans is dependent on fish, wildlife and the natural environment. <i>Conservation Literacy and Systems</i>	Identifies natural resources that help humans meet their basic needs.	Assesses the importance of the role of fish, wildlife and the natural environment in sustaining human populations.	Compares and contrasts how the health and well-being of humans is currently and has historically been dependent on fish, wildlife and/or the natural environment.
Science process skills are utilized to conduct fish and wildlife field investigations <i>Conservation Literacy and Systems</i>	Conducts a descriptive field study of an outdoor natural area using multiple observation skills.	Conducts a comparative field study involving fish and wildlife and their habitat using multiple observation skills.	Conducts a field study that involves collecting and reporting fish and wildlife related data to biologist, community professional, and/or other stakeholders.
Demonstrate decision making skills related to fish and wildlife conservation efforts. <i>Civic Participation and Stewardship</i>	Writes 5 rules people should follow when participating in nature-related outdoor activities.	Describes how cultural influences and values affect outdoor ethics, stewardship behavior and wildlife rules and regulations.	Writes a personal ethics or stewardship statement related to fish, wildlife, and/or natural resources in their community.
Volunteer and participate in natural resource-related decision-making opportunities. <i>Civic Participation and Stewardship</i>	Participates in a natural resource conservation opportunity at school or in local community.	Works with others to plan and conduct a natural resource conservation action at school.	Selects and participates in a natural resources conservation action with a local community partner.
Human actions impact fish, wildlife and natural resources, and fish, wildlife and natural resources impact humans. <i>Civic Participation and Stewardship</i>	Identifies examples of the relationship between human activity and fish, wildlife and natural resources.	Explains and gives examples of the interrelationships and interdependencies of humans and natural resources.	Examines and analyzes a current event or issue considering potential environmental, economical, social and cultural impacts.



Benchmarks for Conservation Literacy

CONCEPTS OF LEARNING THAT ALL STUDENTS SHOULD KNOW AND BE ABLE TO DO.	CONSERVATION BENCHMARKS		
	5 th GRADE	8 th GRADE	12 th GRADE
<p>Citizens have a right and responsibility to be aware of and engaged in fish, wildlife and habitat issues.</p> <p><i>Civic Participation and Stewardship</i></p>	Identifies how people have specific rights and responsibilities related to fish, wildlife, and habitat in their local community.	Researches and evaluates the consequences of taking or not taking stewardship actions on fish, wildlife and habitat issues.	Analyzes our rights, privileges, responsibilities and opportunities to influence public policy, laws and regulations pertaining to fish, wildlife and natural resources.
<p>Outdoor recreational pursuits have many benefits and impacts (such as health, economic, ecological, etc.)</p> <p><i>Outdoor Participation</i></p>	Identifies nature-related outdoor recreation opportunities for health, fun, challenge, self expression, and/or social interaction.	Describes the role of nature-related outdoor recreation for health, fun, challenge, self expression, and/or social interaction.	Creates an individual plan for lifelong nature-related outdoor recreation for health, fun, challenge, self expression, and/or social interaction.
	Identifies nature related outdoor activities and their impact on the natural environment.	Describes impacts that nature-related outdoor recreation activities can have on the local natural environment and community.	Calculates the benefits, costs, and obligations associated with regular participation in nature-related outdoor recreation beyond the local level.
<p>Demonstrate competency in motor skills needed to participate in a variety of nature-related outdoor recreational activities.</p> <p><i>Outdoor Participation</i></p>	Demonstrates mature forms of locomotor and non-locomotor skill combinations used in nature-related outdoor-activities.	Demonstrates competency in modified versions in at least one nature-related activity from three of the following categories: aquatics (water-based activities), shooting/ archery, traversing (hiking, tracking, walking, etc.).	Demonstrates competency in basic and advanced skills in at least one nature-related activity from three of the following categories: canoeing, archery, fishing, shooting, tracking, camping, and hiking.
<p>Participate regularly in nature-related outdoor recreation.</p> <p><i>Outdoor Participation</i></p>	Sets a short-term goal to participate in a nature-related activity and make a plan for achieving it.	Sets personal nature-related outdoor recreational activity goals independently to meet needs and interests.	Cultivates interest and strengthens desire to independently maintain an active lifestyle in nature-related outdoor activities.
<p>Exhibit responsible personal and social behavior that respects self and others in nature-related outdoor recreation.</p> <p><i>Outdoor Participation</i></p>	Understands and follows activity-specific safe practices, rules, procedures and etiquette during nature-related outdoor activities.	Participates cooperatively in nature-related outdoor activities with persons with diverse abilities and backgrounds.	Initiates responsible behavior, functions independently and responsibly, and positively influences the behavior of others while participating in nature-related outdoor activities.



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The Benchmarks for Conservation Literacy identify what students should know and be able to do at the 5th, 8th and 12th grade levels on their way to becoming involved, responsible, conservation-minded citizens. The Benchmarks were developed with input from professional educators in the formal and non-formal sectors. They can be used in program development and as an assessment tool.