

The North American Conservation Education Strategy - Putting the Toolkit Into Practice

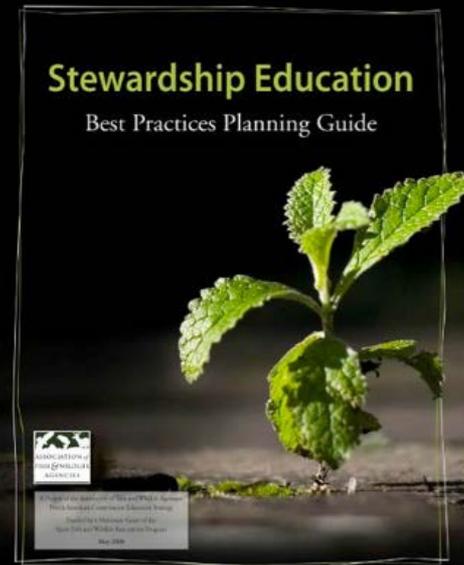
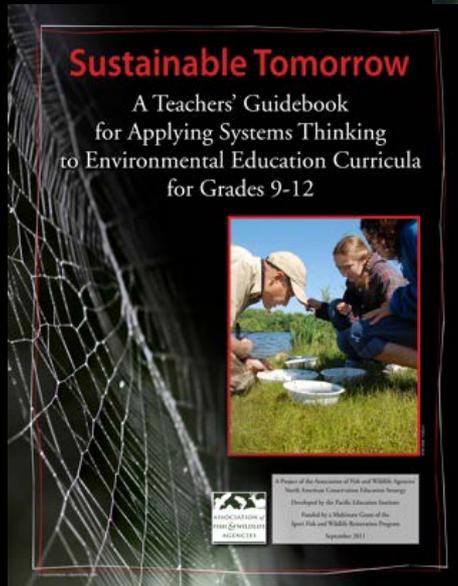
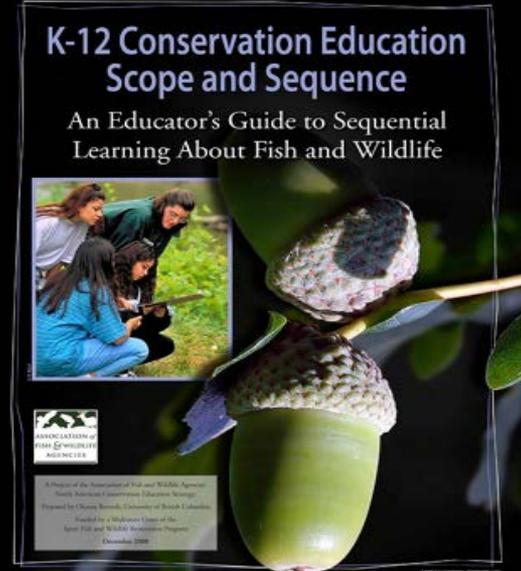
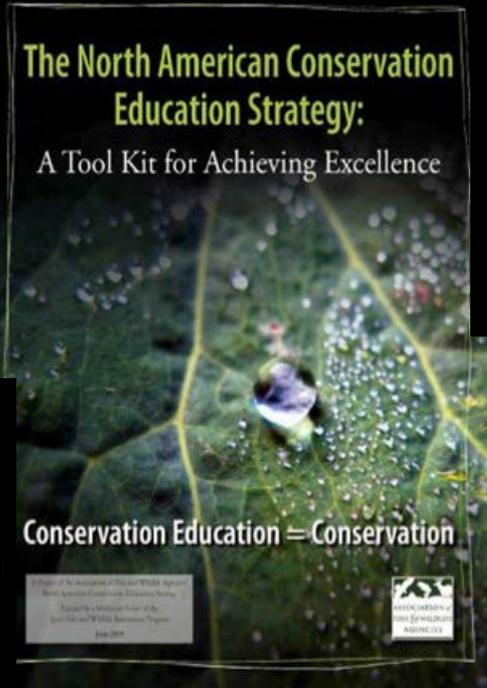
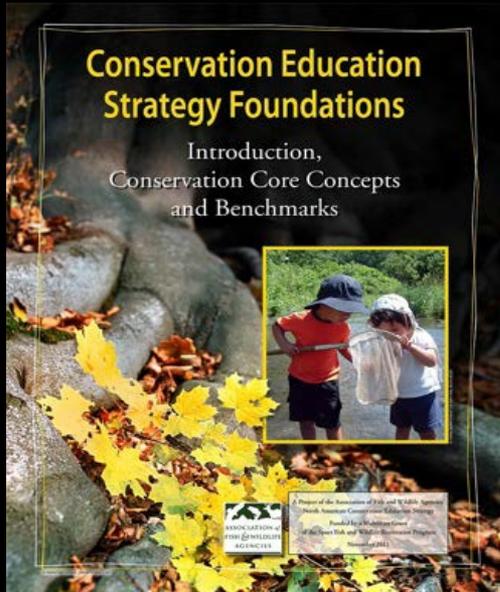




The North American Conservation Education Strategy

- get people outdoors
- broaden our constituency
- provide field investigations experiences
- teach outdoor skills
- transfer knowledge without bias

CE Strategy Toolkit



CE Strategy Toolkit

The “Investigation” Series

Landscape Investigation Guidelines

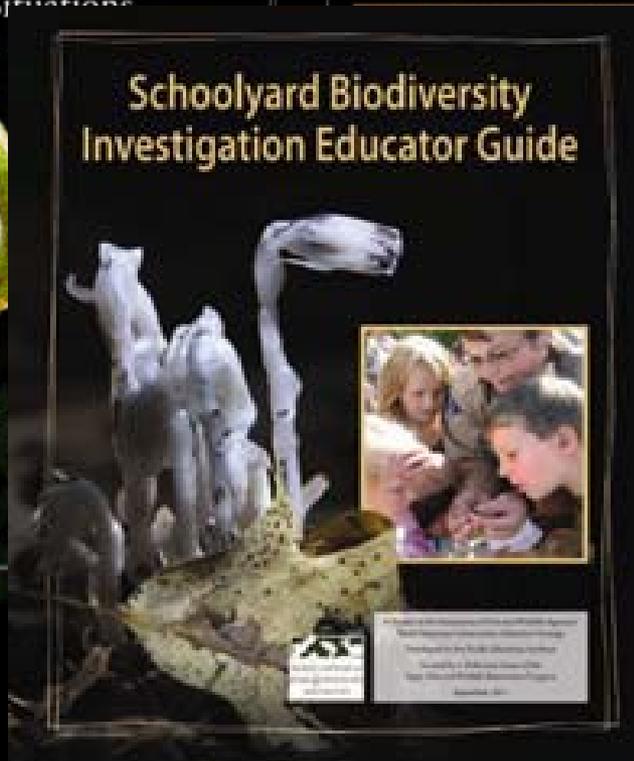
Challenging K–12 Students to Engage in Social Science Inquiry by Applying Spatial Thinking to Real World Situations



Field Investigations

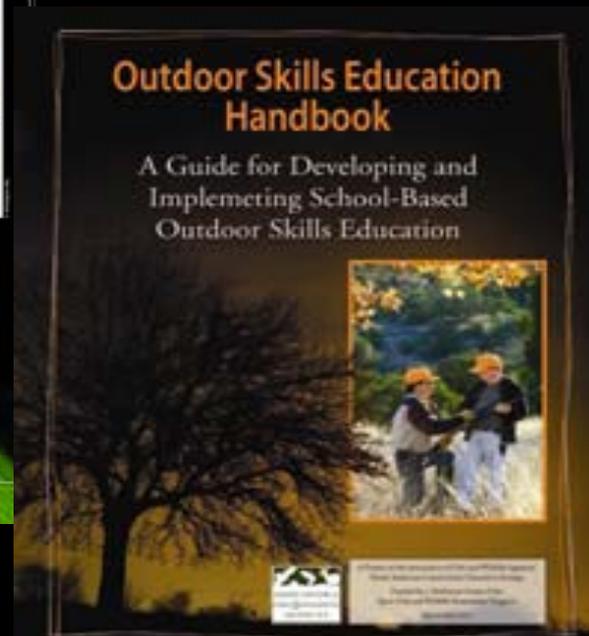
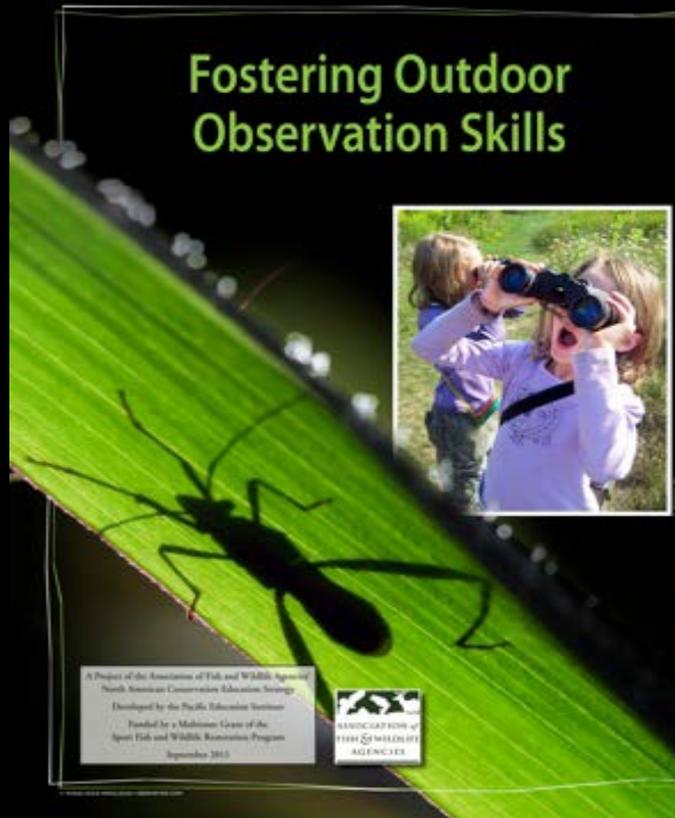
Using Outdoor Environments to Foster Student Learning of Scientific Processes

Schoolyard Biodiversity Investigation Educator Guide



CE Strategy Toolkit

The “Outdoor Skills” Series



www.fishwildlife.org

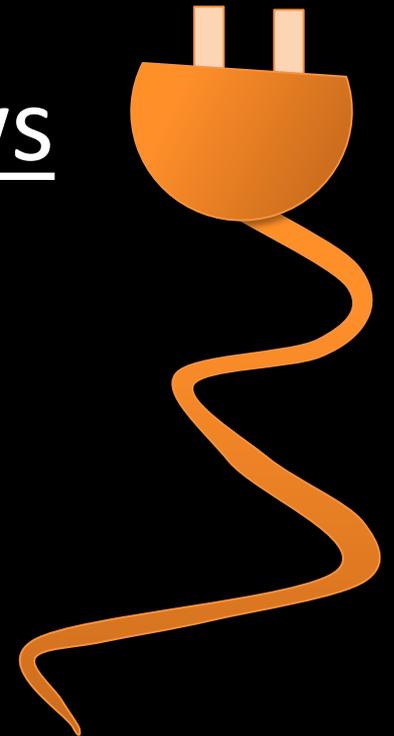
**Select Conservation Education in the Focus Area Section*

<http://bit.ly/AFWAConEdNews>

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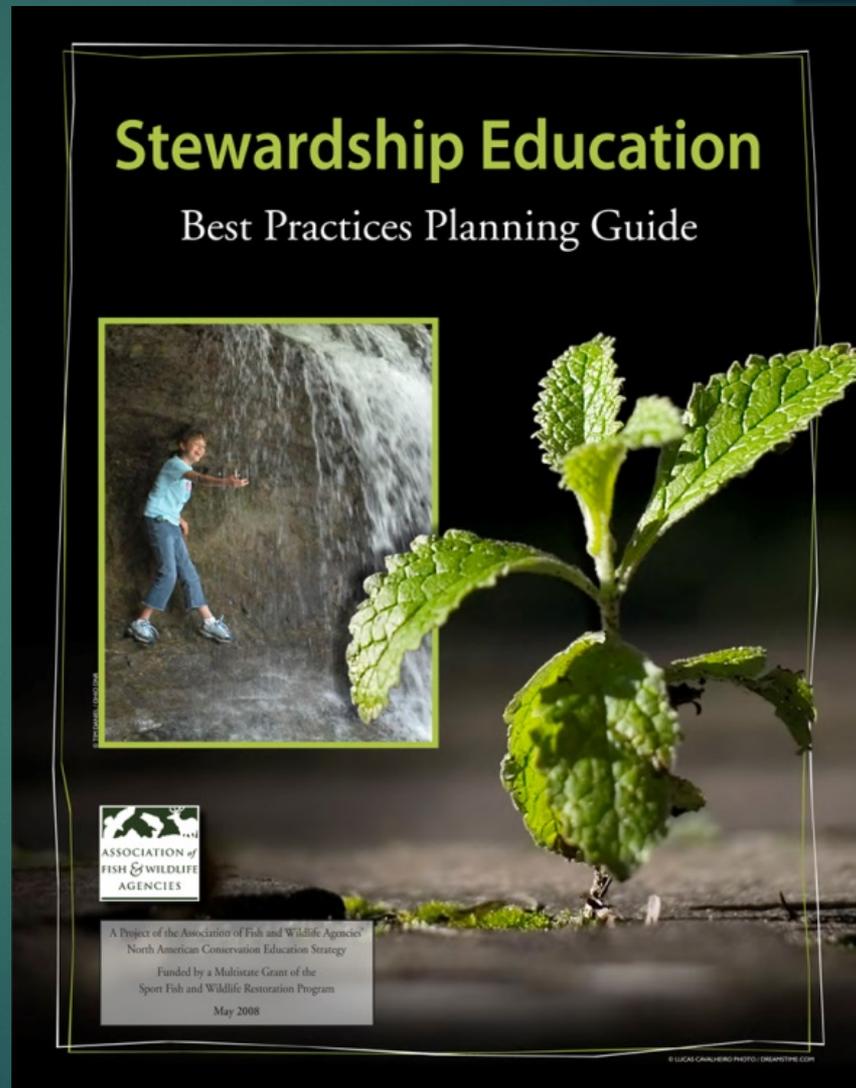
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Applying Stewardship Best Practices

CE Strategy in Practice in Texas

1. Start with Why
2. Program Alignment - Steps to Stewardship
3. Support



Start with Why

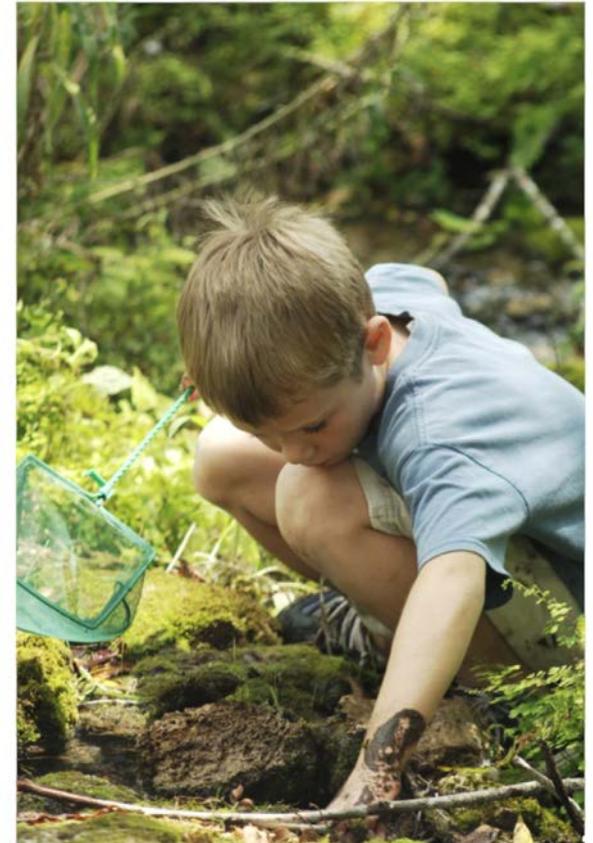
The Public

- ▶ owns the fish and wildlife
- ▶ makes the laws that govern us
- ▶ funds our agency through taxes and fees
- ▶ carries out our management recommendations
(97% of Texas is privately owned)

An involved and informed public
is critical to our mission

Our Picture of Childhood

Why
Steps
Support

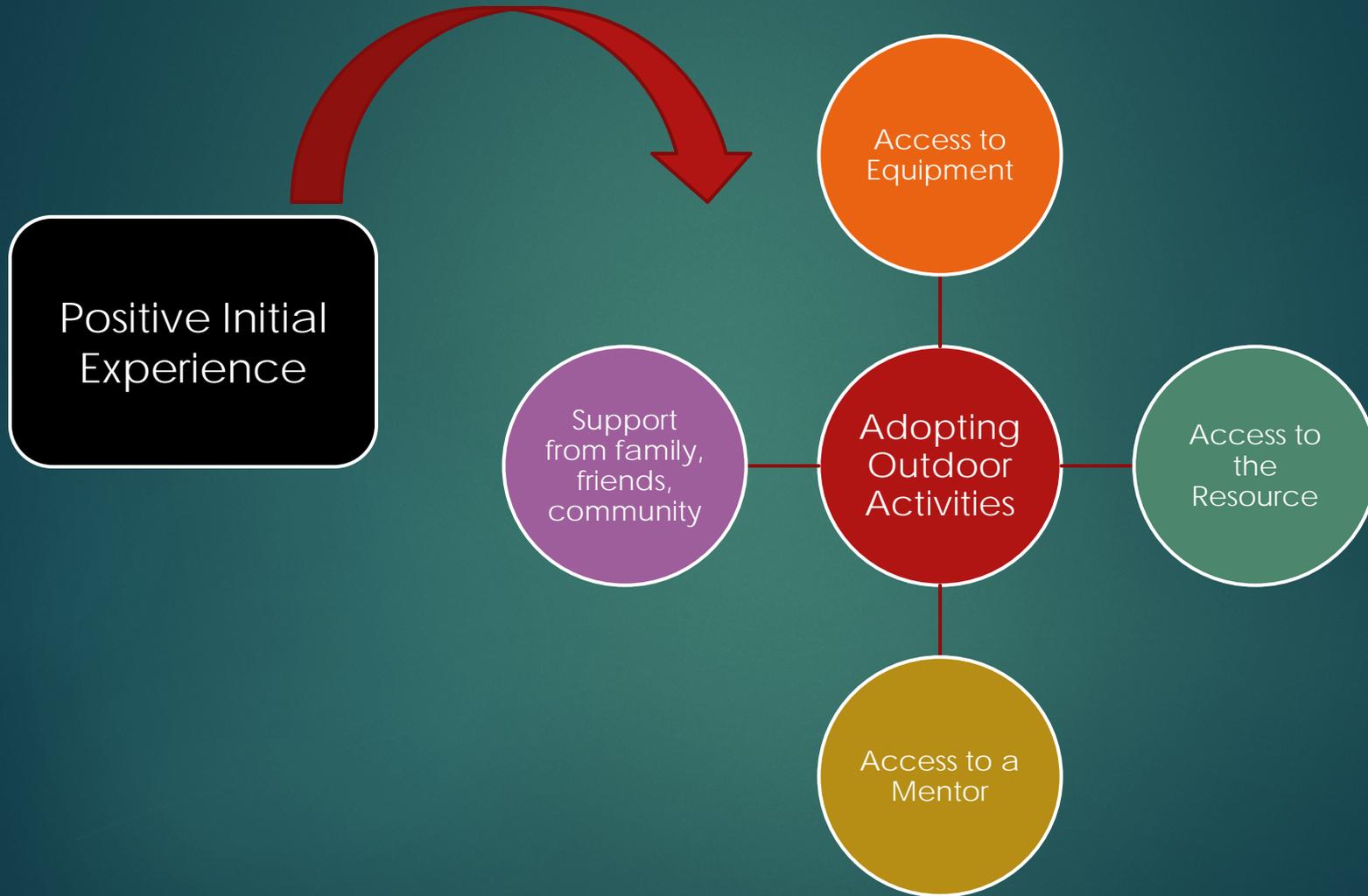


Our future conservationists?



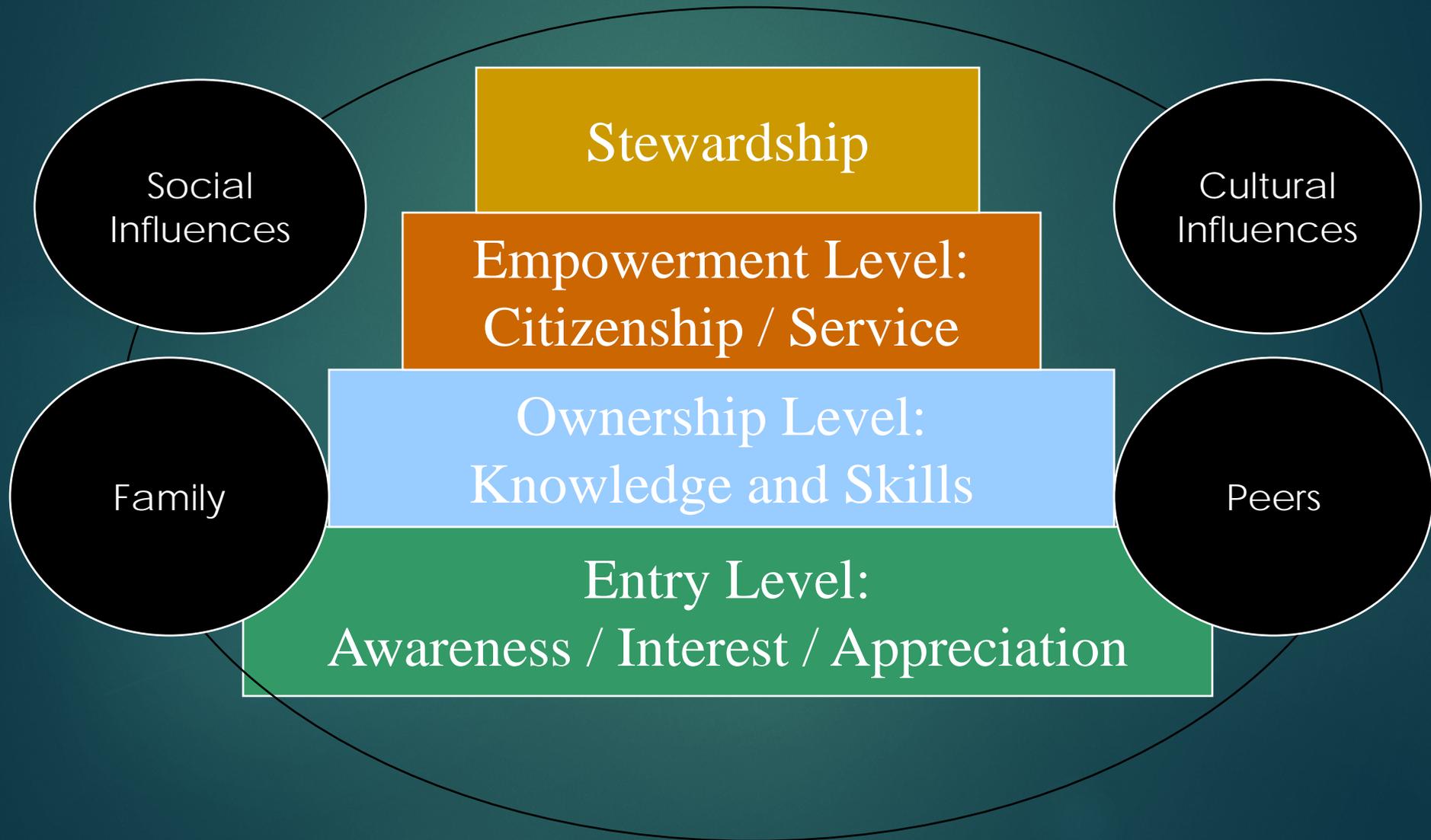
inside, inactive, isolated
and impressionable

Adoption



Building Stewardship

Why
Steps
Support



Awareness/Appreciation (entry level)

Participant

- ▶ “Wow!”
- ▶ Experiences new concepts and activities in positive ways.
- ▶ Feels new but meaningful.
- ▶ Short duration or limited scope.



Awareness/Appreciation (entry level)



Program Provider

- ▶ Introduce themes, concepts, and activities in positive ways, consistent with organizational mission.
- ▶ Address the needs of the target audience.
- ▶ Meet the audience “where they are.”
- ▶ Provide multiple, short/limited scope activities or events offered or repeated over time. Can be “threshold” or “reactivation.”
- ▶ Includes most outreach and interpretation activities: fairs, activity booths, presentations, TV, social media.

Knowledge & Skills (ownership)

Participant

- ▶ More involved activities and programs.
- ▶ In-depth learning/skill development, critical thinking and/or systems-thinking skills.
- ▶ Relevance is more clear. Connect to local issues, opportunities.
- ▶ May involve certification or skill testing.
- ▶ Greater time commitment.



Knowledge & Skills (ownership)



Program Provider

- ▶ Offer more complex/challenging curricula, certifications, skill tests.
- ▶ Incorporate stewardship in all learning and skill development programs.
- ▶ Address the needs of the target audience. Meet the audience "where they are."
- ▶ Foster partnerships for ongoing support of the learners' participation.
- ▶ Engage participants with strong connections to their local natural places/natural resources.
- ▶ Includes hunter and boater certification, Master Naturalist training, Project WILD, landowner workshops, Texas Aquatic Science.

Service & Citizenship (empowerment)

Participant

- ▶ Involvement in actual stewardship activity.
- ▶ Application of critical thinking skills—solve problems.
- ▶ Extended time investment.
- ▶ Commitment beyond self interests.



Service & Citizenship (empowerment)



Program Provider

Provide opportunities for participants to be stewards of the resource.

- ▶ Encourage and facilitate extended time investment.
- ▶ Engage partners.
- ▶ Promote volunteer programs and advisory groups.
- ▶ Provide active ways for people to be involved in decision making.
- ▶ Offer opportunities to identify, investigate and address local environmental issues.
- ▶ Volunteer programs; Texas Master Naturalists, Texas Water Captains

Stewardship

Participant

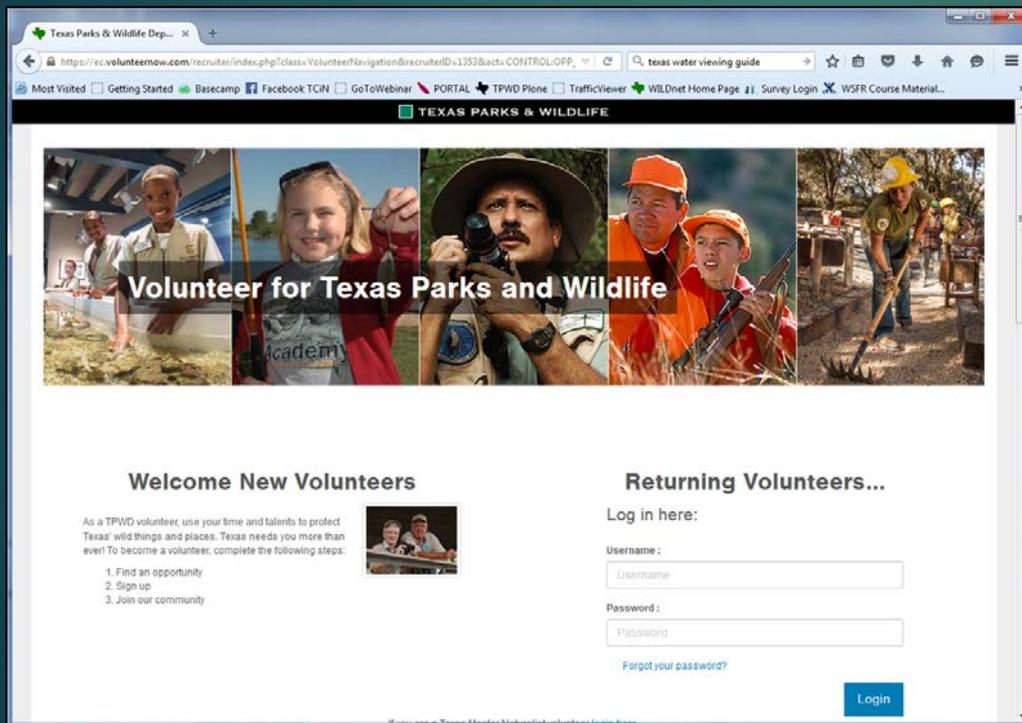
- ▶ Life-long behaviors.
- ▶ Law-abiding citizens.
- ▶ Active decision-makers.
- ▶ “Safe, Legal and Ethical”



Stewardship

Why
Steps
Support

Program Provider



- ▶ Support for individuals to develop and maintain life-long behaviors that are consistent with managing and conserving resources for the sustainable use and enjoyment of present and future generations.
- ▶ Support activities/opportunities to remain involved.
- ▶ Provide opportunities for active participation in decision-making and problem solving.
- ▶ Provide opportunities to model good behaviors and be mentors.
- ▶ Provide rewards, recognize and celebrate successes.

Support

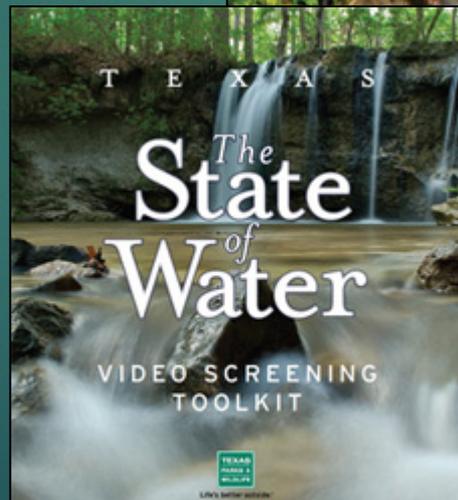
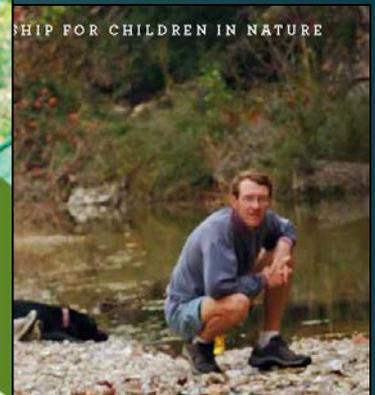
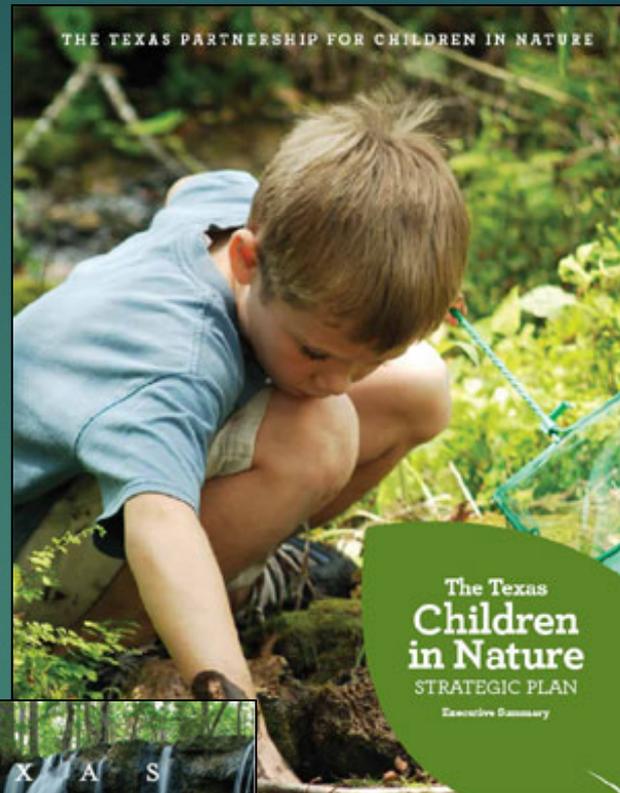
- ▶ Internal leadership process
- ▶ Buy-in from the top
- ▶ New-employee orientation
- ▶ Employee Resource Kit on WILDnet
- ▶ Internal Outreach, Education and Interpretation group



Support

Why
Steps
Support

- ▶ Strategic Planning
- ▶ Tools



Support Tools

Employee Resource Kit on WILDnet

- ▶ Key Messages
- ▶ Texas Top Ten
- ▶ AFWA CE Strategy Tools
- ▶ Models for Stewardship, Recruitment
- ▶ R3 coming



Support

Why
Steps
Support

- ▶ Programs + Partners
- ▶ Share results



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Implementing the CE Strategy Toolkit in Teacher Professional Development

Arizona Game and Fish Department
Focus Wild Arizona wildlife education program



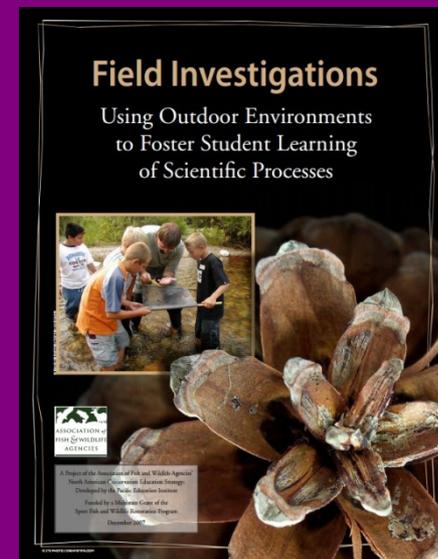
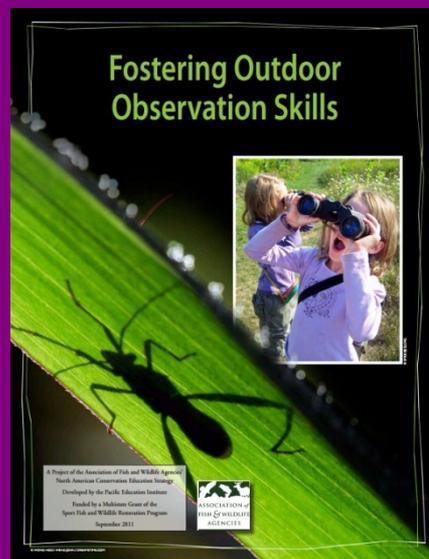
Update Teacher Training

- Address new standards and practices
- Focus on pedagogy rather than pre-designed activities
- Remain relevant
- Toolkit provided solutions/resources



Inquiry Workshop

- Highlight STEM in ecology and wildlife
- Provide meaningful, easy-to-implement wildlife and habitat inquiry activities



- More robust, expanded workshop



Inquiry Workshop

- Observation Activities
 - Using a Sit Spot
 - Using a Science Notebook
 - As Big as What?
 - Estimate the Number of Animals in a Group
- Field Investigation Activities:
 - What Questions Can I Investigate?
 - Comparative Field Investigation



Three Types of Field Investigation Questions

Descriptive Questions

Descriptive field investigations involve describing parts of a natural system. Descriptive questions focus on measurable or observable variables that can be represented spatially in maps or as written descriptions, estimations, averages, medians, or ranges.

- How many ____ are there in a given area?
- How frequently does ____ happen in a given period?
- What is the [temperature, speed, height, mass, density, force, distance, pH, dissolved oxygen, light density, depth, etc.] of ____?
- When does ____ happen during the year? (flowering, fruit, babies born)
- Where does ____ travel over time? (What is an animal's range?)

Comparative Questions

In comparative field investigations data is collected on different groups to make a comparison. Comparative questions focus on one measured variable in at least two different (manipulated variable) locations, times, organisms, or populations.

- Is there a difference in ____ between group (or condition) A and group B?
- Is there a difference in ____ between (or among) different locations?
- Is there a difference in ____ at different times?

Correlative Questions

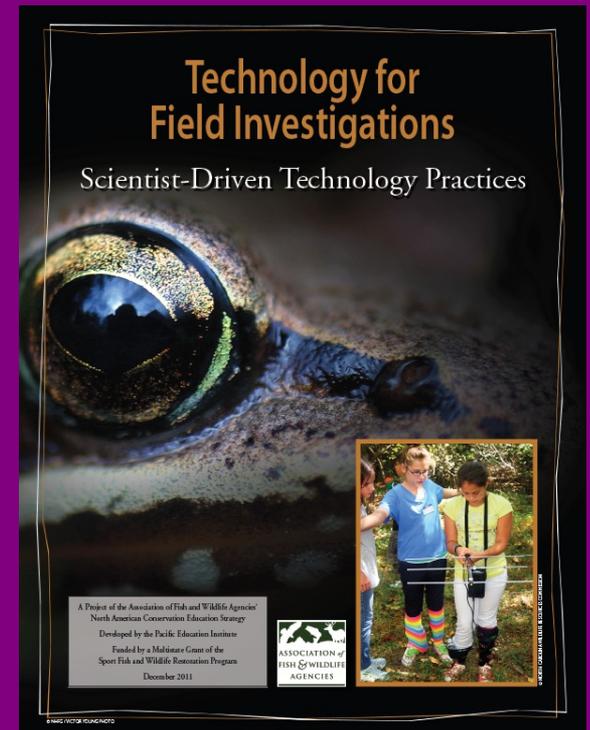
Correlative field investigations involve measuring or observing two variables and searching for a pattern. Correlative questions focus on two variables to be measured and tested for a relationship.

- What is the relationship between variable #1 and variable #2?
- Does ____ go up when ____ goes down?
- How does ____ change as ____ changes?



Technology Workshop

- Address difference between educational and discipline-specific technology
- Introduce relevant career skills





Technology Workshop

- Technology Activities:
 - Technology Used to Observe the Natural Environment
 - Practices in Science for Field Investigations
 - Geospatial Literacy

Table 3: Field Technology Used by Natural Resource Professionals

General Technology	Aquatic Studies	Fish Studies	Wildlife Habitat Studies
GPS Units	Colorimeter	Gill nets	Measuring tape
Compass	DO meter	Hoop nets	Motion cameras
Cell phones	Underwater cameras	Sonar fish finders	Radio telemetry
Lap top computers	ADCP flow meters	Seine	Weigh scales
Digital Cameras	pH pen	Minnow traps	Radio collars
Aerial photos	Water temperature loggers	Electrofishing equipment	Binoculars/Monoculars
Range finders	Depth finders	Sampling gear	iPhone for animal ID, mapping,
GIS Mapping	YSI Water quality meter (DO, Salinity, Temp)	Passive Integrated Transponder (PIT) scanner	GPS
Radio telemetry		Anemometer	Spotting scopes/Night goggles
Ultrasonic telemetry			Hypsometer
Motion cameras			Clinometer
Weather monitoring equipment			Acoustic bat detectors

Table 1: Practices in Science for Field Investigation

1. Field Investigation Methodologies (AFWA/PEI)	2. Framework for K-12 Science Education (NGSS)	3. Technology tools
Formulating Investigative Question <ul style="list-style-type: none"> • Descriptive • Comparative • Correlative 	1. Asking Questions	Access State & National Fish and Wildlife Agency websites for relevant research & background Access online journals
Identify Setting within a System: Identify boundaries of study area and time frame, geographic scale of study	2. Developing and using models	Determine Latitude and Longitude using Maps, iphones and websites with GPS, Google Earth, Bing, ArcMap etc functions.
Identify Variables of Interest <ul style="list-style-type: none"> • Observation 	3A. Planning investigation	Use Apps & Websites to assist observation
Collect and Organize Data	3B. Carrying out investigation	Mobile units SmartPhones PDAs- Garmin's Trimbles, iPAQ's with NatureTracker Laptops with desktop NatureTracker software Report data into excel spreadsheets (in NatureTracker) & report to online sites Mobile Units
Analyze Data	4. Analyzing and interpreting data 5. Using mathematics, information & computer technology, & computational thinking	Analyze Data Develop Spreadsheet and analyze using graphs or GIS for descriptive, comparative and correlative questions
Use Evidence to Support a Conclusion	6. Constructing explanations 7. Engaging in argument from evidence	Creating an explanation with: Google Earth ESRI ArcGIS Explorer
Discussion, Communicating Information	8. Obtaining, evaluating, & communicating information	Sharing Information: NatureMapping Foundation (All species), eBird (birds) Communicating Information: Webinars, blogs, Skype etc Citizen Science sites



Lessons Learned

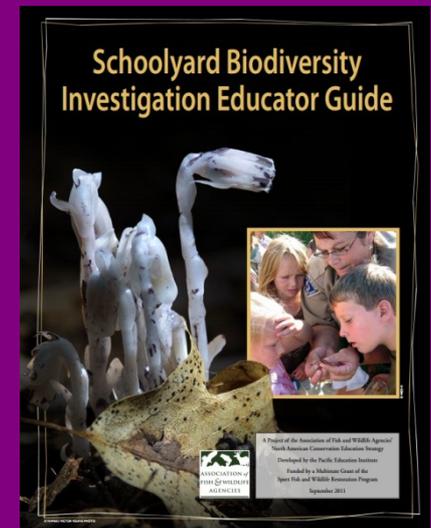
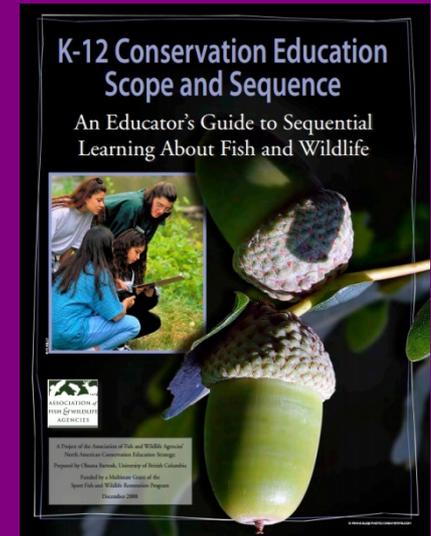
- Don't reinvent the wheel
- Integrate into other workshops
- Guidebooks are tools to improve professional development, not the training curriculum!





What's Next?

- Work with districts on aligning CE Scope and Sequence with curriculum
- Integrate Schoolyard Biodiversity Investigation Guide into schoolyard grants and training





Implementing the Outdoor Skills Education Handbook

Nebraska Outdoor Discovery Program



**Working with schools can be true recruitment
to many outdoor sports**



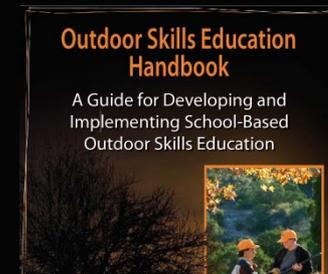


**Unfortunately, not all outdoor skills activities
are conducive IN schools**





- Nebraska wanted to develop a large-scale scholastic outdoor skills based program
- Program needed to reach several thousand youth as an awareness effort in the Recreational Recruitment Model
- Program needed to allow for boating, fishing, shooting sports, wildlife education and more
- Enter the Outdoor Skills Handbook





Standards and Benchmarks

- Asked teachers what they needed and what was important to them
- Align to multiple core standards across disciplines
 - ✓ Archery class became an experiment on energy



Delivery Challenges

- Teacher Comfort Level with Material
- Correlation to Standards
- Sustaining Program Over Time
- Lack of Training Programs for Outdoor Skills Education



Delivery Challenges

- Administrative Concerns
- Discomfort with “Consumptive” Outdoor Skills Such as Shooting Sports, Hunting, Hunter Education, etc.
- Access to Outdoors/Natural Resources



Strategies for Implementation

- Understanding the needs of and communicating with administrators
- Align materials with standards
- Training
- Sustaining program
- Overcome discomfort with consumptive skills
- Accessing the Outdoors



Criteria For Quality Education

- Opportunity to learn
- Meaningful content
 - ✓ Use their language in describing benefits of workshops
 - ✓ Does the content help teachers meet benchmarks
- Appropriate instruction
 - ✓ Age appropriate
 - ✓ Teachers choose

Outdoor Skills Education Handbook

A Guide for Developing and Implementing School-Based Outdoor Skills Education



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

September 2011

Upcoming Monthly Webinars

- January 14- 1:00 Eastern
 - Lessons Learned from the Natural Pathway Project
Matt Dunfee (WMI) & Kellie Tharp
- February 11- 1:00 Eastern
 - Diversity and Agency Education Programs –
David Buggs, Chief Diversity and Inclusion Officer, TX
Parks and Wildlife



A project of the North American Conservation Education Strategy



Funded by a Multistate Grant of the Sport Fish and Wildlife Restoration Program and coordinated by the Association of Fish & Wildlife Agencies

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