Translating Field Studies on Bears into Science-Based Education

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Overview

Bear Trust International and the Alaska Wildlife Conservation Center (AWCC) are developing and implementing a new science-based education program rooted in field research on bears. Lessons link directly to field research on bear ecology (e.g., population estimation), behavior (e.g., human-bear conflicts), and conservation (e.g., the effects of climate change).

Science-based lessons include real data, incorporate technology (GIS, GPS, Program Mark), target high school learners, help youth develop conservation awareness through scientific inquiry, address STEM (Science, Technology, Engineering, and Math; a US campaign to help our students become more competitive in science and math) goals, meet National Science Standards, and address goals outlined by the North American Association for Environmental Education (NAAEE).

The entire program will be web-based, project-based, and free on Bear Trust's Education Portal. In addition, an expanded version of this program will be hosted in the upcoming, state-of-the-art Bears Education Awareness Research Sanctuary facility (BEARS) at the Alaska Wildlife Conservation Center. Bear Trust and AWCC are collaborating to build a signature interface system within the BEARS facility that will connect visitors with field studies on bears worldwide and expand the message of bear conservation.

Stakeholders: Science-Based Education

Youth — Youth need high quality, **science-based** education that engages them with **conservation**, helps them become **environmentally literate** at a **global scale,** and **hones their skills** in **science, math, critical thinking, problem-solving, ecological modeling, and communications.**

Conservation Educators — Agency outreach coordinators, many conservation NGO's, and zoos need timely, **science-based information** for **sound education outreach.**

STEM Educators — US students do not receive the **Science** and **Math** education they need. Last year, the US administration called for an increase in STEM education, tasking school districts to find **innovative ways** to get youth excited about **science and math.**

Bear Scientists — Many bear scientists seek ways to disseminate and translate their findings into **relevant**, engaging lessons for youth and **education messaging** for the public.

IBA — As part of its mission, the IBA seeks to "Increase public awareness and understanding of bear ecology, conservation, and management by **encouraging the translation of technical information into popular literature and other media, and through other education forums**".

Meeting Stakeholder Needs

Bear Trust and **Alaska Wildlife Conservation Center** are addressing **Stakeholder Needs** by developing and implementing **Science-Based Education Programs** rooted in bear research and ecology.

Program Goals:

- Help conserve all eight species of bears worldwide
- Help youth develop conservation awareness through scientific inquiry
- Collaborate with bear scientists, distill published results into relevant, project-based lessons and timely education messaging
- Inspire the next generation of conservation scientists and managers with strong scientific skills
- Provide innovative and engaging STEM education based on charismatic bears and rigorous bear research
- Develop and nurture "Dynamic Learning" **See flow chart** →
- Make science-based programs FREE to everyone; equal access to high quality conservation education

Who Benefits?

Youth | Conservation Educators | STEM Educators | Bear Scientists | IBA | Bears

About Bear Trust International

Bear Trust is a 501 (c) (3) non-profit, conservation organization founded in 1999 to help conserve wild bears, other wildlife, and habitat by focusing on four core project initiatives: 1) Conservation Education, 2) Wild Bear Research, 3) Wildlife Management, and, 4) Habitat Conservation. Bear Trust identifies gaps in research knowledge and conservation needs, develops projects to address gaps and needs, provides scientific results to wildlife managers, and develops innovative conservation education programs for students. Bear Trust works collaboratively with governmental and non-governmental organizations worldwide to optimize resources for the purpose of bear conservation. Contact: Dr. Melissa Reynolds-Hogland melissa@beartrust.org; www.beartrust.org

About Alaska Wildlife Conservation Center

The Alaska Wildlife Conservation Center is a 501 (c) (3) non-profit, wildlife collection-based, living institution which contributes to conservation through education and outreach as well as through science based initiatives. The Center's sanctuary, set on 200 acres, provides visitors with up-close encounters with our bears and other conservation ambassadors species for the purposes of engagement and education of all ages. The Alaska Wildlife Conservation Center's next capital improvement campaign features B.E.A.R.S. (Bear Education Awareness Research Sanctuary), a new exhibit intended to foster interest in polar, brown, and black bears and conservation of the other five species of bears. Contact: Steve Mendive steve@alaskawildlife.org alaskawildlife.org

An Example: The Bear Book II and Curriculum Guide

The Bear Book Volume II: Narratives about field work with all 8 species of bears written by bear scientists

Curriculum Guide to The Bear Book Volume II: 12 lessons that link to, an build upon, narratives in book

- Includes **real data** from bear studies highlighted in the narratives
- Targets students in grades 9-12
- Addresses **STEM** goals and North American Association for Environmental Education (**NAAEE**) goals
- Meets **National Science Standards**
- Web-based
- Project-based
- Tutorials for more complex lessons that include wildlife science technology
- Professional development courses for high school teachers
- Teach the teachers workshops
- **Free** for Youth | Conservation Educators | STEM Educators

Lesson Topics

- Modeling population demography using **real capture-recapture data** and Program MARK
- Estimating home ranges and habitat selection with **real GPS locations** and a GIS
- Carbon footprint and 1 ton challenge using web applications: data from **Polar Bear International**
- Polar bears and climate change: data and results from the **Hudson Bay Project** on predator-prey interactions
- Human-bear conflicts: data and results from **Colorado Parks and Wildlife** study in Durango, CO
- Bear DNA and dispersal; using genetic markers to understand gene flow

B.E.A.R.S. Facility

The Alaska Wildlife Conservation Center is currently building the **B**ears **E**ducation **A**wareness **R**esearch **S**anctuary facility (BEARS), **which will host an expanded version of the Curriculum Guide to The Bear Book Volume II.** Bear Trust and AWCC are designing a **signature interface systems** with direct connections to bear research around the world. Visitors will be able to touch a screen and be transported to places like Peru where bear scientists are studying spectacled bears! By touching another screen, visitors will be transported to **Hudson Bay** where scientists are studying polar bears. In one comprehensive facility, **B.E.A.R.S.** visitors will be able to immerse themselves in exciting bear research being conducted by top bear scientists worldwide!

Social Networking Tool

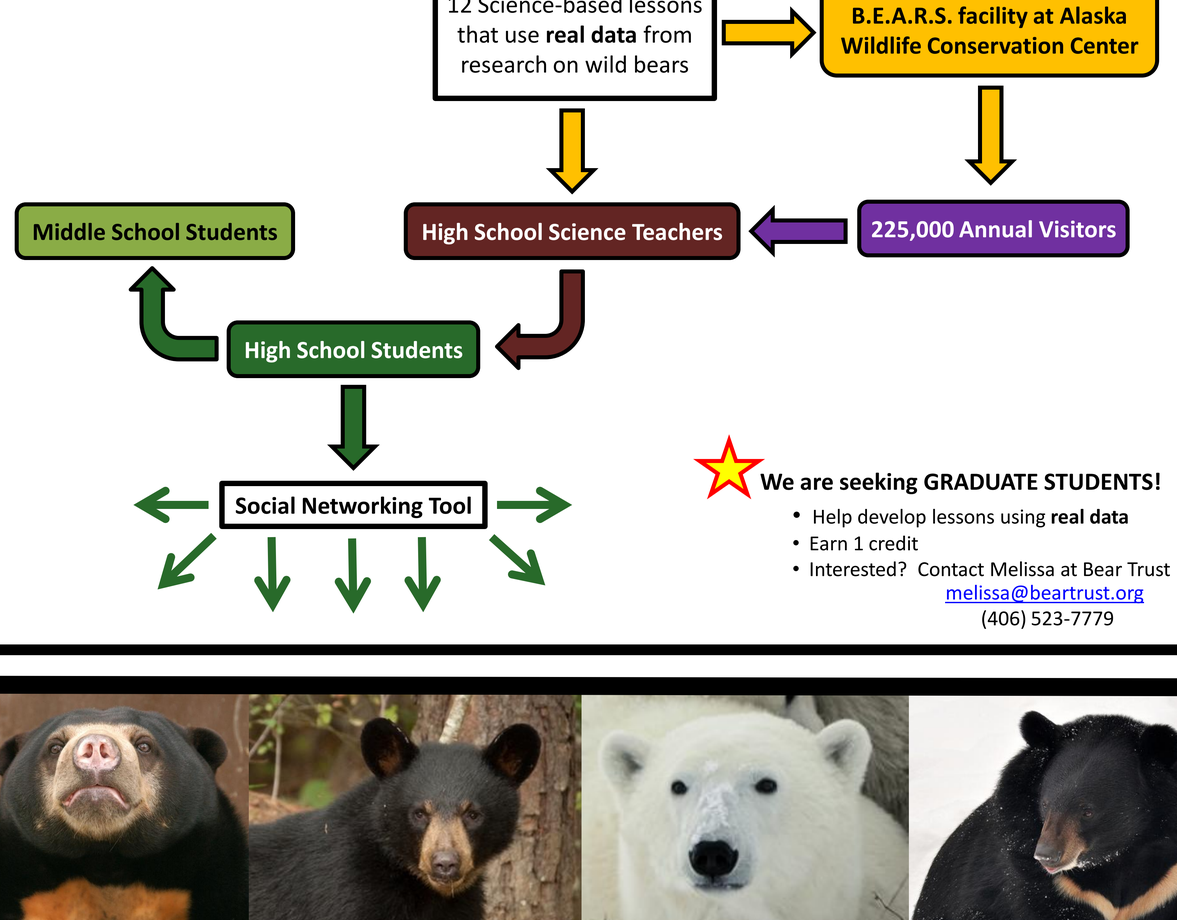
Using social media, we'll provide a networking tool so students in one area can connect with students in other areas. For example, students in Idaho will be able to connect with students in Alaska, Colorado, New Jersey, Peru, India and beyond to discuss differences and similarities in bear conservation around the world.

Measuring Project Success

- **Pilot Study**: 5,000 students throughout the country
- Statistically valid **survey**: delivered twice to pilot study participants, once before and once after the pilot study
- **Response data** from lessons using web interfaces

Maximizing Impact: Dynamic Learning

From lesson development to implementation, our education program is designed to maximize impact. For example, **bear scientists** will share stories and data, **Bear Trust** will collaborate with **graduate students** for lesson development, **high school teachers** will be given professional development opportunities and "teach the teacher" workshops, **high school teachers** will teach lessons in-class to **high school students**, and **high school students** will teach a lesson to **middle school students**. To further maximize impact, Bear Trust is collaborating with **Alaska Wildlife Conservation Center**, who receives 225,000 visitors annually and who will host an expanded version of our program in their upcoming **B**ears **E**ducation **A**wareness **R**esearch **S**anctuary facility (**B.E.A.R.S.)**.



We are seeking GRADUATE STUDENTS!

- Help develop lessons using **real data**
- Earn 1 credit
- Interested? Contact Melissa at Bear Trust
  melissa@beartrust.org
  (406) 523-7779