

Smarter Than Your Average Bear



By Dr. Melissa Reynolds-Hogland

Executive Director of Bear Trust International
PHOTOS TAKEN BY MELISSA REYNOLDS-HOGLAND AND HEATHER JOHNSON

It was late in the evening. The Alaskan sun had set hours ago. Only seven of us remained; everyone else was driving into the wind and snow, heading home. We sat around a table, poring over evaluations. I read one, then another, then another. A tiny smile crept slowly across my face as I let my mind drift with the falling snow to remember the long road here....

It all started eight years ago when A.C. (Charles) Smid, a Regular Member of the Boone and Crockett Club and the founder of Bear Trust International, attended a 2004 conference about bears and bear research. Like most scientific conferences, the presentations were technical with a strong statistical bent. By day three, Charles needed a strong cup of coffee.

At breakfast that third morning, Charles sipped coffee with one of the conference participants, who was sharing a story about a bear. "He broke into a cabin and ate 12 boxes of D-Con rat poison, and then washed it down with a gallon of cooking oil....And did you hear about the Peach Bear? Year after year, that bear broke into the county fair and ate only the peach pies entered into the pie-baking contest!"

The breakfast table slowly transformed into a camp fire setting as sparks flew and imaginations were ignited. Story followed story, all of them about real field adventures with wild bears. At one point, a bear scientist who works on spectacled bears in Peru said, "Wouldn't it be great if someone compiled a bunch of bear stories like these and put them into a book?"

Fast forward three years and Bear Trust International releases *The Bear Book*, a compilation of bear stories written by field scientists, agency bear biologists, professional writers, and even President Theodore Roosevelt (an excerpt from *In the Louisiana Canebrakes*). By design, the stories were written in non-technical style to help make field stories about bears, and bear science, accessible to the public.

We handed *The Bear Book* to lots of reviewers for comments and suggestions, including high school teachers. "If you design lessons to go with some chapters in *The Bear Book*," offered teachers, "we would use this in the classroom." Listen to your teachers.

Fast forward again and it is summer, 2011. Bear Trust releases the *Curriculum Guide to The Bear Book* (Curriculum Guide), a teacher's guide with eight lessons that link to, and build upon, stories about bears in *The Bear Book*. Some lessons also link to scientific studies on wild bears published by field biologists.

In fall 2011, we began contacting high school science teachers around the country to help us pilot the Curriculum Guide in the classroom. One morning, my phone rang. "Would you be interested in piloting the Curriculum Guide with an entire school district in Alaska?" asked Steve Mendive, director of projects and development at the Alaska Wildlife Conservation Center (AWCC).

And so began what would become a strong, synergistic partnership with AWCC. Steve introduced us to folks at the University of Alaska Anchorage, Alaska Department of Fish and Game and coordinators from STEM (Science, Technology, Engineering, and Math – a campaign to help U.S. students become more competitive in science and math) in the Anchorage School District. Together, we used content from the Curriculum Guide to develop a continuing education course for high school science teachers. As part of this course, Bear Trust and our Alaska partners conducted a "teach the teachers" workshop at the AWCC in November 2011.

It was at the conclusion of this workshop that I found myself sitting around a table with our Alaska partners. The teachers who attended the two-day workshop had long since left, leaving behind their evaluations. I mused about the journey to this moment, but not for long. The evaluations signaled a green light to plan the expansion of the pilot study to test the Curriculum Guide in the classroom (currently in nine states!) and also to strategize Bear Trust's next big step.

Volume II: Real Data, Real Cool!

Fast forward to today. At the request of numerous high school science



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teachers and conservation educators, Bear Trust currently is developing the next volume of our science-based education program rooted in bear research and ecology. We've already solicited top bear scientists around the world for 12 stories about field adventures with all eight species of bears, which we will compile into *The Bear Book, Volume II*. We already have 11 commitments. Turns out, bear scientists are eager to get their messages out, too. Our next step is to design lessons that will link to each story.

How can we improve on the lessons? Why not use real data from the same bear studies that are highlighted in each chapter of *The Bear Book, Volume II*? While we're at it, let's provide cutting-edge technology to students, like global positioning systems (GPS), geographic information systems (GIS), and analytic population modeling software. Students will become the scientists, working on real-world, real-time conservation questions. Students will develop hypotheses and predictions, and then use real data and timely technology to evaluate predictions and report findings to their peers.

For example, one lesson will include real capture-recapture data for American black bears from a field study lasting 30-plus years. We will teach students how to use capture-recapture data to estimate population survival and growth rates using Program Mark, an analytic software program that today's wildlife scientists use to understand population ecology. We'll teach students how to include harvest measures in their analyses to help understand how hunting can be an important tool in effective wildlife management.

Another lesson will include real GPS locations for field research bears. Using web-based tutorials, we will teach students how to extract GPS data and use a GIS to estimate home ranges and habitat selection. What better way to immerse students in the exciting process of discovery? And talk about empowerment! While learning about bears and conservation, students also will be honing skills in science, math, ecological

modeling, economic modeling, technology, problem solving, critical thinking, and communications.

All lessons will be completely web-based for ease of use, project-based so teachers can pick and choose which lessons they wish to use, and free. Everything will be available on Bear Trust's website beartrust.org. We also are developing a social networking component for students so that they can connect with students in other regions. Students in Montana will be able to connect with students in Alaska, New Jersey, Maine, Minnesota, Peru, India, etc. to discuss differences in bear species and bear conservation around the world.

This will not be your ordinary textbook experience. Sit, read, and memorize? Nope. That approach typically yields short-term information gain, lasting only until the test is over. Our youth are smarter than your average bear and they deserve challenging, exciting, engaging opportunities to learn about real-life conservation and scientific research through active participation in the process of discovery. Youth need innovative tools to help them become environmentally literate citizens at the global level. Youth need programs that ignite their curiosity and inspire them to explore deeper.

So, we are designing the lessons in the *The Bear Book Curriculum Guide Volume II* (volume II) to meet these needs. We have other goals, too. Bear Trust International is a nonprofit conservation organization with a mission to help conserve all eight species of the world's bears, other wildlife, and habitat. We know that volume II will be a great platform for raising awareness about bear conservation worldwide. Many conservation issues for bears are linked to changes in human populations, habitat, and climate, which also affects other animals. Therefore, lots of information in our "bear-based" lessons will be applicable to conservation issues surrounding other wild animals. Such exposure and understanding will help our youth develop global conservation awareness and environmental literacy.

Importantly, Bear Trust believes that

effective wildlife conservation should be based on sound science. Our lessons are designed to help inspire the next generation of wildlife managers and scientists, with emphasis on strong scientific skills. Equally important, we believe it is critical to empower all youth with scientific skills and ensure they understand the difference between evidence-based information and personal opinion, which will reap long-term rewards for bear conservation. To this aim, we are designing lessons to meet STEM goals and National Science Standards.

Maximizing Impact: Dynamic Learning

From lesson development to implementation, volume II will be designed to maximize impact. For example, bear scientists will share stories and data with Bear Trust, who will collaborate with graduate students for lesson development. High school teachers will be given professional development opportunities and teach the teacher workshops, and then pass this information on as they teach lessons to high school students. Those students will learn actively, and then teach a lesson to middle school students. High school students also will have access to a social networking tool to connect with other high school students and discover differences and similarities in conservation of different bear species around the world.

To further maximize impact, Bear Trust is collaborating with the Alaska Wildlife Conservation Center (AWCC), which receives 225,000 visitors annually and will host an expanded version of Volume II in their upcoming, state-of-the-art Bears Education Awareness Research Sanctuary facility (BEARS).

Moreover, Bear Trust and AWCC are collaborating to build a signature interface system in the BEARS facility that will connect visitors with bear studies around the world in real-time. Visitors touch a screen and get transported to Hudson Bay, where they see live footage of polar bears and learn about polar bear research and conservation. Visitors touch another screen and get



FAR LEFT: Field crew fitting bears with GPS collars. **LEFT:** Data is collected from each bear captured to track their activity. **RIGHT:** Free curriculum guides and study pages are available online.





Photo taken by Doug Lindstrand

ABOVE: Teachers at a Bear Trust workshop. **RIGHT:** Melissa with a bear at the Alaska Wildlife Cons. Center.

transported to Peru and learn about spectacled bear research and conservation. We will have eight interface portals, one for each bear species. We anticipate that some parents, students, and teachers who visit BEARS will want to bring Volume II home to their school districts.

Why Free?

Bear Trust believes that high quality education is critical to conservation and sustainable communities. We don't charge educators a fee for our innovative programs because a lot of school districts and conservation organizations are unable to afford high-quality programs. In these sobering scenarios, the students pay the ultimate price. We believe in leveling the playing field and making certain all students have equal access to high-quality, science-based education.

Our science-based education programs are free to educators and students everywhere thanks to the generosity of many individuals, organizations and foundations, including many Boone & Crockett Club members.

For high school students and educators, we offer the Curriculum Guide to *The Bear Book Volume I* and our upcoming Curriculum Guide to *The Bear Book, Volume II*. For the younger crowd, we offer The Bear Essentials, our science-based education program with nine lessons that target kids in kindergarten through eighth grade. ■

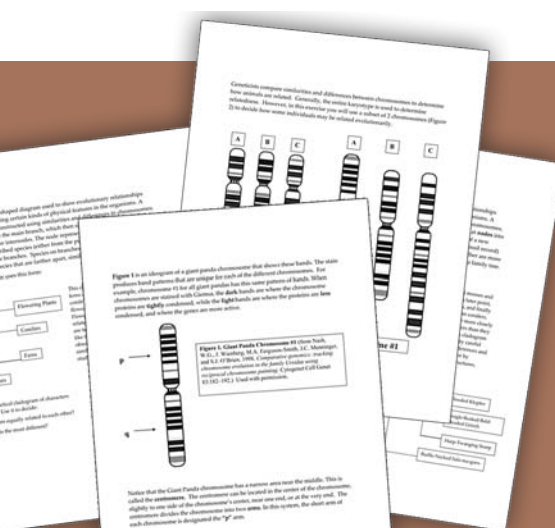


Melissa Reynolds-Hogland, Ph.D., is the executive director of Bear Trust International. Melissa has a background in field science (bears to birds) and management. At home in the woods, Melissa thought she would be a field rat forever. It wasn't until her children arrived that she began to fully comprehend the critical need for high-quality, science-based education. With Bear Trust, Melissa blends her passions into actions for children and bears everywhere.

ABOUT BEAR TRUST INTERNATIONAL

Bear Trust is a nonprofit, 501 (c) (3), conservation organization founded in 1999 with a mission to help conserve all eight species of bears, other wildlife and habitat. To this aim, we focus on four core initiatives: 1) science-based education, 2) scientific research, 3) bear management, and, 4) habitat conservation. Bear Trust is based in Missoula, Montana, and is governed by a board of seven members. Four of Bear Trust's board members are members of the Boone & Crockett Club (Gilbert Adams, Marc Mondavi, A.C. [Charles] Smid, and Gray Thornton). Our other board members include John Chaney, Derek Craighead, and Geoff Pampush.

If you would like to learn more about Bear Trust, make a donation towards our science-based programs, or receive free copies of our science-based programs, please visit our Web site beartrust.org or contact Dr. Melissa Reynolds-Hogland; melissa@beartrust.org (406) 523-7779.





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