



HumanBearConflicts.org

PROCEEDINGS OF
*The 6th International
Human-Bear Conflicts Workshop*



*PATHWAYS TO
PROGRESS*

Connecting People, Conserving Bears

C. W. Lackey & R. A. Beausoleil, Editors

BEARS OF THE WORLD



American Black Bear
Ursus americanus



Grizzly / Brown Bear
Ursus arctos



Polar Bear
Ursus maritimus



Asiatic Black Bear
Ursus thibetanus



Spectacled Bear
Tremarctos ornatus



Sun Bear
Helarctos malayanus



Sloth Bear
Melursus ursinus



Giant Panda
Ailuropoda melanoleuca

Illustrations courtesy of Evelyn Kirkaldy (evelynkirkaldyart.com)

The Workshop's PATHWAYS TO PROGRESS

Back in 1987 a small, dedicated group of agency bear managers, educators and wildlife specialists met at Yellowknife in the Northwest Territories to focus on finding ways to better understand and manage conflicts between people and bears. That historic gathering was the beginning of a new path forward for both species.

Managers and others from all over the world interested in understanding and reducing conflicts soon made attending these workshops a priority. They knew their time and money would be well-spent and they would go home with lots of useful, actionable information, new ideas and an invaluable network of people all working to find solutions. Now, all 6 workshops have made important contributions and helped advance the field of conflict prevention and management.

The Focus shifts from Managing Bears to Motivating people

One of the many advances was a seemingly small but actually very important step forward taken at the fourth gathering in Missoula, Montana, in 2012 when the Bear-Human Conflicts Workshop was renamed the Human-Bear Conflicts Workshop. Because professionals everywhere saw the need to recognize one very important truth: it's people who cause most conflicts with bears.

And it is up to people to find solutions.

Lake Tahoe 2022 ... Another step Forward

- 1st IHBCW - 1987 - Yellowknife, Northwest Territories
- 2nd IHBCW - 1997 - Canmore, Alberta
- 3rd IHBCW - 2009 - Canmore, Alberta
- 4th IHBCW - 2012 - Missoula, Montana
- 5th IHBCW - 2018 - Gatlinburg, Tennessee
- 6th IHBCW - 2022 - Lake Tahoe, Nevada



2022 Local host Committee

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We hope you like the Workshop's fresh new look. We think having a professionally designed logo and graphics package, templates for communications and materials, a permanent website and an event management team in place will give the next Organizing Committee of future workshops more time to focus on the agenda, activities and speakers that make these workshops so unique. Our non-profit partner, Appalachian Bear Rescue, which also handled logistics for the 5th, has agreed to continue to manage the event, host the website, handle registrations and process payments. Special thanks to Linda Masterson and LaVonne Ewing for their assistance with the graphics package and transferring files for this proceedings.



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Alberta Environment & Parks is the ministry responsible for black and grizzly bear management in Alberta, Canada. Human-bear conflicts are managed primarily under the provincial BearSmart program which focuses on education, awareness and adoption of best practices in order to reduce human-bear conflicts among agricultural, recreational, industrial and municipal stakeholders.

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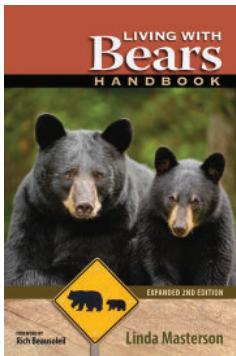
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is a non-profit, tax-exempt organization open to professional biologists, wildlife managers and others dedicated to the conservation of all bear species. The organization has 550+ members from over 60 countries.

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Editor's note:

We have tried to the best of our ability to maintain the transcripts as they were recorded so that the reader may have the full benefit of the conversations that took place. We believe we were successful in editing sentences to make them easier to read without changing the speaker's intended meaning. It was our intention to identify every speaker but due to the recordings this was not always possible. We apologize in advance for not being able to identify all speakers as this was our intention, but several people did not introduce themselves prior to their comment or question or were inaudible.

Carl Lackey & Rich Beausoleil – Editors



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6th International Human-Bear Conflicts Workshop Summary – A Wonderful Success!

In October 2022, the Nevada Department of Wildlife hosted the 6th International Human-Bear Conflicts Workshop (IHBCW) at Lake Tahoe, Nevada. This was the first in-person workshop, or conference for that matter, for ‘bear people’ in over four years following the COVID pandemic. Originally scheduled for the fall of 2021, planning began in early 2019, shortly after the 5th IHBC in Tennessee. The pandemic slowed things down, but the organizers were hopefully optimistic that things would be ‘back to normal’ in a few months. That, however, would prove not to be the case. There were too many unknowns, including national and International travel restrictions, travel budgets, vaccine questions, and whether it was preferable to have a full virtual workshop, a hybrid workshop, or postpone until the following year. By September of 2020 the Organizing Committee had results from a pre-workshop survey that was sent to past attendees asking for their preferences. It was clear that people preferred to postpone rather than have a virtual workshop or take a chance on not being able to travel at all. Postponing to 2022 meant we had to pay a \$4,000 penalty to the host hotel, which would eventually pale in comparison to the increased food and beverage costs in 2022 associated with the skyrocketing inflation. However, once that choice had been committed to, we focused on accruing funds through sponsorships and contacting speakers to increase the visibility of the workshop. We received about \$15,000 in seed money from the hosts of the 5th IHBC and we quickly added to it, eventually raising over \$70,000 from sponsors and vendors. This allowed us to keep registration costs low, which was a pre-established goal, at \$150 for a regular registration, but we eventually still raised about \$33,000 in registration fees.

The 6th IHBCW Organizing Committee, comprised of members with varied backgrounds and experiences, built upon what the organizers of the 1st IHBCW in 1987 (Northwest Territories) started; we brought together a diverse group of people from many disciplines, including bear managers, educators and wildlife specialists to share information, techniques, and lessons learned, with one common goal - to better understand, resolve and most importantly to prevent human conflicts with bears. The theme for the workshop was Pathways to Progress, with Pathways being the solutions, ideas and techniques, and Progress being the human behavioral change we are all striving for.

This truly was an international workshop, with 300 attendees from nine countries, presenting on work from Mexico, Bolivia, Norway, India, Pakistan, Slovakia, Japan,

Canada, and the United States. Thoughtful and intriguing presentations were given on 6 of the 8 bear species of the world including American black bear (*Ursus americanus*), brown/grizzly bear (*Ursus arctos*), Asiatic black bear (*Ursus thibetanus*), sloth bear (*Melursus ursinus*), polar bear (*Ursus maritimus*), and Andean Bear (*Tremarctos ornatus*). Only the giant panda (*Ailuropoda melanoleuca*) and sun bear (*Helarctos malayanus*) were not represented.

One of the most important parts of the IHBC workshops has always been the face-to-face networking that takes place and the Organizing Committee worked hard to structure the workshop and allow these opportunities as much as possible. Each day, morning and afternoon breaks gave people the chance to visit over coffee, tea, fresh fruit, and muffins, and 90 minute lunches gave everyone time to relax while meeting up at various eateries in Lake Tahoe. Not only does this type of workshop atmosphere offer us the chance to visit with friends and colleagues we haven’t seen since the last workshop, but it gives the newer attendees the opportunity to meet and converse and for diverse groups to learn from each other. The Organization Committee also spent some time developing an electronic exit survey (by text, email, and a QR code in the Program). The survey not only provided the committee with feedback on how the workshop was structured, it also informs the hosts of the next IHBCW on establishing the agenda. One surprising finding of the survey revealed that the Tahoe workshop was the first IHBCW workshop for three-quarters of the attendees, with only around fifty attendees having attended more than one! We have provided a copy of the questions that were asked in the Appendix of this proceedings. We encourage the next IHBCW hosts to continue using an exit survey, so every meeting improves with input from attendees.

The Organization Committee also took on a huge challenge while preparing for this meeting which was to develop a new universal logo that could be adopted by the IHBCW and used well into the future. It is crucial that the IHBCW be immediately recognizable to attendees and organizations. In the previous 5 meetings, 3 different logos were used, and the 1st Proceedings did not utilize a logo. After a considerable amount of time was invested, we chose a Venn diagram type logo, which gave a nod to previously used logos, and is comprised of a non-species-specific bear and humans of both sexes. We also used this logo to develop signage, banners, and table covers and plan to pass all these products on to the next hosts. We are confident this logo will last well into the future so that when people see the logo, the workshop is immediately identifiable.



HumanBearConflicts.org

*Proceedings of the 6th International Human-Bear Conflicts Workshop
October 16 –20, 2022, Lake Tahoe, NV*

Our invited Featured Speakers helped set the tone for many of the discussions. If you missed any of these, you can still read about the work they are doing by visiting the IHBCW website at www.humanbearconflicts.org and by reading their printed abstracts in these proceedings. Each one presented, from different perspectives, very thoughtful insight into human-bear conflict, messaging and engaging the public, and working with people to understand what it takes to coexist with bears.

We recorded the four panel discussions (the BearWise Program, Barriers to Electric Fence Use, Tips for Effective Media Communications, and Engaging Communities in Human-Bear Coexistence Research) and we transcribed them so they could live on forever in this proceedings. Each panel lasted approximately one hour, leaving time for the audience to ask questions and offer comments.

We also had a little extra fun at this workshop too, with the help of an airhorn. As we explained to all folks that submitted abstracts, we didn't want folks using terms such as "nuisance bear, garbage bear, and problem bear" when describing human-bear conflict because it tends to shift the responsibility for HBC away from people and on to the bear; by doing so we fail to change human behavior which is the root cause of these conflicts. But since old habits are hard to break we knew these words were going to occasionally squeak out at some point during a presentation. Rich Beausoleil and I sat in the front row with the airhorn, ready to blast if a presenter used one of these negative words (all in good fun, of course). Fortunately, everyone was really on their game and avoided using the terms. It wasn't always easy though, as many people caught themselves at the last second. Our intention was that everyone leave the workshop with these terms in mind, and hopefully stop using this verbiage in their messaging, publications, and contacts with the public.

The week kicked off with the Welcome Social on Sunday the 16th. Roughly 200 people made it to Tahoe in time for the social. There, they enjoyed drinks and appetizers while listening to local historian and US Forest Service forester, Don Lane, give a humorous and lighthearted presentation on the history of Lake Tahoe. Don is a great presenter and really engages the crowd with his knowledge.

Fresh coffee greeted everyone on Monday morning when the workshop officially began. After the welcome message and introduction of the Organizing Committee, our keynote speaker was Chris Servheen, retired USFWS Grizzly Bear Coordinator, who presented on the 50-year evolution of human-bear conflict management. Through his experience

of living it, he discussed how bears went from being fed to keep them in National Parks to tragedy in the late 1960's. Then, in the 1980s, how things began to change and evolve after grizzly bears were listed under the Endangered Species Act, and how people started to understand that bears played a role in the ecosystem, and that managing human-bear conflict began to focus more on humans rather than killing bears. Finally, he brought us into the 21st century and discussed what challenges we are faced with today, including climate change. This was followed by a great retrospective look at the IHBCWs, presented by Dick Shideler, Alaska Department of Fish and Game (retired).

The morning and afternoon session themes on Monday were all about Pathways to Progress, and the presentations focused on education, messaging, and working with communities. Dan Gibbs led the panel on BearWise, explaining how this unique program, developed by bear managers, began and how it has evolved. Monday evening wrapped up with a well-attended and diverse poster session, including 21 poster presentations.

Tuesday started off with a presentation by our first Featured Speaker, Joe Savikataaq, Jr., a Conservation Officer and the Mayor of Arviat, Nunavut, Hudson Bay. Joe discussed balancing the needs of people and polar bears, and the challenges that come with human-bear conflict in the Arctic. He was followed by the general session on the multitude of Tools & Tactics used in HBC and bear management. After lunch our second Panel Discussion - Overcoming Barriers to Electric Fence Use for Mitigating Bear Attractants, led by Jay Honeyman. An incredible amount of useful information was presented in this discussion that are included in this proceedings. The presentations wrapped up by 5pm and people headed out for dinner on their own.

On Wednesday, we hosted two featured speakers. Dr. Diana Doan-Crider, Director of the Animo Partnership in Natural Resources, who presented on her decades of experiences with bear conservation in northern Mexico, and how incorporating the local knowledge worked where traditional Western science and methods did not. Her outstanding presentation really hit home with the audience, who gave her a minute's-long standing ovation. Later in the day, Dr. Katherine McComas of Cornell University gave a thoughtful presentation titled Influencing Human Behavior Towards Bears Through Risk Communication. The two general sessions, Pathways to coexistence: Understanding People and Effective Messaging and Outreach were about coexistence and connecting with people, which closely followed the themes presented by the featured speakers. Clive Desire-Tésar led the Panel Discussion on media

relations, titled Changing the Channel on Bad News Bears: Communications and Media Tips featuring media experts from wildlife agencies and news outlets.

That night, workshop attendees were treated to a catered evening social. Served buffet style with scattered high-top tables, attendees were able to mingle freely and have lively discussions. Many were doing some last-minute bidding on the 30+ silent auction items before the auction closed and winners were announced. The winner of the special raffle was also drawn during dinner. Ivonne Cassaigne from Mexico won the Pneu-Dart G2-X Caliber Projector, donated by Pneu-Dart.

Thursday morning started off with our Featured Speaker Seth Wilson who presented on his 20+ years leading the Blackfoot Challenge, Learning to Live with Grizzlies: A 20-Year Case Study in the Blackfoot Watershed of Western

Montana. This was followed by the general session covering different Perspectives on Progress and then the fourth Panel Discussion, Engaging Communities in Human-Bear Coexistence led by Sarah Elmeligi. To cap off the workshop, we ended with an interactive session with all attendees discussing key takeaways, thoughts, and comments. The workshop formally ended around noon.

The Organizing Committee wishes to thank everyone who made the effort to come, first and foremost, and to everyone who presented and/or actively engaged in the many discussions. With the delay caused by the pandemic, and then rising airfare combined with inflation, we realize how difficult it was to get here. We look forward to getting together again for the 7th IHBCW, to be held in 2025 in Kalispell, Montana.

Carl Lackey, Nevada Department of Wildlife

Chris Servheen

Chris Servheen retired from the US Fish and Wildlife Service (USFWS) in 2016, after 35 years of managing the now historic recovery of grizzly bears in Wyoming, Montana and Idaho. Chris says he retired so he could spend more time in the field camping and studying bears.

“Today we have a healthy, robust population. When I first started, that seemed like an impossible goal. We got there by looking out for grizzly bears and balancing their needs with the needs of people.”

It was a balancing act that required Chris to explore many different pathways to progress. A big part of his job was working with remarkably diverse groups of stakeholders and special interest groups, helping them find common ground and work together toward a common goal.

“I am sensitive to the need to manage bears so that people who live, work, and recreate in bear habitat feel that agencies have their interests in mind when they manage bears and respond to human/bear conflicts.”

Over the years, Chris was involved in everything key to grizzly recovery, from securing habitat and outreach and education to sanitation and motorized route density to making sure they were getting good science so there would be a solid foundation for making smart decisions.

Chris was the USFWS contact person for every management action taken on every grizzly bear involved in a human/grizzly conflict in Wyoming, Montana, and Idaho. He focused on finding ways to deal with conflicts while limiting mortality, and was the co-organizer of the 4th International Human-Bear Conflicts Workshop in 2012 in Missoula, Montana

Today Chris Co-Chairs the North American Bear Expert Team for the IUCN’s Bear Specialist Group with Rich Beausoleil and is the vice president of the Montana Wildlife Federation.





Diana Doan-Crider

Diana Doan-Crider, Ph.D. is a wildlife, range and landscape ecologist who has been studying black bears in the arid and ecologically challenging environment of northern Mexico for more than 30 years. She found that some of the typical tools or budgets of Westernized science weren't as suitable for the area, culture, or economy, and weren't able to help her address some of the larger questions about how bears use their landscapes.

Today Diana is the coordinator for the Native American Rangelands Training Initiative, and also serves as the Director of Animo Partnership in Natural Resources. Animo Partnership strengthens place and culture-based educational programs and environmental justice efforts for underrepresented agro-ecological communities. She applies her research toward developing tools that help people maintain healthy relationships with the land in the midst of a rapidly changing environment. Most of her research has been conducted in her family's homeland of Mexico.

She inherited her passion for teaching and environmental justice from her mother and grandfather, both who were Tepehuán natives from Durango, Mexico. Diana lives in Texas with her husband, Cody.



Seth Wilson

Seth Wilson is the Executive Director of the Blackfoot Challenge, a leading collaborative conservation NGO based in Montana. Seth is also a long-time Northern Rockies Conservation Cooperative Research Associate. He is a current member of the IUCN-Human-Bear Conflict Expert Team and past Chair of Montana Livestock Loss Board.

He grew up in West Cornwall, CT and holds a B.A. in Environmental Studies and Government from St. Lawrence University, a M.S. in Environmental Studies as well as a Ph.D. in Forestry from the University of Montana in Missoula, MT. He was a post-doctoral research fellow at Yale University from 2009–2010.

While conducting his doctoral research, Seth began working for the Blackfoot Challenge in 2001 as the organization's first Wildlife Coordinator and gathered baseline data and developed strategies to reduce conflicts with grizzly bears and wolves that are still hallmarks of the program today. As an applied conservation biologist, Seth has worked on resolving issues between people and wildlife in the United States, Canada, and Europe for more than 20 years.

Recently, he spent three years in Slovenia as an expert advisor to the Slovenian Forest Service and partners from Italy, Austria, Croatia, Slovakia, and Romania to support brown bear and Eurasian lynx conservation and management.



6TH INTERNATIONAL
**Human-Bear
Conflicts**
WORKSHOP

HumanBearConflicts.org

FEATURED SPEAKERS



Katherine McComas

Katherine McComas, Ph.D. is a professor of communication at Cornell University where she specializes in risk, science, and environmental communication. She also supports the university's public engagement mission by serving as Cornell's Vice Provost for Engagement and Land-Grant Affairs.

For more than two decades, Katherine's research has focused on understanding how people respond to information about different types of risks, which includes understanding who people trust for information, how people respond to different pathways of communication, and what types of messages influence attitudes and behaviors. The contexts for her work range widely, including communication about zoonotic disease, wildlife health, climate change, food safety, and renewable energy, among others. She particularly enjoys collaborating with state and federal agencies to ensure that the research addresses these agencies' needs.

She is the author or coauthor of 80-plus refereed journal articles and two books, including co-editing the *SAGE Handbook of Risk Communication*. Her work has been supported by the National Science Foundation, National Parks Service, U.S. Environmental Protection Agency, U.S. Food and Drug Administration, and U.S. Department of Agriculture (USDA). From 2011-2019, she served as Area Editor for Risk Communication for the journal *Risk Analysis*. She is a Fellow for the Society for Risk Analysis (SRA) and served as SRA's President 2018-2019.



Joe Savikataaq, Jr.

Joe Savikataaq, Jr., is a Conservation Officer and Mayor of Arviat, Nunavut, a fly-in only community which sits along the coast of Hudson Bay and is directly on the route that many polar bears take to reach the growing sea ice in the fall.

Joe grew up in Arviat, in the heart of polar bear country. He's been protecting polar bears from people and people from polar bears since 2012 when he became a Conservation Officer with the Government of Nunavut.

Today he runs the only polar bear deterrence program that focuses on live capture, transport and release of polar bears. Polar bears depend on sea ice for their survival; in the fall Arviat is right in the middle of the migration path of polar bears waiting for the annual freeze-up when sea ice reforms after months of summer melt. During a busy year Savikataaq's innovative program deters as many as 223 bears migrating through and near Arviat, a traditional Inuit community in the Arctic that is home to about 2,800 people.

Joe enjoys the challenges and rewards of finding ways to balance the needs of both polar bears and people. Before becoming a Conservation Officer he was a heavy duty mechanic; those skills came in very handy when he was designing and building his first polar bear trap.

In addition to piloting the boat for his work, Joe is also a member of Arviat Search and Rescue and the Arviat Coast Guard Auxiliary and frequently goes out on rescue missions. Joe is also a licensed pilot and flies a float plane.

GENERAL SESSION

KEYNOTE ADDRESS



The Evolution of Human-Bear Conflict Management in North America

Chris Servheen, Ph.D.

*US Fish & Wildlife Service Grizzly Bear Recovery Coordinator (retired);
IUCN Bear Specialist Group - Co-chair, North American Bears Expert Team;
President and Board Chair, Montana Wildlife Federation*

Human-bear conflict management in North America has come a long way in the past 50 years. In the 1960s and early 1970's, agencies managed bears with limited attention given to identifying and addressing the root cause of the conflicts. In some states there was no management – if there was a human-bear conflict with a black bear (*Ursus americanus*) or grizzly bear (*Ursus arctos horribilis*), then landowners were encouraged to solve it themselves. When there was a management response, it simply involved killing the bear or, very rarely, relocating or translocating the bear in the hopes that it would stay and make a living without further conflicts; not attention given towards the attractants. The forerunner of USDA Wildlife Services responded to livestock depredations with intense lethal management of all bears in any given area, even animals that had not been involved in conflict.

Essentially, there was zero tolerance for any livestock depredations: traps, shooting and even poison were all used to kill bears anywhere near livestock on public or private land. The impact on grizzly bear and black bear populations was of no consequence or was ignored.

In Yellowstone and Glacier National Parks prior to 1967, garbage was intentionally fed to bears inside the Parks to serve as a visitor attraction. That practice resulted in hundreds of incidents of property damage and human injuries each year due to all the food-conditioned and human-habituated bears. Bears were valued only as a source of amusement for Park visitors. Bears had little or no existence value as important parts of nature and healthy ecosystems. Somehow, no one saw this as a problem until one night in 1967 when two women were killed by different grizzly bears in Glacier National Park on the same night.

In the late 1970's and early 1980's, there began a slow enlightenment. With the USFWS listing of the grizzly as Threatened under the Endangered Species Act in 1975, it gradually dawned on some agencies and people that continual killing of all bears for livestock depredations, particularly on public land next to National Parks, was perhaps having a population-level effect.

Bear populations slowly began to expand in numbers and range. Relocation and translocation of bears instead of killing became more common. As immobilization drugs and skills evolved, more and more bears were captured and handled by agency staff. The realization that conflicts were not just due to the bears but were also due to attractants and the way that people behaved when living in bear habitat. The idea that most bear conflicts were due to humans and human behavior was gradually accepted. The term “bear problem”

evolved into “human-bear conflict.” We haven’t eliminated the terminology of “problem bears” or “nuisance bears” from our vocabulary completely, but we seem to be moving in the right direction.

As we moved into the 2000’s, we saw acceptance in most jurisdictions that moving and killing bears was just treating the symptoms of human behavior problems. Nonetheless, in some jurisdictions, not blaming the bear has gone too far and the result is little or no management.

Such places tolerate bear behavior that most other jurisdictions would never tolerate like building entry and multiple repeat conflicts. This results in inconsistency and confusion amongst our publics. We see increasing emphasis on preventing the problems from happening in the first place with innovative technologies such as electric fencing, outreach, range riders, carcass relocation, planning, education, local ordinances/fines, and the application of the Bear Smart and BearWise programs.

The public, especially new residents, are often blissfully unaware of how to live in bear habitat and informing these people is perhaps the most serious management challenge we face. Current emphasis in most places is on preventing conflicts through human education rather than trying to change bear behavior. We are not out of the woods however and see more and more human settlement overlapping increasing numbers of bears. This overlap increases the intensity of conflicts, and it requires managing the people who cause these conflicts. Additionally, there is turnover in home ownership so those you may have educated in the past may have moved on and the process needs to start over with the new residents

What is the future of human-bear conflict management? It will certainly involve more understanding of human dimensions and how to successfully communicate with people who live in bear habitat. Future bear managers will be armed with more skills to be successful people managers and communicators as they work to avoid having to capture and handle bears.

The theme of the 6th International Human-Bear Conflicts Workshop is “Pathways to Progress.” In my career, I have seen grizzly bears go from being on the verge of extinction to today having healthy, robust populations. When I first started, that seemed like an impossible goal. We got there by looking out for grizzly bears and balancing their needs with the needs of people. It was a balancing act that required me to explore many different pathways to progress. A big part of my job was working with remarkably diverse groups of stakeholders and special interest groups - some who loved bears, some who hated bears, and others who were concerned with what the bears’ return would mean - helping them find common ground and work together toward a common goal. I will discuss this process and our approach in my presentation in the hopes that it helps all of you achieve even more progress. We are moving forward, and I have hope for the next 50 years.



The International Human-Bear Conflicts Workshops: A Retrospective

Dick Shideler, Aklaq Services; Alaska Department of Fish and Game (retired)

Since the first meeting in 1987 in Yellowknife, NWT, Canada, the International Human-Bear Conflict Workshops have evolved from a small group of interested researchers and managers to major meetings with participation by a broad spectrum of attendees, all with the goal of learning more about reducing human-bear conflicts. Some themes have remained the same over the years, and new ones have emerged. We can celebrate successes and bemoan failures, and hopefully learn from both.

We are now at the 6th workshop, and in keeping with the workshop's theme of "Pathways to Progress" it seems timely to review the previous workshops to evaluate how we got to where we are now and, hopefully, establish a baseline for discussion of where we should go in the future.

Having attended the last 4 workshops gives me a historical perspective on their evolution. I intend to look at the themes, organization, participation, and conclusions from previous workshops to provide this baseline... and perhaps with a dash of humor included.

General Sessions

The Challenge of Providing Correct, Consistent Bear Safety Messaging

John Hechtel, President, International Association for Bear Research and Management

Although there is no shortage of information on bear behavior and bear safety, some of it being used is incorrect. Inconsistencies and contradictions cause confusion and contribute to the mistaken notion that bears are simply unpredictable. Many people don't really believe the empowering reality that people really do have control over the great majority of important factors that determine their safety.

There are reasons why available information can be confusing and problematic. Biologists cannot do controlled scientific experiments to find definitive answers or to test the reliability of advice. They instead must rely on trying to carefully interpret what sorts of things during encounters and attacks seem to help or make things worse. Herrero's work on the difference between serious defensive and predatory attacks, e.g., is a good example of important insights gleaned from this approach. Using our understanding of bear behavior and reports of attacks, we've been able to do a good job of understanding interactions and to provide sound advice to reduce risk during encounters and minimize the seriousness of injuries during attacks.

Our understanding of what the best strategies are, however, has changed somewhat over time as we have continued to study and learn, and observed how people understood and used safety advice that was provided to them. What may have seemed like good advice has sometimes turned out to have unforeseen consequences when people incorrectly applied it. For example, the old suggestion to throw your pack to distract an aggressive bear and allow your retreat ended up not doing what was hoped for and created new problems with bears that learned to confront hikers to get them to throw their packs. Seeing the outcomes of certain human reactions during bear encounters led to refining our ideas over the years on how to reduce risk around bears. And that led to some of our insights and advice evolving.

Ideally the public's knowledge would have improved over time, but instead of the better information being spread and absorbed, searches will get links to both outdated and poor-quality information, as well as to the best current evidenced-based advice. But it's difficult for people to know which is which. Even many agency staff who prepare safety materials and who do training, don't always understand the subject. This results in incorrect, outdated information being recycled in pamphlets, on signs, and in training classes.

There have been a few efforts such as Safety in Bear Country Society and the Alaska Interagency Bear Safety Education Committee to gather the best advice and reach interagency consensus for bear safety information. But there is currently no quality control, no central source for the "correct" information, and no agreed-upon standards for information being provided or taught in safety classes. Right now, if someone will hire a training provider, there's very little guarantee that what is being taught is correct. Many people preparing and presenting information don't really understand what they are teaching, its limitations or reliability. Some may even know what to advise people to do but cannot explain why they should.

I will present an overview of perspectives and changes to bear safety advice over the years --where some of the advice originated; problems with attempts to scientifically study the issues; how safety information has



changed over the years; some attempts to reach consensus; why underlying principles are crucial; and the struggle to provide consistent bear safety messaging.

Before we can do a good job of communicating correct information to the public, we first must find better ways to ensure dependable advice is understood and being used by professionals. We can never eliminate all the poor-quality information found on the internet, but we need to at least work on ensuring that moving forward high-quality, evidenced-based consensus information is readily available and being used by agencies, NGOs, and other local bear smart types of groups, as well as in training classes whenever possible. We need to work harder on making it easier for people preparing safety information, training the trainers, and doing other training to access the very best information. They should be held to a higher standard.

Part of the solution is to focus on understanding the principles behind the advice, why certain behavior or actions are advocated, and how/why advice has changed, rather than just outlining best practices without providing any deeper understanding. And I propose we need a trustworthy resource where people can turn for the up-to-date consensus safety information, possibly through a group like the International Bear Association (IBA).

Using the Social Science Toolbox to Evaluate Education Strategies for Coexistence

Ramona Maraj, Parks Canada

Dr. Jill Bueddefeld, Wilfred Laurier University

Education initiatives are a cornerstone of human-bear conflict and coexistence programs. Initiatives span the spectrum of available education strategies, including products that are broadly aimed at multiple audiences to individually tailored, high intensity outreach programs. Pamphlets, videos, blogs, signage, public talks, advertisements, interpretive events, school curriculums, and door-to-door campaigns are examples of common strategies deployed by government and non-government agencies (NGOs) to reach people and instigate behaviour change.

Significant fiscal and human resources are invested into developing and executing education strategies; however, the vast majority of education programs are implemented without any evaluation of their effectiveness. Where programs have been evaluated, the focus has been primarily on changing attitudes, behavioral intents, and knowledge towards wildlife and conflicts.

Unfortunately, there is not always a direct link between attitudes, intents, and knowledge and actual change in behavior. Research has shown that while human-wildlife conflict education programs can increase knowledge, they do not necessarily alter behaviour. Furthermore, studies evaluating the efficacy of education often rely on self-reported data collected via surveys. As such, these studies lack a direct measure of human behavioral change and can include a self-reporting bias.

We consider Dialogic Based Narrative approaches and Learning for Behaviour Change theories. We review theories of learning, discuss how to systematically measure their efficacy as measured by behaviour change, and adapt them to increase effectiveness. For instance, Transformative Learning has the potential to address the value action gap between intentions and behaviour, instigating changes in behaviour that are maintained over time. We discuss how these theories are relevant to human-bear conflicts, how they might be applied to education efficacy studies, and present examples in the context of conflict and coexistence programs.

What Can \$1 Million Do? Unique Community Grant Opportunity in Colorado

Kristin Cannon, Colorado Parks and Wildlife

During the 2021 legislative session Colorado lawmakers approved a funding bill for the Department of Natural Resources (DNR) that included \$1,000,000 to the Division of Parks and Wildlife (CPW) for the “conservation of native species.” CPW dedicated this money to alleviating human-bear conflict using non-lethal techniques. After internal deliberation and in consultation with DNR, CPW will distribute the money through a community grant program. With applications due May 6, 2022 and money available in June 2022 this timely discussion can look at a government sponsored funding solution meant to bolster local community efforts and how to determine its impacts.

This session will look at how this program was funded, developed, and launched. Community stakeholders helped develop the criteria for the grant and evaluated the applications. Those guidelines will be described and discussed along with the fiscal considerations and responsibilities of a public institution in distributing funds.

Other points will include what types of groups submitted applications and for what kind of projects, how those projects met the goals of the program, how funding was ultimately distributed, perceived obstacles to applying, and what efforts were tried to make this as accessible of an opportunity as possible.

What would you do with \$1 million to reduce human-bear conflict? The goal of this session is to examine what one agency chose to do with unexpected funding and how that choice is unfolding.

Climate, Conflict and Coexistence: Identifying and Addressing the Drivers of Human-Polar Bear Interaction in Southern Hudson Bay

Joseph Northrup, Ontario Ministry Natural Resources and Forestry; IUNC Bear Specialist Group - Member, North American Bears Expert Team

Clive Desiré-Tesar, Clive Tesar Consulting

Sam Iverson, Canadian Wildlife Service, Environment and Climate Change Canada

Alysa McCall, Polar Bears international Canada

Lyle Walton, Ontario Ministry of Natural Resources and Forestry

Geoff York, Polar Bears International

Gregory Thiemann, Faculty of Environmental & Urban Change, York University

Southern Hudson Bay represents the furthest south continuously occupied distribution of polar bears globally. In this area, polar bears are forced to migrate onto land each summer when the sea ice melts. With ongoing climate change, the ice-free season in this region has lengthened, with bears spending more than one month longer on land than during the 1980s. Further, polar bears in this and adjoining management units have shown declining body condition, survival and abundance over the last few decades. The decline in body condition and extended period of time on land increases the potential for negative interaction with people. The Cree People of the Hudson Bay Lowlands have existed with polar bears for millennia. In recent years, members of some First Nations communities have indicated that interactions on the land and in communities with bears are increasing, and the number of bears reported to have been killed in defense of life and property appears to have increased.

The coexistence of people and polar bears is an important and emerging issue across the circumpolar Arctic, with serious implications for bear populations and human safety. Improved understanding of the factors contributing to conflicts between people and bears is a critical need for informing strategies to reduce conflict. Through experience in other communities, we understand that the engagement of local people in developing appropriate measures is a prerequisite for local acceptance and implementation. The primary goal of this project is to co-develop, with Cree communities, strategies for reducing conflicts between people and bears. This includes the gathering of Indigenous Knowledge on polar bears and human-polar bear conflict and collation of existing scientific information on this topic. The final objective is for community-led efforts to result in customized, appropriate conflict reduction strategies for each of the Cree communities within the focal area. We will present progress so far on our objectives, lessons learned and plans for the future.

Community Outreach and Bear Safety Education Programs as a Tool to Mitigate Human-Sloth Bear Conflicts in Western India

Dr. Nishith Dharaiya, Wildlife and Conservation Biology Research Lab, Department of Life Sciences, Hemchandracharya North Gujarat University, Patan (Gujarat) India

Dr. B. B. Radadia, Biology Department, Shri M and N Virani Science College, Rajkot (Gujarat) India

For the past 50 years, biologists have been drawing attention to deteriorating habitat and increasing conflicts as major threats to sloth bears in India. Clearly, these two issues are linked, but efforts to address them in a comprehensive, thoughtful manner have been lacking. Here we summarize a diverse set of work conducted since 2007 in Gujarat state, at the western edge of sloth bear range, where semi-arid, fragmented habitats have contributed to escalating sloth bear attacks. The sloth bear attacks have reached more than 300 per year in the last ten years; that made the people hostile towards sloth bears.

Our research findings indicated that movement corridors around settlements are needed to allow bears to circumvent people and reduce human–bear interactions. We also found that degraded forest cover contributes to bears' use of human food sources near villages, with consequent bear attacks and retaliatory killings.

Combined with habitat improvement initiatives, we have organized several awareness campaigns in tribal villages of Gujarat and we measured significant positive changes in peoples' attitudes towards bears as a result. We have scientifically assessed a suite of social drivers to enhance human–sloth bear co-existence in the area. Our study concludes that there is a need to inculcate positivity and enhance the tolerance of locals towards the sloth bear. This can be achieved by providing true and scientific information about the species through conservation outreach programmes and involving the locals in the conservation-oriented work.

Keeping this as a central goal, we have initiated the outreach programme in the villages around the sloth bear corridors in Gujarat by involving forest field staff and local youth and demonstrated optimistic outcomes there. We have developed different audio-visuals, virtual and capacity enhancement programs as tools to engage the community and forest field staff which has proved effective to inculcate the positive attitude of people to co-exist with sloth bears. Our outreach programs have also become instrumental in building the rapport between the villagers and forest field staff for joint action for sloth bear conservation.

How the BearWise® Program Builds Bridges, Promotes Partnerships and Creates Common Ground

Dan Gibbs, Tennessee Wildlife Resources Agency; Co-chair, BearWise Program

Linda Masterson, BearWise Program

LaVonne Ewing, BearWise Program

Bill Stiver, Great Smoky Mountains National Park

Today most states with bear populations are dealing with more bears, more people and more conflicts. In addition to bear populations expanding, more people are moving from the cities to more suburban and rural settings, which means more people now live in traditional bear country. Conversely, due to the widespread availability of anthropogenic food sources, in many places bears are also moving into urban areas. Both these factors cause many agencies to struggle with how to stretch their limited resources to not only manage ongoing situations with bears and people but also to develop messaging that makes people want to take steps to avoid conflicts.

Before you can develop effective messaging, it is important to understand where people currently get their information about bears. A Human Dimension study conducted in Pennsylvania (PA) by Responsive Management in 2008 showed that only 1% of the public utilized their state wildlife agency as a resource for information about bears. In addition, the top three sources (newspaper, television, family/friends) identified by PA residents cannot be relied on to always provide accurate, unbiased information about bears. Add to that a society that is now increasingly mobile and connected via technology, and reaching people with a consistent message becomes an even greater challenge.

The BearWise mission is to deliver consistent, science-based information and practical solutions that help people, businesses and communities live more responsibly with bears. The BearWise online store is just one of the many facets of the program that helps fulfill that mission.

Our store makes it easy for people to take information, ideas and solutions with them and put them to work. They can download free flyers in English and Spanish as well as in-depth bulletins and fun activity sheets, as well as order outreach materials, including magnets, safety cards, stickers, signs and books. Proceeds from the store help support BearWise.

A review of who uses the store and how they use the materials shows that BearWise reaches members of the public that state wildlife agencies traditionally find difficult to connect with. The thousands of visitors to the website who have downloaded and/or purchased materials come from all US states, 7 Canadian provinces and several countries.

Because BearWise delivers a universal message, federal and state agencies, parks, forests, communities, businesses, NGOs and other groups often promote BearWise and distribute BearWise materials at their own expense, greatly extending the reach of the BearWise message. We will explore how BearWise builds bridges, promotes partnerships at all levels and creates common ground.

BearWise® Communities: Moving a National Outreach Effort to a Community Recognition Program

Ashley Hobbs, North Carolina Wildlife Resources Commission

Colleen Olfenbittel, North Carolina Wildlife Resources Commission

David Telesco, Florida Fish and Wildlife Conservation Commission

The Southeastern Association of Fish and Wildlife Agencies (SEAFWA) created BearWise in 2018 as a regional effort to communicate consistent and effective messaging about how to live responsibly with black bears. After garnering nationwide interest, BearWise is now housed under the Association of Fish and Wildlife Agencies (AFWA) and has been adopted by 32 states in the US. Part of the BearWise program is encouraging communities to become BearWise.

Some states chose to adopt formal recognition programs for BearWise communities, in which these communities formerly commit to securing attractants and following the BearWise Basics. In addition, BearWise allows each state to have additional requirements for their recognition programs and, since each community is unique, the flexibility to work with a community to create reasonable expectations and outcomes for recognition by adjusting the requirements according to their residents' willingness to comply and the community's capabilities.

While "gold standards" such as ordinances requiring residents to keep attractants secure, commercially manufactured bear-resistant garbage carts, and the permanent removal of wildlife feeders are ideal, states can allow for other methods to secure attractants while requiring the community to commit themselves to consistently educate residents as to why they need to secure attractants when bears are active.

These approaches are designed to combat several barriers to recognition, including income disparities, residents' lifestyles, lack of an existing unifying structure (e.g., homeowner's association), and residents' varying perceptions of black bears. If a majority of the community is following the requirements for that state's BearWise recognition program, they become a recognized BearWise community, business or recreational area.

Once recognition has been achieved, the group receives their own BearWise sign and acknowledgement on the official BearWise website. A local biologist provides support to the community, as needed, and conducts an official "check" annually to ensure compliance to the agreed upon commitments. We provide examples of how Florida and North Carolina operate their recognition programs and examples of BearWise recognition from each state.

Do Community Groups Have a Role in Reducing Human-Bear Conflict?

Brenda Lee, Colorado Bear Coalition

Human-black bear conflict is an increasing problem throughout the United States. As human-bear conflict has increased, so has community involvement. Unfortunately, there is a deep divide between many of these community groups and the agencies charged with managing wildlife. Given this divide, the increase of human-bear conflict, and the rise of citizen-led groups, it is essential to move forward with a roadmap of how these stakeholders can effectively work together. This cannot happen without efforts to find common ground and to understand the role that each stakeholder holds and the benefits they bring.

We can start by asking some key questions, such as: Is human-bear conflict a human behavior problem or a bear management problem? Does this affect who is held responsible for reducing attractants? Is a community-led group best positioned to understand local values and communicate change in a way that will result in higher adoption and compliance? Is change driven by the community more effective than coming from outside the community?

In 2011, a group of citizens in Boulder, Colorado formed the Boulder Bear Coalition (BBC) to solve the escalating issue of human-bear conflict. Alleyways were consistently strewn with trash, Colorado Parks and Wildlife (CPW) managers were frequently called in to handle bears, and there was little citywide effort to identify and reduce attractants. BBC created a strong community voice to take the pressure off of CPW officers, who were widely seen as the villain coming in to kill bears and put the focus directly on the city and community to clean up attractants that were bringing bears into town. BBC is one example of how a community-led organization can be instrumental in initiating and implementing programs to reduce conflict and exemplifies how it can be done in a way that is respectful, collaborative and proactive.

Examples of ways that community-led groups can play an essential role in reducing human-bear conflict: educate local government about the problem and provide clear solutions; develop trash ordinances; support enforcement; create an urban fruit gleaning program; plant a native food buffer zone; establish a city/state/community working group; build trust with the city and state; work with local trash haulers and bear-resistant cart manufacturers; bridge communication between the community and CPW.

Since an optimal solution to reducing human-bear conflict requires a reduction in attractants as well as an increase in deterrents, the involvement and collaboration from members of each community is critical. As Boulder Bear Coalition demonstrates, community led groups are a valuable resource for government wildlife agencies to tap into. Let's start the conversation now, beginning with engaging in a healthy discussion on how we can build a better future for our communities, wildlife management and bears.

Grizzly Bear Coexistence Solutions

Gillian Sanders, Grizzly Bear Coexistence Solutions

Grizzly Bear Coexistence Solutions (GBCS) improves human-grizzly bear coexistence through education, collaboration, and the use of practical tools. Working primarily in the Kootenay Region of Southeastern British Columbia, GBCS has helped to install 475+ electric fences to successfully deter grizzly and black bears from a wide variety of attractants, from urban chicken coops to deadstock compost areas to a salmon spawning channel. GBCS also provides safety education and less-lethal management of bears with support from the provincial government.

We have changed social norms around coexisting with bears in the Kootenays and have expanded our work to other areas of the province. This is especially relevant as grizzly bear populations recover and bears are using low elevation habitats that overlap with rural agricultural communities and residents who are unfamiliar in encounters with grizzly bears on private properties.

Our next project includes a ‘teach the teacher’ model of creating similar projects in other areas of the province, with the goal of creating an enduring culture of coexistence based on the practical success of this work.

Successes and Challenges of the Mountain View BearSmart Community Program in Alberta, Current and Future Outlook

Paul Fraser, Barr Engineering and Environmental Science Canada Ltd;
Mountain View BearSmart Society

Jane Bicknell, Mountain View BearSmart Society

In Alberta, conflicts between people and grizzly and black bears are common in the western part of the province. Many communities in western Alberta, which are dealing with human-bear conflicts, are tasked with delivering the right messages to their residents about bears. An effective Bear Education and Awareness Program, whether coordinated by a government agency or NGO, should attempt to increase public understanding of bears and demonstrate to residents how to coexist with bears through proper management of attractants.

The Alberta BearSmart program was introduced by Alberta Environment and Parks (AEP) to reduce the number of negative interactions between bears and people and to lower the costs associated with property damage by bears. This multi-stakeholder initiative led by the Alberta government includes partnerships with industry and communities.

In each community voluntary, preventative conservation measures have been implemented to address the root causes of human-bear conflicts in order to reduce the risks to human safety and private property, as well as the number of bears that have to be destroyed every year. The acceptance and success of a Community BearSmart program depends upon the cooperation of the municipality, the provincial government, the business community and private citizens. Mountain View County (MVC) and Clearwater County (CC) in west-central Alberta are within prime grizzly and black bear habitat. Until recently, grizzlies inhabited only the western third of the counties. Nowadays, some grizzlies follow riparian corridors to the east and residents are surprised that grizzlies are moving east into habitats they've never occupied before.

Mountain View BearSmart Society (MVBS), an integral part of the Alberta BearSmart program, is a non-profit community-based organization that was formed in 2008 in Mountain View County in response to hunter fatalities from grizzly bears in 2007 and 2008. MVBS strives to promote bear and wildlife awareness in MVC and CC through prevention, education and awareness in order to reduce human-bear occurrences and to increase public stewardship of bears.

Human-Bear Coexistence in Slovakia

Michael Haring, State Nature Conservancy Slovakia, Bear Intervention Team

Nowadays human-carnivore conflicts are more common as a consequence of higher numbers of people moving in the wild and occupying more land. situations that involve any negative interactions between humans and large carnivores. There are several different sources for human-wildlife conflicts, for example when bears cause damage to property or when humans are injured or killed by wildlife. Human-bear conflicts usually often result in killing or lethal control of the individual animals involved in incidents

Slovakia hosts about 1000-1500 brown bears which are part of the large Carpathian bear population. Hunting brown bears was banned in Slovakia from 1932 to 1962, which resulted in recovery of the population from a low in the 1930s. Nowadays much of the previous range is re-occupied. However, poor garbage management and feeding of bears with human-derived foods as tourist attractions is common

The Bear Intervention Team Slovakia was established by issuing the Methodical Instruction of the General Director of the State Nature Conservancy and the Ministry of the Environment of the Slovak Republic on the establishment, organization and work of the intervention team and its regional groups for the brown bear (27 August 2014). It arose from the need to inform the population, prevention, education, risk minimization, prevention of possible conflict situations and damage caused by brown bears, from the need for an operative solution to the elimination of damage caused by the brown bear and for solutions to the dangerous encounters between the brown bears and the humans.

The intervention team has the right to ensure the scaring, capture or killing of protected animals which, by their behavior outside the places of their natural occurrence, directly endanger the health or safety of people. Team was completely reworked in 2020 and actually consists of seven members, divided into two groups (based on the scope within the Slovak Republic): North and South.

Presentation content:

- Legislation - Legislation relevant for Brown bear (*Ursus arctos*) management in Europe and Slovakia
- Distribution and abundance – From history to present
- Problem bears – Causes, Avoidance, Solutions
- Intervention team – Where, why and how we work in Slovakia
- Management – Prevention, Education, Aversive conditioning, Problem bear removal
- Bear attacks on people in Slovakia
- Interesting cases – Cases we successfully resolved so far

Cohabitation in the Arctic: Human-Bear Best Practices in an Alaska Oilfield

Christina Pohl, ConocoPhillips Alaska, Inc.

Wendy Mahan, ConocoPhillips Alaska, Inc

Across the central coast of Alaska’s North Slope, there is a successful co-habitation of the landscape and active oilfields by humans, polar bears, and brown bears. For over 30 years, grizzly and polar bears have been monitored directly and through opportunistic observations by the north slope workforce and in close collaboration with state and federal agencies.

In over 40 years of oilfield operation no oilfield workers have been attacked or injured, even though the oilfields overlap with summer surface ranges and winter denning habitat of two species of bears. To challenge the situation more, the closest wildlife management agencies are approximately 450 miles away and the oilfields are not directly accessible by a public road system.

We will provide a review of our bear-interaction programs which include a combination of human-bear interaction plans, education and training, attractant management, deterrence programs, den management protocols, and engineering and operational best practices.

PANEL DISCUSSION

How BearWise Builds Bridges, Promotes Partnerships and Create Communities

Dan Gibbs, Tennessee Wildlife Resources Agency; Co-chair, BearWise Program

Linda Masterson, BearWise Program

LaVonne Ewing, BearWise Program

Bill Stiver, Great Smoky Mountains National Park

Ashley Hobbs, North Carolina Wildlife Resources Commission

The work to create a vehicle that would give state wildlife agencies a way to deliver standardized messaging on living responsibly with black bears began back in 2012 in the Southeast. That vehicle became a regional program under the Southeastern Association of Fish and Wildlife Agencies (SEAFWA).

After several years of gathering information and reaching a consensus on messaging, the website for the BearWise Program debuted in mid-2018. BearWise quickly became one of the most widely used sources for science-based information and useful resources for living more responsibly with black bears.

Like bears, the internet doesn't recognize state boundaries, and soon people from all over North America were visiting the website and downloading materials. States outside the Southeast wanted to know how they could join BearWise. In 2022 BearWise became a non-profit, North American program under the Association of Fish and Wildlife Agencies (AFWA). By mid-year 34 states had joined BearWise.

A look at who is using BearWise resources and what they are doing with them reveals that BearWise builds bridges to important target groups that state wildlife agencies often have a hard time reaching. BearWise also provides common ground for cooperative programs with other agencies, NGOs, educators, businesses and communities.

We will explore how BearWise works at the national, state, community and neighborhood levels to connect with so many diverse audiences that have at least one thing in common: they all agree we need to find workable ways to better understand, resolve and prevent human-caused conflicts with bears.

TRANSCRIPT

Sara Holm – Good afternoon, I'm Sara Holm and I'm a wildlife biologist with the California Department of Fish and Wildlife. I have been with the department for 23 years and working with bears in this Tahoe Basin for most of that time. I am also a member of the organizing committee. So we're going to start this afternoon by finishing off the opening session, Pathways to Progress, with a panel discussion by BearWise. And they are going to each speak and we're going to try to leave about 20 minutes at the end for questions.

I'm going to introduce the members up here. We have Dan Gibbs, chair of BearWise, and a bear biologist with the Tennessee Wildlife Resources Agency. Linda Masterson, author of Living with Bear's Handbook and the marketing and communications director for BearWise. Lavonne Ewing, the creative services director for BearWise. Bill Stiver, chief of Wildlife with Great Smoky Mountains National Park. And Ashley Hobbs, a black

bear and furbearer biologist at the North Carolina Wildlife Resources Commission. All right. I'm going to get you guys started.

Linda Masterson - Thank you. Good afternoon everybody, and thanks for all coming back from lunch. We really appreciate it. BearWise is a nonprofit education and outreach initiative that is managed by a national team of state wildlife agency bear biologists, professional communications teams, and is administered by AFWA, the Association of Fish and Wildlife Agencies.

The BearWise mission is to help people live responsibly with black bears. That is all we do. We are black bears, 24-seven, every day. It is supported by the Association of Fish and Wildlife Agencies and now 34 BearWise member states. So the BearWise mission is to help people live more responsibly with black bears. Over the next 90 minutes or so, we will show you how BearWise fulfills that mission at the national, state and community level.

We all really love to talk about BearWise way, way too much. We plan to leave at least 20 minutes at the end of the panel presentation so we can have a good group discussion there.

BearWise is totally focused on the human side of preventing human caused conflicts with bears. We do not get involved in bear management or other state or agency issues. How BearWise came to be is a story that should inspire all of you. The seeds for BearWise were planted ten years ago at the 4th International Human-Bear Conflicts Workshop in Missoula, Montana, where a biologist from the Southeast got inspired by all the education and outreach programs that were making such a difference in the real world. And he thought to himself, we have really dropped the ball. We need to do something like this. He doodled this during that workshop and fortunately for us he's a saver and he got encouragement from another bear manager who was there, and he went back home, and he started figuring out, how can I turn this idea into reality? The Pathway to Progress, from a doodle in 2012, to a national program in 2022 was a really long one. It was filled with lots of ideas bouncing around and collaborative action and a few sharp left turns and curves along the way. The next stop was the Eastern Black Bear Workshop, and then to the Southeastern Association of Fish and Wildlife Agencies - Large Carnivore Working Group, which was also chewing on how states could band together to create a regional bear education program.

So bear biologists from 15 states in the Southeast went to work crafting messaging that would be scientifically sound and consistent throughout the region. And by the 5th International Human-Bear Conflicts Workshop in Tennessee in 2018, the mission was agreed on. The basic messaging was hammered out, and the framework for the program was in place. So six years after that light bulb went off, BearWise was ready to emerge from its incubation den. When Lavonne Ewing and I were asked to join the team after a meeting at the Fifth, we said yes, faster than a bear cub can scoot up a tree. Why? Because we knew that BearWise was the program that we'd been envisioning ever since I wrote *Living with Bear's Handbook* back in 2006; a people friendly program that didn't look or sound like it came from the government but had the credibility of being founded in sound science that everybody could believe in, and created and overseen by bear biologists. So we're going to take a look at how BearWise works. But before we do that, our committee chair, Dan Gibbs, will give you a look at why BearWise was needed in the first place.

Dan Gibbs - Thank you, Linda. So I'm going to talk with a little bit of an accent and a little bit faster than Linda. And luckily for me, a lot of what I'm going to say through this segment has already been said once, twice, maybe three times today already. So it's a little bit of a review. But basically, you know, why did we begin in the southeast? We needed something like BearWise. And so I think most people have seen this map. It was done in 2014 showing the black bear range in North America. And if we went in eight years later, we would see very quickly that a lot of the white needs to be shaded gray and there would be a lot more locations,

a secondary range, because black bears are not only continuing to grow in numbers in their current range, they're expanding into new range and also reclaiming historical range.

In addition to bears numbers increasing, the number of people is obviously increasing. We've talked about this today, but the number over the last century has been about a 200 million increase in people across the United States. So bears are increasing, people are increasing, bears are moving, and people are moving. And I've heard multiple people mention this today, how people from other parts of the country are moving into their states. So there's a lot of movement going on in our country. A lot of people are leaving the more urban areas, the cities, and coming to more suburban or rural areas. And they're landing in areas where we have black bears and grizzly bears. And they don't realize it, but they get there, and they have no idea they just moved into bear country. So that's a real challenge. And then we also have people on the move doing outdoor recreation things, whether it be a State Park, National Forest, national parks. I believe most of these areas will tell you they're seeing an increase in visitation over the last two years and this trend is continuing.

So people are on the move, bears are on the move. I won't tell you what state we saw these people moving from or where they were going to, but just to use your imagination, you know where I live. So anyway, you get more people and then you combine that with more attractants and you're going to naturally have more conflicts and you can have these conflicts even when you don't have more bears. And we hear this all the time in Tennessee. There's just so many more conflicts. There's just so many more bears. And really in some areas that's true. But in other areas it's not. Our bear numbers in a lot of our areas are pretty stable, yet we're still seeing an increase in conflicts, and this is because of more people.

So this puts bear managers in a really unique place where we're having a very complex issue trying to manage populations, but we're also trying to manage public tolerance of bears. The less tolerant people are of bears, the less you can do from a recreation perspective. So it is a challenge for sure. And it leaves a lot of state agencies juggling resources. And this was kind of covered earlier today but I wanted to mention again, in the past it hasn't been that long for a lot of us, especially in Tennessee, where people would call and say, hey, I've got a bear that's got into my trash and is causing problems, what can you do? And we say we'll come get it because we have somewhere we can take it. We had areas we were trying to supplement populations that didn't have quite as many people, and we had places we could put these bears and turn them loose and everything was good. People were happy. But what we were doing is we were teaching people to be reactive rather than proactive, because that's exactly what we were doing. We weren't teaching people about attractants or anything at that time. So now when people call in, we've trained them to call us, we don't come get their bear. Now we're saying, Hey, you need to... We're using phrases like attract management to reduce conflicts and be proactive and learn to coexist. And it leaves our constituents scratching their heads going, well, I don't know what that stuff means. How do I do that? So we realized that we needed to have a source for people to learn how to do these things. So we started talking about where people get their information. Yeah, we looked at this survey that was done in 2008 in the state of Pennsylvania, and at the time 75% of people were getting information about bears from friends, family, newspapers and TV.

And the real disturbing thing was only one out of a hundred were going to their state wildlife agency for information. And while we didn't have numbers like this in the Southeast, we suspected it would be very similar because we just weren't reaching our people and we were trying to figure out how we were going to do that? How are we going to reach people? We knew that the Internet was the up and coming thing and that's where people were going to go. And everything's good, right, because everything on the Internet is true, correct? Right. Well, no, it's not. And so we wanted to find a resource that would provide good information, and we wanted it to come from the state wildlife agencies because we had the most up to date information and data to provide to the public.

But the Internet is tricky, as we all know. Sometimes you can have good information interspersed with bad and I'll use this as a quick example. When I was trying to find a picture for this presentation, I came across this and it immediately caught my eye because of that right there. And that looks a lot like a pepper spray can. So I go to the website, just click on the little picture to go to the website. And sure enough, this is a site telling people that you can prevent close encounters if you carry pepper spray. And I think most people in this room would have an issue with that. But the same site also has some very good information about conflict avoidance. And they cite entities such as the National Park Service, BearSmart and some other folks that that we are all very familiar with. So what you have is a site that's confusing to the general public because they're getting good information interspersed with bad and they don't know which is which. So that's what BearWise tries to do, is to find consistent and common ground in messaging that everybody can agree on. And then whether or not people are in Florida, Tennessee, Maine, California, Washington, wherever they're familiar with this program, they know what's expected of them when they're in these areas. And it also gives people, like from an agency, when someone calls the office and they want to know something about bears, they can send them straight to BearWise because they're confident that the information there is going to be correct.

So that's what BearWise tries to do. Now, illustrate that real quick with this. So this is a picture, or pictures representing 27 different states, and it shows something unique about every state and every state's bear management program. It can be anything from whether you hunt or you don't hunt, what kind of habitat you have, history in the state, or number of bears. There are differences and there are no two bear programs that are alike. But these pictures also show similarities in hue, design, and style. And that's what BearWise is trying to do, is trying to reach out and find those common things about bears such as the BearWise basics. And they're not feeding birds when bears are active, and issues on keeping your dogs leashed when you're walking, things like that. It builds on that kind of stuff and provides information for the public. So with that, I'm going to sit down for a few minutes and Linda's coming back up and she's going to give you some examples.

Linda Masterson - Okay, So now that we're all ready, how does BearWise get out into the world? Providing sound information, practical advice and consistent messaging is the foundation, but the real challenge is getting that information read, shared, and put to work out in the real world.

So let's take a look at how our website, our store customers, our 34 member states, our partners, our subscribers and our social media channels all help us get that BearWise message out there. Our website is the hub of the BearWise program. It is all bears, all the time. People can visit 24/7 to get informed to get inspired and to find the resources they need to get going and do something. The information is rooted in science. The advice has been tested in the real world and all the content, materials and resources are reviewed and vetted by a team of state agency bear biologists and managers. So no matter where anyone goes, the BearWise message is the same and I'm very happy to announce there are no nuisance bears, problem bears, or bear problems on BearWise. We have strict language protocols, and we are very focused on helping people understand the root causes and issues of conflicts and what they can do to prevent them so that they can be part of the solution and not part of the problem.

The BearWise basics are the foundation of the program. This universal Big Six creates the most potential for human caused conflicts and what to do to avoid them. Seriously, garbage, bird feeders, pet food. They look so deceptively simple, but I know hammering them out took about 24 hours a word. They are on the website in brief and in detail, and they're also in a flier in the BearWise store that can be downloaded for free and has been thousands of times. We use Google Analytics as well as the information that we collect from everyone who visits the BearWise Store and utilizes our material to help us better understand what people are looking for and what keeps them coming back to BearWise. This might or might not come as a surprise to you, but it turns out that *About Bears* is one of our most visited sections. Bears are amazing and complex animals, and people really do want to know more about them. So we feed them a steady diet of sound information and fun

facts about bear biology and bear behavior. So we're supposed to be preventing conflicts, right? Why don't we just cut to the chase and focus on coexisting and reducing conflicts? It's because no one likes to be told what to do without being told why it's important they do it. So helping people understand what drives their behavior is what helps their own light bulb go off. Once they realize that bears are just being bears, it's much easier for them to accept. It's up to people to prevent conflicts, and it's people who can help keep people safe and bears wild. So every month we try to feed that curiosity, and we deepen the understanding, and we try to inspire people to get up and do something.

This is a screenshot that shows articles on why your critters would like you to protect them with an electric fence. How taking two seconds to lock your car doors can prevent a ton of expensive problems. And what bears across the country are up to in September. That's been a monthly feature we have done all year long. It has been very popular. What are bears doing now? Focusing on bears and bear behavior keeps people coming back because they know there's always something new to discover. A little electrifying humor and a plea from the chickens gets people reading and delving into more in-depth information. And I'm sure you all know people think their chickens are almost human. So this really worked well. We post all of the articles we develop in the article bank on our website, and we send one out about twice a month to the thousands of people who have signed up to receive BearWise emails.

We reinforce all that outbound messaging by using social media to further promote our content. *Bear Safety Tips* pages are just as popular as *About Bears*. I'm sure that's not a surprise to John Hechtel and a lot of other people. Everyone wants to know what to do if they see a bear or vice versa. Safety tips include many different sections. They cover the most searched for topics like how you can prevent conflicts around homes, businesses and communities; or how to safely enjoy the great outdoors without endangering people or bears. I think it's important to realize that the people who visit us, they want to protect the bears. They also want to learn how to keep bears wild and how to change their own behavior. Or if they don't, when they show up they do by the time we let them loose. Sometimes the right medicine is kind of tough to swallow. Do's and don'ts aren't enough when you're asking people to change and give up something they are passionate about, like feeding birds or letting their dog run around off leash. You need to show them why their behavior matters and offer up alternatives like ways to attract birds, not bears. Or why dogs and bears just don't mix, unless they're Karelian Bear Dogs, and how you can safely walk your dog in bear country. These issues are much too complex for a flier, and they need to be portable. So we created a bulletin format that's a two sided format that gives us the space we need to find common ground with these people and to give them alternatives that allow people to indulge all of their passions without endangering themselves, their pets, or the bears. In this case, with the dogs we actually did the bulletin first and we really quickly discovered that dogs and bears was a real hot button issue. Maybe this year's chickens. And the media wanted something to link to so we very quickly created a web page to match that information. Here is another thing that really sets BearWise apart, because people not only can read the information on the website, they can literally print it and take it with them or share it. So now Lavonne is going to give you a quick look at some of the materials in the BearWise store and all the things people are doing with them.

LaVonne Ewing - Good afternoon, everyone. Weary travelers that you are. One thing that really sets BearWise apart is our store of eye-catching and useful resources and materials that remind and encourage people to be BearWise. Here is where we take the digital world of our website and put actual stuff in the hands of people. People who then easily spread the message to neighbors who need to clean up their act. Camp directors educating youngsters, to employers concerned about employee safety and so much more. A quick glance at the current categories shows magnets and stickers, door hangers and coasters, a fun kids' corner, the new whistles and safety cards under the books, and combo kits. We have a welcome kit and a safety kit. Banners and signs. And the last one down on the right is the state BearWise stuff, which has fliers with our

members' state logos. Our most popular category would be the fliers and bulletins. These fliers are available in English and now Spanish and can be downloaded for free or printed in quantity and drop shipped to the customer. With such easy access, this one stop library of shareable information encourages visitors to download multiple handouts. I often see people coming back for more, and some folks just download absolutely everything to start with. The power of the printed word is not to be underestimated in our fast paced, quickly evaporating world of soundbites, headlines and images viewed on our smartphones. Well-written, well-designed, printable words have legs. More than you realize. I have been surprised by the legs of our BearWise materials. We like to keep the store fresh, keep people coming back. Winter is a popular time for indoor kid activities, especially with teachers and families. And we have a lot of grandparents downloading these activity shapes. So the upcoming *What's Wrong with this Picture* will be a very fun placemat and coloring page. Expect that in this store in a month or two.

The other thing I'm showing here would be the coasters with the BearWise Basics. So we have BearWise Basics at Home and BearWise Basics Outdoors. Quite popular. So if I take a look now at who is using BearWise, we actually know this because one of the things we get when giving free materials is an exchange. We ask for their information. They need to tell us who they are, where they're from, and what they're going to do with BearWise stuff. This step in the checkout process has enabled us to gather a lot of information about who's using BearWise and what they're using it for. That's also how we know that people from every state, seven Canadian provinces and several countries not only visit the website, but they also take material with them from the stores in the first two and a half years of operation. Thousands of visitors have downloaded 6000 handouts. Talk about legs. It's out there. It's really cool. It's really quite fun for me to see the diversity of uses, such as when an English teacher in Switzerland downloaded the outdoor safety tips for the classroom or the woman hosting an artist's retreat in the California wilderness. But I'll share one with you that made me laugh out loud. Quote, *"I will tape this flier on my front door to remind me how lucky me and my two dogs were when a single male charged me right in front of the house. My blood curdling scream stopped the bear in its tracks ten feet away. My blood curdling scream also prompted a neighbor to call the cops because he thought someone was being murdered. I carry a whistle now."* So this is great stuff. All this feedback is something we'd never get from Google Analytics. So this store has been great.

We are able to reach members of the public that state wildlife agencies traditionally find difficult to connect with. One of our biggest customer segments is S.T.A.R.. So that's not a new government branch or super terrific retirees, but the accepted shorthand for short term rentals. I didn't know that. But thanks to Airbnb and VRBO, this is a huge segment. I imagine they are concerned about damages and the safety of their renters. NGOs, educators, communities, HOA's, and businesses promote BearWise and distribute our materials at their own expense. All of this is greatly extending the reach of the BearWise message. Community papers, public radio, other media outlets frequently use our content to refer people to BearWise. Lately, I'm seeing a number of zoos downloading materials for special bear days they are hosting. And on the human zoo side of things are places where people live. Here, the caretakers and managers are attempting to educate and motivate. I could say the inmates, but I think I should say the inhabitants of such places. State and federal agencies, National parks, state parks, and forests are increasingly referring and linking to BearWise for more information.

This slide shows a couple examples of customized materials we've done for our member State wildlife agencies across the country. I have a Spanish flier on the left with Arizona's logo, the Stash and Mash Your Trash and the South Carolina sticker. This slide shows Georgia's banner they take with them on presentations. And also Emily, who is here today on the right with Pennsylvania Game Commission. She was connecting with crowds at an Elk Fest last month, and I'd say it was pretty successful. And the three kids who had to answer her bear

questions before they got a BearWise Sport pack. Go Emily. So I'll pop up a quote we just received. It is heartening to read such comments and to know we are making a difference.

Social media is one of the few outreach tools that we use because most of our outreach is done by users. Social media helps connect with people who might not find our website. Our social media manager, Sarah Yoder, uses the most popular platforms, Facebook and Instagram, to push out timely content and to tag relevant stories and sources recommending BearWise, as well as our member state agencies. She reports that our most popular topics - Cubs, and All Things Cubs. People just relate. What a great way to open that educational door. Bear facts. People really respond and connect with science based facts. People of all ages and stories from the field. Our biologists have meaningful stories and countless examples that educate the public and inspire them to keep bears wild.

The impact of our social media outreach is multiplied many times over by all of our users who tag us, share content and send people to BearWise in their posts. These two are from member states, Arizona Game and Fish and the Pennsylvania Game Commission. And so, Dan, your turn.

Dan Gibbs - Thank you LaVonne. LaVonne mentioned just a minute ago how one of the big challenges for state wildlife agencies is reaching people within our states that we don't normally have access to. And for Tennessee, for my agency, it is a real challenge. We are a standalone agency, we're not a DNR. So we primarily serve the consumptive users of the state.

So reaching those non-consumptive users, your outdoor weekend campers and hikers and picnickers is a very big challenge for us. And one thing you didn't share earlier that I'm into is on people moving. Sevier County is a county that accounts for almost half of all of our conflict calls that we get. And in the year 2000, it was estimated that by 2040 Sevier County's human population was going to increase by 74%. So when you think about that, adding that many more people on top of the area where you already get half of your calls from is pretty daunting and you're trying to figure out how you're going to reach these people. And the other aspect of that is where Gatlinburg is. So we're getting in the summertime, a quarter million new visitors every Friday night. So every weekend you have another 250,000 people. Trying to build partnerships is certainly a challenge and something that we're really interested in for sure. So some of the things that we've done in Tennessee, you saw this flier a few minutes ago, is that At Home Basics. But the National Park Conservation Association contacted BearWise and said, hey, we want to put something about bears in one of our mailings and the Southeast Office for NPCA is in Knoxville and they're very interested in coexistence of bears around the Smoky Mountains National Park. So they contacted LaVonne and she got their logo put on the bottom of that, and they sent that out to 15,500 of their members in each state. So just like that, there's 15,000 people, most of whom the state agencies don't have access to, are getting information about how to live responsibly with black bears.

I want to show you this map real quick, just because it paints a picture of how important having partnerships on public lands within the southeast can be. And in this picture, there's six national forests and one national park in six states. So it's very easy and you can literally be in one state and in a national forest, take a step and be in another national forest. And this happens all the time. So having consistent messaging among these forests and in the national park is really critical because once again you want people to see the same message, no matter where they go, and that's what they're seeing. And Bill's going to talk about the park here in a minute, but I wanted to mention one thing that we did with the Cherokee National Forest in Tennessee. They were looking to get some more information in their kiosks all across the forest. We helped them put together this poster and it's all information on the BearWise site. But we organized it in a way that their recreation folks' thought was conducive to their users. And just like with the other flier, we put their logo there to show the partnership and then we also included their specific information about their food storage order so people could see that. And so we're really happy to get this done. In the Cherokee National Forest they host over two

and a half million visitors a year. And while this forest is open to hunting, most of them are your recreational users not consumptive? So reaching a lot of people with bear information through that partnership. A couple of others, one that we have is with the Appalachian Bear Rescue, who is represented here at this meeting. And they've got a multiple approach to bears, including research, education and rehabilitation. And so from the education aspect, we've partnered with them to help us implement our recognition program or community recognition program.

And I won't say anything else about that because Ashley is going to give us a real good overview of that here in a minute. But we're really happy to have Appalachian Bear Rescue on board to help us with that. It's a great partnership from two aspects. One, the number of people, as we mentioned, they have over 200,000 followers on Facebook. Once again, a lot of people that normally don't interact with our agency and sometimes we have quite strained relations with some of these people. And when they see that Appalachian Bear Rescue is working with us hand in hand, it just really strengthens their partnership even more. It helps with the attitude of many of their followers towards the State Wildlife Agency. So we're happy with that. And then the funding aspect, they're putting their money towards BearWise which helps us tremendously as well.

Real quickly, someone mentioned earlier that a lot of times people don't like to listen to experts. Well, they certainly don't like to listen to the government either. And so something that Bill Stiver and I are very active with is the Smoky Mountains BearWise Task Force. It's a group of business owners and residents that live and work in the gateway communities, the Smoky Mountains National Park on the Tennessee side. They're working together to try to effect change. Bill and I are advisors to their board. But when they go out and try to reach out to their local politicians to get some change and things like that and hopefully get interest in doing some good things for bears, these people are not hearing from the park or the state government. They're hearing from their residents and their voters. It's still early in this process, but it seems to be having a pretty good impact.

And one real quick example of what they've done. This is very small, but it's still significant, the city of Gatlinburg reached out to them and said, hey, we want to do something about littering. Can we integrate bears into our littering campaign? And this is what resulted in that. So not all of the stuff on BearWise is about littering but this still bringing attention to bears and to the BearWise program through this signage. And one last partnership I'll mention, then I'll turn it over to Bill, is the Appalachian Trail Conservancy has reached out and we're just having some conversations with them about creating some form of a partnership. We're not sure exactly what that's going to look like yet, but we're definitely moving in that direction. And that's exciting because we in Tennessee, I know other folks have the AT running through their states, have issues with black bears and hikers. So there's a great opportunity here to educate hikers, whether it be through-hikers or day-use hikers, even section hikers. And to give you an idea of the kind of impact we're talking about here, 14 states, just shy of 2000 miles and 3 million users annually. So there's another potential for a partnership to reach out and really grab hold of a lot of people that we would struggle with reaching. With that, Bill I'll leave it to you.

Bill Stiver - So why the BearWise partnership? Why is Bill Stiver from Great Smoky Mountains National Park talking about BearWise? Well, it's because I thought Linda Masterson might hurt me if I didn't come and talk here today. She did threaten me a little bit, so I'm on the agenda. So why a BearWise partnership? Well, Great Smoky Mountains National Park has 1900 black bears. It's probably the highest density of black bears in North America. And that estimate actually comes from a partnership that we have with the Southern Appalachian Black Bear Study Group. It's a group that we've been a part of since the early 1980s. And in fact, there's a poster session on it later tonight. But the state of Tennessee, Georgia, North Carolina and South Carolina came together to generate a population estimate for the southeast southern Appalachians. And we were fortunate to get an updated population estimate. So we have a long history of working with state

agencies in the Southeast, so it kind of only made sense that we would join in this partnership. Of course, we're the most visited national park in the country, with 14 million visitors in 2021. And that's a typical summer day for us.

We do have bear education information, fliers and folios, but we do not have an entrance station. We have no way to reach visitors that come to the Smokies, but I take that back. People can come to the visitor centers and get this information. And in fact, on a busy day we might have 5000 come through Sugarland's Visitor's Center. So we have a lot of people coming through and we have opportunity to get information in their hands, but we don't have that one on one entrance station connection that a lot of national parks have. Of course, we have the standard signage throughout the park and, trying to inform people about food storage and disturbing wildlife and disturbing bears and all that kind of stuff.

So we have ways to reach people and we also use Facebook and the Internet. There's occasional Facebook posts about black bears. And if you go on our Web page, you can find some information on black bears. But it's pretty dry stuff. So as a result, this is what we see. This is summer of 2021. This is just last summer. These are just a few images that that I pulled off of things that we still see in the Smokies, even though we've been dealing with human-bear conflicts for many, many years, we still have trash issues at times. We still have people approaching bears, we still have bears approaching people. We still have people feeding bears. So again, it only makes sense to be a partner on BearWise. Of course, if you come to the Smokies, black bears are the symbol of the Smokies, right? We love black bears in Gatlinburg and Sevier County, as Dan mentioned. Everywhere you go, our baseball team, the Knoxville, Smokies and their bears, and Friends of the Smokeys, our partner has a bear logo.

Everything about us is black bears, right? We love bears. And we have lots of bears living in our communities around the park. And again, Sevier County is one of the fastest growing counties in our area, and as Dan mentioned, the number one county where the state receives calls on human-bear conflicts. So a couple of years ago, if you remember, at the 2018 Human-Bear Conflicts Workshop, we were actually working on a three year study from 2015 to 2018 using GPS collars to kind of identify where the hotspots were in and around those communities around the park, because we knew there were some issues with respect to bears moving in and out. And we had a local TV station do a story on this project and I'm just going to show it to you real quick and hopefully this will work. You're going to have to suffer through the advertisement.

Playing audio of commercial:

“Whoa, smells like the backseat of a cab in here.”

“I thought it would neutralize all the bad odors coming from the kitchen trash. Is it working?”

Narrator - “There's an easier way to manage your food waste. Keep food scraps out of the trash and odors out of your kitchen with an InSink-erator garbage disposal.”

“Honeysuckle meadows, your favorite.”

“Your favorite.”

Narrator - “InSink-erator. Kitchen Better.”

Video switches to News story:

Ryan Williamson - “I know when that bear starts showing up around people that bears lifespan is greatly decreased.”

Reporter - “The Great Smoky Mountains stands as a great sanctuary with 800 square miles to let wild bears act naturally. Biologist Ryan Williamson helps keep wildlife wild in a national park with more than 11 million visitors. Sometimes he has to separate them.”

Ryan Williamson - “The bear will go in there, pulls the trigger, the door will shut. The bear will be there waiting for me the next day when we come in.”

Reporter - “He relocates bears deeper in the park, farther away from people. But then what happens?”

Jessica Braunstein - “In the past with the old technology, it'd be really easy to just lose track of those animals.”

Reporter - “In 2015, several agencies teamed up to fund research by Tennessee grad student Jessica Braunstein. They've set 27 problem bears free and tracked them for a year with GPS collars. And they did the same with a control group of what you consider good backcountry bears not causing problems.”

Dr. Joe Clark - “We thought there were two kinds of bears, front country bears and backcountry bears, and that 95% of the bears were thought to be backcountry bears, you know, bears that went about through business, living in the woods and had very little contact with humans.”

Reporter - “Those front country bears are the ones that live close to countless cabins, dumpsters and backyards where they can find an easy meal. That's why the city of Gatlinburg took a proactive step in 2000, created the only ordinance zone along the Smokies that requires bear proof trash cans.”

Bill Stiver - “The thought process was, if we had a boundary that was bear proof that maybe they wouldn't go beyond it, if they didn't find food and garbage.”

Reporter - “Now that the GPS study is done, these collars showed whether it's a good bear, conflict bear, front country, back country, it doesn't matter. Almost every single bear leaves the park to find food.”

Bill Stiver - “What was surprising was how far out into the communities these bears are going.”

Reporter - “And it's not just males roaming in search of a mate, but even females with cubs will travel long distances.”

Bill Stiver - “We would never have seen this with old technology. A female bear we caught in Elkmont campground. She took off looking for food. Went all the way up near Pigeon Forge. She looped over here, spent some time over at Walter State Community College, through downtown Sevierville. Downtown! These bears are moving from one side to the other and in and out of the park all the way across the park.”

Jessica Braunstein - “She's not getting food in Gatlinburg. Doesn't mean she's not going to go to Cataloochee, or go to Cosby, or go to Townsend.”

Reporter - “In Gatlinburg, biologists say that ordinance zone was a great start in 2000. Now it's not even a speed bump.”

Bill Stiver - “Things have changed a lot. You got a lot more people. We've got a lot more bears and we've got a lot more visitors.”

Reporter - “Scientists estimate there are 1600 bears in the park, triple the amount in the 1990s, and the amount of people living in counties around the park has increased by 120,000.”

Ryan Williamson – “One thing that our technology has showed us, there is no *farther and deeper* into the woods for the territory that these bears cover.”

Dr. Joe Clark – “There are very few bears who are not impacted by what goes on outside the park. The park is huge, but it's not big enough to have self-contained bear populations. The study makes a myth of some long time assumptions. Biologists say it requires people to change their mindsets, for bear proofing their yards, and government policy on trash.”

Jessica Braunstein - “That needs to be safe for both the visitors and for the animals.”

Ryan Williamson - “Bears are expanding. For bear proofing, we are behind the curve.”

Reporter - “These maps and this study redefine who lives in bear country in East Tennessee.”

Ryan Williamson - “And the black bear is one of those iconic things that we want to pass on to protect it for our future generations to enjoy.”

Reporter - “In the Great Smoky Mountains, Jim Matheny, WBIR - 10 News.”

Bill Stiver - So one of the take homes from our research was 90% of the male bears and 50% of the female bears that we put collars on left the park. So if we have 1900 bears, the majority of our bear population is moving out of the park and engaging people in our community, which again kind of stresses why we need to work with our state agencies to message about BearWise.

And of course, when they go out of the park, these are the kinds of things that happen in the communities around our park. The video mentioned this, and I'll mention it again. I've been at the Smokies for 32 years and a lot has changed. When I first came here, the bear population was 500. Now it's 1900. When I first came to the Smokies, visitation was about eight and a half million. And this chart says 12 and a half and now it is 14. And the residents in Sevier County alone has doubled. Not to mention the new hotels, cabins, restaurants, everything else that comes along with it. As a result, human-bear conflicts, in the park specifically, have increased over time. Over my career it's an upward trend. And we're also seeing what we call low frequency, high stressful incidents becoming more frequent. These are bona fide bear attacks. The first 24 years of my career, we had four. The last seven, you can see here, we've had five. This includes a human fatality, a couple of people attacked in hammocks, human scavenging, just a lot more of those phone calls you really don't want to get. They've just become more frequent.

I was surprised and really happy to see this. I actually stole this slide from our deputy superintendent. We were at an all employees meeting a couple of years ago and the park management team was sort of outlining their priorities in terms of protection and resource protection. And one of the management team priorities, a special focus priority is BearWise, focusing on BearWise and the issues. They recognize all the things that I just mentioned to you as a priority for our park management team.

Now, being part of a task force is nothing new for us. Actually, and I'm going to say this and don't airhorn me here, but in 1989, there was a group called the Gatlinburg Problem Bear Task Force. And the members of that task force were Tennessee Wildlife Resources Agency, the city of Gatlinburg, the National Park Service and the University of Tennessee. And they were focusing on the same issue. Why do bears come into Gatlinburg? Over the years, well, first of all, they identified quite a few challenges. But over the years, they did have a few good accomplishments. One is a shared position that still exists that's co-funded by the city of Gatlinburg and Tennessee Wildlife Resources Agency. The city ordinance, which you saw on the video that still exists. And there was actually a proclamation where you cannot willfully feed bears within that ordinance. But it is not

illegal to feed bears in the state of Tennessee. So if you're outside of that ordinance, you can actually feed bears. And that's one of the things that our task force that Dan mentioned is actually working on now.

So one of the more positive things that we have done in recent years is we've renamed that task force. It's now called the Smoky Mountains BearWise Community Task Force. And as Dan mentioned, it's a task force that is comprised of local business owners and NGOs. And Dan and I are just, we're just advisors and we're just like, here's the things that need to be done to reduce human-bear conflicts in our communities. And this group has put together a flier and they're actually having a meeting with some local politicians here sometime in the next week or two to make a pitch about some different regulations and laws, but specifically the one about feeding.

We've started to incorporate BearWise into our literature. This little flier, Bears are Dangerous, you see down here in the corner, it now has a Learn More at BearWise.org. This Smoky Mountain Black Bear book was recently revised, and it has BearWise information in it. In fact, this is a page from that book on BearWise. Again, we have 14 million people coming, people from all over the United States, all states that are fostering or promoting BearWise. And so we're hopeful that they will have read that information before they come to our region. And more recently, there's actually a new children's book that's coming out that's going to have BearWise information in it and in fact, Linda, Lavon, and I and the author of this book, we worked together to come up with this cover to show a behavior that's more positive. Right? This girl's watching a bear from a distance with binoculars, something that we're trying to encourage people to do. It's a big issue we have, people willfully approaching bears in the Smokies.

Now, the last thing I do when I talk to a group about BearWise is I make them pull out their phone. So everybody here pull out your phone. I know you're not supposed to be, but we're going to do this little exercise because it's something I do every time I give a BearWise presentation. All right, I want you to go to your search engine and I want you to type in the word BearWise.org, and I want you to raise your hand when that comes up. All right. This gentleman right here. Everybody raise your hand. I've just taught you the quickest way to get information if you have any human-bear conflicts. Right. So I teach that to every audience that I go to. I make them get their phone out and pull it up and pull up BearWise.org. So you right here, I think you were number one so you're going to get a prize when you come see me afterwards.

All right. Real quickly, before Ashley gets up here to talk about BearWise communities, one question that we get is how is everything organized? What's the structure of the oversight? And I'm going to give just a real quick three slides, if you want to get with any of us to talk to us about that, we'll be more than happy to give you more information. But right now, BearWise has 34 states that are members and these are the states that fund BearWise. And as was mentioned earlier, the Association Fish and Wildlife Agencies has the oversight, which I won't go into detail why, but that was a very important step for us to be able to move from the southeast into a national program. So we're very thankful that that AFWA was willing to do that. And one of the things that AFWA and all of us really want to see is to make sure that every member state has a voice. And so to do that, there's an oversight committee that has representation across all of North America that determines the scope in order of the projects.

And so this nice slide is how sausage is made, so to speak. So I'll just real quickly mention a couple of things. There's two arms to what we call the president. The BearWise president's task force, which will be in place for two years through AFWA. Then they will decide where BearWise goes within the organizational structure of that time. The administrative arm includes representation from AFWA, which would be the president who was most recently, Tony Wasley, who all of you heard from this morning, and the chief operating officer, John Lord, who is here at the meeting getting a crash course in bear conflict management. So that's AFWA.

We also have a director from each of the associations. There's four associations in AFWA and there's a director from each of those associations. And then on the other side, the oversight committee. This is the

committee that determines the scope and what we're doing, what we're working on. This is a committee that vets all the information, makes sure everything is up to date scientifically and determines what we're going to work on prioritizing. Each association has two black bear biologists and if you're working with the state wildlife agency and if you're a member, these are the people who you will contact and give your input to. And all of you should have already heard from these folks for this year regarding that information. We also have the marketing creative aspect of it, which is Linda and LaVonne. We also have a member state outreach specialist that is going to just give input from that field and outreach information and education. And we also have a seat for a member state grizzly bear specialist. A lot of questions about how grizzly bears fit in to BearWise. BearWise is about black bears. All the silhouettes are black bears. We talk about black bears a lot. There's a lot of good information that's already being created about grizzly bears. But we also know that our people that use BearWise go visit grizzly country. And we don't want there to be confusion when they get there. So the idea is, and this is still in the early stage, but the idea is that this person will take the lead role in working with those other BearWise groups, excuse me, those grizzly groups and member states that have grizzly bears to make sure that the BearWise site does a good job of directing people to all the great resources that are already out there and available regarding grizzly bears. So with that, I will turn this over to Ashley. And if you have any questions about any of that, especially this organizational chart, please see me later. Thank you.

Ashley Hobbs - All right, guys. I think we ran a little long, so I have about half the time I'm supposed to, so you're about to see some real speed here, okay. But I'm going to be very vague.

My name is Ashley Hobbs. I'm the assistant black bear biologist for North Carolina Wildlife Resources Commission. I'm speaking on behalf of our state today, but also on behalf of Florida as well. Dave Telesco from Florida couldn't make it here today. I'm going to kind of show you a compare and contrast of two states working at the community level. So BearWise communities. This is a relatively new program. It is only implemented right now in two states. Just because you opt in to BearWise doesn't mean your state also has to have BearWise communities. It's a voluntary program. We also do things a little bit differently in each state. Florida has had some version of this for many years now, so we use that in North Carolina as a reference point and we built upon that. So one of the big differences is in Florida, they're going to ask you as a community to address primarily trash. And they also have some funding in place in some areas to kind of subsidize bear resistant trash cartse. In North Carolina we have none of that. And in fact, a lot of the places that we need to target don't have something like a homeowner's association. They're not very affluent communities where we really, as managers would like to get into.

So, in North Carolina, we went a bit broader and a bit more flexible as well. In North Carolina, when a community approaches me, I ask them to address trash, I ask them to address wildlife feeding, and I asked them to come up with a way to track and respond to bear activity within their community. So those are the three requirements in North Carolina.

In Florida, primarily, if you can address trash, you can become a BearWise community. So here is how we kind of take it step by step in North Carolina. If you'd like a more detailed version of this I have a document at the BearWise table and I have some on my person too, just let me know. But essentially, we typically get approached for our communities after there have been break-ins in that community, after we have bears and dogs interacting in particular, or you have people being bluff charged in the community. Those are kind of the main drivers of people approaching us to ask for more information. Once they come up to us and we will meet with them, we'll come up with action items; how can we address trash? How can we address wildlife feeding, and how are you going to monitor activity within your community? And so we'll kind of talk through that. This process is very similar in Florida as well. And then we're going to talk about how, once we've decided how

we're going to do it, it's going to be how are we going to keep that going? How are we going to enforce those things?

In Florida, they would very much prefer that you have some sort of fine or punishment in place if you're not following the requirements. In North Carolina, as I said, the places we're trying to target the most, where we would most like to have BearWise implemented, don't have an HOA to enact a fine if you aren't, say, complying to put your trash out before a collection day for example. Instead, I ask people as the bare minimum to follow up with people who are noncompliant, with education. And so I also put committees in place in each of my communities. It's very small, just a few people, but they're going to be able to drive education within that community and for the greater community as well. They're serving as BearWise ambassadors and then they're also going to track activity and respond to it with BearWise resources. So, for example, if somebody has a bear in a bird feeder, they report it to their BearWise committee, That committee member will respond with maybe that *Attract birds, not Bear's* flier. So getting that information into people's hands quickly. And then each year we're going to keep checking in with them and make sure we figure out what's working, what's not, what has changed, and how we can keep that moving forward.

Here you see kind of a sliding scale that we use in North Carolina. Kind of good, better, best. So bare minimum requirements are storing trash in somewhere like a garage or a shed on non-collection days. And then always, always, always putting it out the day of collection, as you know. And then we ask people when it comes to wildlife feeders, bird feeders, deer, corn, things of that nature, they bring it in two weeks after they experience bear activity. And then we go all the way over to what I typically refer to as gold standard. So bear resistant garbage cans. Your retrofits. That's where you put in ordinances addressing trash and wildlife feeding as well. So we have a couple different examples here I want to go through, again very briefly.

In Florida, this is what their communities look like. They have five communities. One of those is a military base. But if you're familiar, people do live on military bases, and you see that they primarily address trash. Some of them have bear resistant options. Some of them have other methods that they have to secure trash. And all of these have to be enforced through some sort of fine or punishment.

And Hurlburt Field, this is an Air Force Base. Again, this kind of came to fruition before BearWise was a full concept. They secured trash, they train security, and they educated people not only who are living on their base, but who are on their base for a short term, contractors, people who are there just for a few hours and everyone is expected to comply with the rules around securing garbage on campus or on base. And then their security forces are now responding to human-bear interactions that are reported on the base. They put this in place and two years later, they saw a 70% reduction in the number of human-bear interactions reported, which is a significant success story.

In North Carolina we also have five different communities. One kind of difference is the communities in Florida have some sort of HOA or unifying entity. We don't really have that in North Carolina so far. I have one town, so of course they have a town council. I have one community with an HOA and the rest don't have a unifying feature really. No one can put together an ordinance or institute a fine, for example. And you'll see a variety of different ways here and how they meet those requirements to become a BearWise community. The town of Highlands was our first BearWise community. We really met them at the perfect time. They had a situation where they had bears that were dispatched in their town over approaching people, interactions with dogs, for example. So they had a lot of motivation to become more BearWise, to coexist with bears. They also, at that same time were doing an overhaul on their sanitation program.

So what we ended up doing is we changed the equipment that they were using so that they could use a bear resistant option and they had all of their resident's purchase bear resistant carts. This is a super affluent community so there was some pushback, but this was feasible for the average resident. They also changed

their commercial street cans to bear resistant options as well. And they put in ordinances. Their ordinances address trash. They are required to be in a bear resistant container if you are within city limits and want to use town sanitation. They also have ordinances addressing the intentional feeding of bears. If you want more information on that, please come see me. I'm happy to walk you through that.

And then lastly, they addressed short term rentals and how trash is handled at short term rentals, holding the homeowner liable for the actions of those short term rentals. So a lot of ordinances in place, a lot of gold standard practices here. And they already had what they call the bear task force in place. And this is a group that was already educating people on how to coexist with bears. So we utilize them to kind of keep the ball rolling with BearWise throughout the town. And really a lot of their activity has gone down, a lot of their human-bear interactions were centered around trash. Now that we've addressed trash, there's a lot fewer human-bear interactions happening. They also have activity reporting on their website. So when they send out a report, that location is put on a map and they get to see in real time where bears are around town. So they can do something as simple as take a different route to walk their dog that afternoon. So this has been a real success story for us and we're coming up on about a year of them being BearWise. We have had a lot of success, but it's not all sunshine and rainbows. A lot of this is like herding cats. Probably for every community you have that comes on board and does become BearWise I have two or three others that were interested, maybe we had a couple meetings and then it just sort of fizzled out. And that's sort of the name of the game here. There's a lot of juggling people and people's schedules, and retired people really like to just go off to a foreign country for a month and then say, Hey, I'll get in touch when I get back. So it's hard to keep that ball rolling, that momentum going. And then particularly when you're looking at the different incomes around the areas you're trying to target, not every BearWise practice seems attainable to some people because of their income levels. Not everybody has garages, especially in those places in North Carolina we're trying to target.

And then, like I spoke about earlier, a unifying structure like a home owners association certainly makes it a lot easier when you have that one basis for communication and implementing ordinances and fines and bylaws, etc.. And then you have people's perceptions of black bears. We kind of touched on this earlier today, but some people see them as these cuddly little creatures and they think that if they are practicing BearWise basics around their home, they're going to see bears less and that's unacceptable to them. And then I have people who are terrified because they saw a bear on their ring camera at 3 a.m. and they think that there's a huge public safety issue going on in their neighborhood and they don't feel like the BearWise basics are enough to address that safety issue, that perceived safety issue. And then everyone in between. But oftentimes those two ends of the spectrum tend to be loud voices, and sometimes that can dissuade the community from moving forward. And then you kind of have this other issue here where we have these communities that do move forward. We are able to get them into place and people around them aren't necessarily acting in the best interests of the bears.

So you have people who are really putting all their effort into being good ambassadors of BearWise, coexisting with bears, and other people who come by and are being the complete opposite. So it's definitely an uphill battle at times. And it's not just for communities. I do want to point out that we do have several other entities, especially in North Carolina. We asked Sierra Nevada brewery. This is a big tourist destination. We get a lot of those short term people that we can reach with that BearWise message through their tours. They also have some messaging on their campus, and they have converted all their trash cans to bear resistant options. And then we have a couple of small colleges on there. We have a summer camp on there. Hopefully some state parks will come on board, and campgrounds will come on board as well. And I have a few hotels that I'm working with right now to kind of, again, get the short term people on board. So it's not just communities. We are expanding and trying to fit together all these little puzzle pieces in order to make a broader picture of BearWise.

Sara Holm - Thank you, guys. We wanted to hear from Ashley, so we went a little bit long, but we have time for questions, and we now know how the BearWise program builds bridges, promotes partnerships and creates communities. Well, let's ask them some questions.

Questions & Answers

Question - Hi, I'm Maria Davidson with SCI. Linda, when you showed your slide, when you introduced that topic, remember we brought on board the dogs and bears, and we talked about some people might not like that. And you mentioned, I can't remember your words, that there was a lot of heated something from the media. What was it? I don't remember.

Response - The media was extremely interested in this topic, probably because we all know that interactions with dogs are a trigger and that the media was very interested in how do we promote this information. The media can't link to a PDF on a website. So we went and took the PDF information and turned it into a web page so they could link to it.

Question - Hi, I'm Doris with Cinema County Wildlife Rescue. I'm curious as to why the state of Tennessee allows bear feeding.

Response -The state of Tennessee does not have a law against feeding any wildlife. The only regulation is that you can't, well feeding wildlife on private property. You can't feed wildlife on wildlife management areas, and you can't feed wildlife in that ordinance zone that Bill mentioned. And that's where we are in Tennessee, the legislature has never passed a law making it illegal.

Inaudible comment

Response -Tennessee isn't alone in that. I will add that we would like to see that changed.

Question - I am a member of a homeowner's association community on Donner Summit and I understand California is now a BearWise working group. So how would we, who would we contact to become a BearWise community in California?

Response - Is there a link on the site LaVonne? We can give you that information, just come back to the BearWise booth, but the standard is going to be California. We're still working through getting all that finalized there, representation and stuff, but if you're interested in something in your particular state on the BearWise site, each state has a contact person for their state. You can click your state and that will get you to the link, but I'm not sure that California, they're very, very new to the program, so they may not be on there yet.

Question - Oh, my name is Barbara and I live in Roaring Fork Valley of Colorado, which is Aspen, down to Glenwood Springs. I live just eight miles outside of Aspen. I have a quick question. Have you actually, I loved your presentation, our population in summer triples pretty much and they're there to hike up, go up into the wilderness, you know, bike, party. And I find what's frustrating is there's information out there. There's just lots of information that can go to web sites and different things. But did you ever find, do you find that the people think it's too draconian? Number one, to make if you rent your house, you must provide the information, even make that renter sign it, or if you have a lodge or a hotel, are you giving out? We have to you know, look into all of this. But one of the things that somebody said was a little draconian, it was to hold homeowners responsible if something happens. I find it not that way, but do you get any kind of feedback on that?

Response - Yeah. When dealing with legislatures, sometimes it just depends on who you actually talk to, to get that ball rolling and are they on the same page as you? But it's going to vary depending on who you're talking to, what level you're talking to them at, for example.

So for context, in Buncombe County, about 42% of the calls for the state come from one county in North Carolina each year. And so that's something that we're working towards. I'm even trying to do kind of the backdoor way, where maybe we can't make that a requirement, but maybe I can get companies that do short term and long term rentals to adopt those policies and become a BearWise business. So we just try to approach it from every angle, and it really just depends on who you're dealing with and how motivated they are and probably their experiences as well.

Question - Hi, my name is Erin Edge and I'm with Defenders of Wildlife out of Missoula, Montana. And I guess this might be a clarifying question. You had mentioned having somebody come on the oversight committee around grizzly bears. And one thing I was wondering is, it sounded like you were going to maybe just have something on the BearWise website that says go here for grizzly bear information. But I guess I'm a little bit concerned because some of the communities we work with, a lot of them, we can't talk about black bears without talking about grizzly bears. And so if we're saying, you know, BearWise has all this great information and then there's a link on there, it says go somewhere else for grizzly bear information, that feels like it could feed some of the confusion. So, I don't know, maybe I misunderstood how you presented that, but that was just one thing I thought of.

Response - Thank you for that. I appreciate you bringing that thought up. And you know, it's tricky because we don't want to reinvent the wheel. There is a lot of good information that's out there on grizzly bears. But at the same time, we know that the bulk of the users are there for black bears, but they also do travel to grizzly bear country, and we want to make sure they understand that there are different expectations, there's different things about the two species that they need to know. And how you get that information to those people, we've still got to figure that out. And, ideally the path of least resistance would be the best way to go. We don't have the funding to create a bunch of new stuff and there's no need to because it's already out there. So that's why we mentioned that seat at the Oversight committee. With grizzly bears we'll most likely will create a subcommittee to bring in some of those other groups like the IGBC and other states is kind of what we're talking about doing. That's the idea. But there's still a lot to do and those thoughts are definitely be considered. Thank you.

Question - Hi, my name is David Diamonds. I'm from Bozeman, Montana. I'm with the Interagency Grizzly Bear Committee. And appreciate that question from Erin and that response from Dan. The IGBC will be 40 years old next year. Some of the success that you heard from Chris Servheen this morning is part of that. And it has that single species focus because of the recovery aspect. But for the managers that work in that area, of course, it's two species that you're responding to, not just one. So I think maybe there's just a misunderstanding there. I guess I would like to take that olive branch and agree that we should be working together. And because the difference is places that have one versus places that have two, and there's a lot in common. The second question I had was on evaluation, and I feel that Ramona sort of raised the bar for all of us this morning on really thinking carefully about what does work, what is needed, who are the audiences. Obviously you want a universal set of messages, but they also have to work in all of these places that they need to get to. And then my third question is on recognition. And that was the last piece that was just presented on community recognition. And again, I just want to point out that you heard a different model this morning from Chris. This BearSmart community recognition. That's the British Columbia model. There are ten communities in that province right now that have that formal recognition. The IGBC states are considering that model where there's that series of steps and it's a little bit different, I think, than this BearWise program. I think it is still state by state but I really would like to spend some time and dig in on understanding the differences and benefits and risks of creating the incentives communities need to move forward.

Response - Thank you. As far as evaluation goes, if we went back and dug into files from the different folks at the Large Carnivore Working Group and pulled stuff out from the beginning, you'd see things on the wish list.

You would see what kinds of things we're doing or what isn't working. What can we change? A lot of the things that LaVonne gathered through the Google Analytics and the questionnaire really helps a lot. And hopefully at some point we'll have some funding available, either through grants or through store income and, things like that, maybe we can fund some research to look at that because I personally think it's very important. There's no point in continuing to push a particular flier or a particular slogan if it's just confusing people that are not using it. So yeah, that's very important. And then in Ashley's defense, she felt pretty rushed there because the rest of us were a little long winded and she didn't get a chance to say as much about the recognition program as I know she wanted to regarding your question. But one of the things that we learned really quickly in the Southeast was that, I kind of alluded to it in Tennessee with the partnering with ABBR, each state has its own set of resources regarding what kind of time and money and manpower they have to put into monitoring and coordinating a recognition program. So that's been the model from the very beginning. At the BearWise site level, each state makes a determination whether or not they want to develop a program. If they do, they develop the criteria for their state because they're the ones that have to police it. The things that BearWise asks of the state is to make it a recognition program and not a certification. I won't go into those details. And so each state looks at a lot of things. I actually alluded to it, income of the community. If the community can only afford retrofitting cans, but it's keeping bears out then if North Carolina is fine with that, then that's great. So that's kind of where we are on that.

I just want to say we do not have the funding in the budget to do all the formal research we would love to do, because actually that's part of my background. We get a lot of feedback by having BearWise. Every state has a member rep, and we have a technical committee. They meet with all their member reps. We ask them what are people asking you for? What kind of questions do you get, what information do you need? And then we get that same feedback and input from the people who use BearWise because we collect all that information before they are allowed to download our free materials. So it's not as good as having a formal research study out there, but it's a lot better than let's do this. So I think that is what is driving us right now and we will evolve and move forward and that's what we're interested in, is putting out information that you can all support and people will use.

An Analysis of Human-Bear Conflict in North America: 1880 to 2020

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We present an analysis of human-bear conflicts that occurred in North America from 1880 to 2020. We collected 2,178 human-bear conflict incidents, consisting of 270,565 data entries, from various sources available to us.

We found that human–bear conflict incidents are rare, averaging 15.6/year across the study period, though increasing to 25.9/year in the current decade. Grizzly bears (*U. arctos*) make up the majority of incidents (69%), followed by black bears (*U. americanus*; 25%), and lastly polar bears (*U. maritimus*; 2%). Sixty-nine percent of incidents occurred in the United States (58% of those in Alaska), and 31% in Canada. Ten percent of incidents resulted in death of a person(s), and 22% resulted in serious injury.

The majority of incidents are classified as surprise encounters (32%), but a significant percentage were also caused by a bear being curious (28%). The most common activity being engaged in when an incident occurred was hiking or walking (30% of incidents), but hunting (17% of incidents) and at a campsite (17% of incidents) were also significant. Although females with cubs comprised a significant proportion of incidents (24% of all attacks), single bears were responsible more than any other cohort (63%). There is a notable difference between black and grizzly bears however, as 76% of black bear incidents involved single bears (13% involved females with cubs), while only 58% of grizzly bear incidents involved single bears (29% involved females with cubs). This may reflect a higher propensity for black bears to engage in predatory behavior, which is further reflected in the difference between black and grizzly bear incidents that were judged to be “possibly predatory” in nature (30.8% for black bears versus just 5% for grizzlies).

Both firearms and bear spray were effective, but not infallible tools for deterring or de-escalating bear attacks. In cases where a firearm was present, it was successfully used to deter or de-escalate an attack in 61% of cases, and bear spray was successful in 67% of cases. We are confident that our research, including these and other insights will prove an important source for future human-bear conflict resolution techniques and bear safety messaging for wildlife managers and the general public.

Bearenheit 451: Evaluating the Role of Harvest to Stabilize or Reduce Crop Damage Conflicts

Andrew Tri, Minnesota Department of Natural Resources

The relationship between regulated black bear (*Ursus americanus*) hunting and human-bear conflict seems to be muddled in the literature. Some studies show no relationship between harvest and conflicts, while others show that harvest can be effective at limiting or preventing conflicts from growing beyond current levels. In 1987, Minnesota became one of the 1st states to enact a permit-quota hunting system to manage the bear population. We designed regulations to allow for a “no-quota” zone in which the number of hunting license were unlimited in areas outside traditional bear range. The idea was to allow for increased management flexibility, reduce crop and property damage, to prevent further expansion of bear range into agricultural areas, and give hunters the opportunity to hunt every year.

Crop damage complaints (primarily corn damage, but sunflower and other crops as well) in Minnesota remain a perennial issue. Minnesota is the 2nd biggest sweet corn producer in the US, and 4th overall for total land area planted in corn (3.4 million ha in 2021). There is more corn planted here now than ever; area planted in corn, yields, and planting density have increased many-fold over the past decades. Crops are difficult to secure, relative to other attractants, so we have had to create a holistic approach (using both lethal and non-lethal methods) to reduce or maintain low levels of damage. Under this strategy, landowners have the following options: hazing or killing the bear under state statute, shooting permits, using a licensed hunter to take bear prior to the season, trapping (no longer used), or receiving technical advice about energized fencing, propane cannons, field planning, and planting options.

Our overall question was to investigate the role of hunting in crop damage issues in Minnesota. We have complaint data from the 1980s–present on crop damage calls and can compare various hunting regulations on crop damage complaints. Since then, the bear population doubled and then halved again statewide. Statewide complaints have dropped from the peak of ~4,500 annually in the early 2000s to 670 annually over the past few years. This decline was commensurate with population decline and change to our wildlife damage policy and messaging (now ~90% of the bear calls are handled over the phone).

We initially hypothesized that unlimited numbers of hunters in the no-quota area would have lower success rates but could keep crop damage from expanding, keep bear populations outside traditional range low, and prevent bears from expanding far beyond their 1980s and 1990s ranges. Although the proportion of damage complaints have remained a stable proportion of total complaints, the no-quota zone experiment was not successful in keeping bear populations low nor did they prevent bear range from expanding. The proportion of complaints of crop damage (those investigated on-site) are higher now (13%) than in the late 1980s (10%) and early 1990s (7%) but has been a surprisingly small and stable proportion of total complaints over the past 40 years. Through a variety of factors, we unintentionally created a popular hunting area with relatively high success. No-quota hunters make up 50% of the total number of hunters statewide and take ~1/3 of the annual bear harvest.

Agricultural producers in the no-quota area have been able to get a licensed hunter on-site to remove a specific bear without much issue. The same cannot be said for producers in the quota areas. For the 2020 and 2021 bear seasons, we created bear permit area 451 (a quota area with an unlimited number of permits) to

determine if drastically increasing the number of hunters in a small area would have any effect on crop damage complaints. We compared crop damage complaints in the area for the 3 years prior to the zone's inception with crop damage complaints in growing seasons after the regulation change. We evaluated hunting success and density of these hunters (before and after the regulation change). We are now at a crossroads with what decision to make next: (1) revert the unit back to quota area, (2) keep the unit (status quo), or (3) convert the area to no-quota.

Regulated hunting is one tool that can be used to influence crop damage. It is a broad tool that is not a good fit for all situations, but one tool among many. If part of a holistic conflict management program, it can be a viable option to reduce crop damage or at the very least, stabilize it at current levels.

Experimental Test of the Efficacy of Hunting for Controlling Human-Wildlife Conflict

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Human-wildlife conflict can cause major declines in wildlife populations and pose a threat to human safety and livelihoods. Large carnivores are among the most conflict-prone species because they range widely, eat human-associated foods, and can pose a risk to human safety.

Numerous approaches have been proposed for reducing conflict between humans and carnivores. Legal harvest of carnivores by licensed hunters is an attractive method to attempt to control rates of conflict because, if successful, it would be cost-effective, straightforward to implement, and could meet multiple wildlife management goals simultaneously. However, there is mixed evidence for the effectiveness of harvest in reducing conflicts.

We leveraged a unique management project in Ontario, Canada, in which a new spring black bear hunting season was implemented in selected wildlife management units in addition to the existing fall season. We examined human-bear interactions and incidents (*sensu* Hopkins et al. 2010) before (2012, 2013) and after (2014, 2015) this implementation in both treatment and control areas. Further, using data from 2004 - 2019, we examined the longer-term patterns of human-bear interactions and incidents before and after this management project when a spring season was implemented throughout the entire province beginning in 2016.

Harvest increased significantly upon the implementation of the spring season in selected units. However, there was no concomitant reduction in interactions or incidents and, in fact, these were higher in areas with the new spring season relative to control areas.

Human-bear interactions, incidents and harvest were all strongly related to the availability of natural foods in all analyses. These results show that regulated, sustainable harvest was ineffective at reducing human-bear interactions and incidents in the near-term and might have increased both. We discuss potential mechanisms for this increase.

Our results support a long history of research showing that natural food availability is a primary driver of human-wildlife conflict. Programs promoting coexistence between people and wildlife, including education, capacity building and management of unnatural food sources are likely to be the most successful at reducing conflicts between people and bears.

A 20-year Retrospective of Aversive Conditioning of Grizzly Bears in Kananaskis Country, Alberta, Canada

John Paczkowski, Alberta Environment and Parks

Claire Edwards, University of Alberta

Jay Honeyman, Alberta Environment and Parks

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Aversive conditioning is a grizzly bear management tool which has been employed in the Parks and Protected areas of Kananaskis Country, Alberta, Canada for over 20 years. The aversive conditioning program involves applying different conditioning stimuli to grizzly bears in an effort to change their behaviour and maintain public safety.

We will discuss the context, evolution and operational requirements of the program. We reviewed and summarized over 8,000 grizzly bear aversive conditioning records collected between the 2000 and 2019. Most of the over 30 grizzly bears involved in the program were habituated female grizzly bears that demonstrated a strong fidelity to the facility zone, an area of high human visitation and recreational infrastructure. Juvenile and young bears typically required more aversive conditioning actions, while conditioning frequency diminished with age.

None of the bears involved in the aversive conditioning program were involved in serious human wildlife conflicts causing human injury or death. The aversive conditioning program has also reduced the need for local facility closures and management removals of bears, which may contribute to greater reproductive success. Survival and reproductive success of bears involved in the aversive conditioning program were relatively high, which may contribute to a locally stable to grizzly bear population. Bears that left the operational area of the aversive conditioning program, specifically protected areas, were often subject to a higher frequency of management actions and removals.

We will also discuss the efficacy of different noise, projectile and contact projectile stimuli as well as the use of Karelian Bear dogs.

The Kananaskis aversive conditioning program is a model of how management actions can achieve both public safety and conservation objectives in a high recreational use landscape, specifically parks and protected areas.

Aversive Conditioning of Grizzly Bears in Kananaskis Country, Alberta, Canada

Claire Edwards, University of Alberta

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Parks and protected areas provide important refugia for populations of grizzly bears (*Ursus arctos*), which have a threatened designation in Alberta, Canada. In protected areas, bears frequently experience neutral events with humans, leading to habituation. This behavioural adaptation by adult female bears may enhance offspring survival by shielding them from infanticidal male bears, but habituated bears can pose challenges for wildlife managers who are also tasked with visitor safety.

Many protected areas address human-bear conflict with a suite of tools that includes aversive conditioning and hazing. These tools apply negative stimuli via noise, pain, or pursuit to bears with the goal of increasing wariness and reducing proximity to people, and they have been used in Kananaskis Country, by wildlife managers from Alberta Parks and the Wind River Bear Institute since 2000. Onset of this approach coincided with a corresponding 50% reduction in grizzly bear mortality and relocations within the core of the park area from 2000 to 2008. Here, we quantify conditioning tools and protocols and relate them to bear responses both immediately after application and over longer time periods.

From 2000-2019 teams of 1-3 wildlife managers from Alberta Parks and the Wind River Bear Institute aversively conditioned 37 marked grizzly bears, in a total of 4,949 conditioning events, with at least five conditioning events per bear. Individual bears were treated with between one and five conditioning tools per event (mean = 2.19, SD = 0.92). Individuals were treated from one to 14 years, females were conditioned for an average of 4.61 years, and males for 1.62 years. Bears were conditioned using 20 different negative stimuli, which we grouped into four categories; approach (vehicles and foot), noise (sirens, horns, barking dogs, shouting, and clapping), and projectiles (crackers, screamers, rubber bullets, bean bags, and paintballs). Behavioural responses by bears to conditioning were recorded using 17 behavioural categories, which we condensed post hoc into five groups; unknown, assess, ignore, retreat, and approach.

We investigated the impact of conditioning tool types and specific methods within types. We further examined covariates that we expected to influence a binary response variable of a bear retreating, or not, from wildlife managers. Covariates included 11 variables associated with conditioning tools (e.g. total count of tools used in a conditioning event, time since last conditioning event, etc.) and 12 biological covariates recorded by wildlife managers in the field (e.g. age, sex, presence of cubs, etc.). Managers measured the response by bears immediately upon their arrival and after their conditioning actions. The most common immediate response to conditioning, across all categories of tool type, was retreat (93% of 4,949 actions). For the remaining events, bears either ignored or assessed managers, but they approached on rare occasions (18 events; 0.004%). In a logistic regression analysis examining the effect of tool type, bears were most likely to retreat when they were pursued, followed by when projectiles were fired. Bears were slightly more likely to retreat when they were approached, but they were more likely to be indifferent to noise. Within tool types, bears were more likely to

retreat when: they were approached by wildlife managers on foot, relative to in vehicles; projectiles contacted the bear relative to when they did not; and pursued with wildlife managers and dogs, relative to managers alone. Bears were also more likely to retreat with an increasing number of conditioning actions within an event and when they were closer to each of the wildlife manager and vegetative cover. Bears were less likely to retreat if cubs were present and more likely to retreat with advancing years in the program.

These results suggest that bears in Kananaskis Country learned to retreat from aversive conditioning and that this tool can help to reduce conflict-associated behaviour and support long-term residency by bears in this protected area. Aspects of this program might be emulated in other jurisdictions to advance non-lethal management of bears throughout ranges where bears and people share space.

Looking to Visitors and Experts to Inform Management of Roadside Bear Viewing in Peter Lougheed Provincial Park, Alberta

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Management of wildlife viewing in parks encompasses conflictual and coinciding factors including humans, wildlife, and landscape. As a master's project, bear viewing and its management was investigated using a case study of Peter Lougheed Provincial Park (PLPP) in Alberta, Canada. Located in the front ranges of the Canadian Rocky Mountains, PLPP is a destination that attracts visitors seeking nature and wildlife experiences. Bear viewing, which most often occurs along roadways, is a popular activity in the Park and surrounding area. Input was solicited from two related sets of actors: visitors who might witness or engage in roadside bear viewing and experts who inform or manage bear viewing. We were interested in investigating notions of risk to bears and humans and inviting perceptions of existing and potential park interventions.

Our three research questions were 1) how can roadside bear viewing best be addressed to improve park management and visitor experiences and to reduce risks to bears and humans? 2) what are the perceived risks associated with bear viewing in PLPP? and 3) what does the combination of this project's literature review and the empirical case study suggest about how best to manage roadside bear viewing in PLPP?

Bear viewing poses risks for both humans and wildlife. One such risk is the formation of a “bear jam”—vehicle traffic jams resulting from when drivers slow down/stop on a road to view bears. Bear jams can result in potential vehicular collisions, habituation of bears to visitors (potentially leading to their mortality or relocation), park resource implications, necessary management of visitor expectations and behaviours, and the need for additional effective communication and education (Herrero et al., 2005; Penteriani et al., 2017).

In PLPP, bear jams are mostly framed as a “bear problem” and managed via aversive conditioning (Government of Alberta 2011; Government of Alberta, 2020). Alberta Parks employs a breadth of bear safety workshops and materials; however, gaps remain in terms of general dissemination of responsible human behaviour guidelines and bear jam specific messaging (Government of Alberta, 2020). There is little dedicated signage or clear messaging about safe and respectful bear viewing practices. Some National Parks facing bear jam challenges take a more human-focused approach. The Wildlife Guardians program (Parks Canada) on-site education is an example (Parks Canada, 2020).

To examine the “human side” of bear viewing in PLPP, interviews were conducted with related experts (n=22) and carried out via an online survey of visitors to PLPP (n=380). The online survey was open from June to September 2021 and was shared largely through social media and non-profit newsletters, resulting in 380 completed surveys. Semi-structured interviews were conducted from July to November 2021 to solicit expert opinions on roadside bear viewing and its management. The survey collected demographic information and asked about bear viewing experiences, current bear-related messaging from the park and NGOs, management and aversion strategies in the park, and perceptions and attitudes about roadside bear viewing. Interview participants included a mix of Park staff and local experts in different positions including Conservation Officers, bear technicians, ecologists, communicators, local NGO members, and community experts to collect a diversity of vantage points and a range of expert experiences and opinions on management strategies and observed human behaviours relating to roadside bear viewing.

The results emphasize the need for a balanced approach—managing both humans and bears. Suggested strategies across both data sets include people management (adding no-stopping zones and/or closures; emphasizing enforcement; improving education, communication, and outreach), bear management (employing aversive conditioning), landscape and visitation management (reducing roadside attractants and modifying highway infrastructure; incorporating sanctioned bear viewing areas). Experts highlighted the need for clear and consistent messaging to encourage and enforce responsible bear viewing behaviours, and to inform visitor expectations (early on, in multiple ways, and consistently). This could include increased messaging (signs; online) on responsible bear viewing practices, safe bear viewing areas, in-person park communicators, and regularly collecting and incorporating qualitative data on visitor perceptions to inform management practices.

This case study occurred with purposeful sampling during one season of a very particular era (COVID-19 era with impacts on Parks, tourism, and recreation), limiting generalizability. Nonetheless, it contributes new information on bear jams in PLPP and can be contextualized within greater literatures. Data summaries and presentations are being returned to PLPP and the public to inform management on this type of human-wildlife interaction and its associated impacts, as well as greater discourse on bear viewing.

Benefits of Developing and Implementing an Agency Policy to Manage Human-Bear Conflicts

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Human-bear conflicts have been rising in the United States due to an increase in black bear populations and human populations. With the ability to work remote, more people are moving to suburban and rural areas and are new to living in bear country. Bears are also adapting to more urban environments due to convenient and abundant food sources.

State wildlife agencies are tasked with handling the increasing number of calls, educating residents and visitors, and making tough decisions about how to handle specific situations. Agencies must do all of this while prioritizing public safety and considering public perception. Several states utilize staff from multiple divisions, partner agencies, and even private contractors to respond to human-bear conflicts. There are many tools that wildlife managers use to respond to human-bear conflicts such as aversive conditioning, trap/release, relocation, humane destruction, education, and outreach. Tools are difficult to use without instructions.

This led at least ten states in the Southeastern United States to develop and implement policies or guidelines regarding human-bear conflicts. These policies or set of guidelines can be viewed as an instruction manual for all the tools in the toolbox. Two states that utilize a policy are Florida and Tennessee. These policies and guidelines steer their decisions, delineate staff tasks, and provide cohesive terminology. The policies were created by a team of staff members with input from multiple divisions within the agencies.

Agencies evaluated what needed to be included, what decisions were already being made and what would be sustainable going forward. Florida has a multiple page document and Tennessee has a one-page matrix. These policies look different but have many of the same benefits for staff and the agency.

Utilizing a policy can limit liability, guide key messaging and terminology for staff, create uniformity throughout the state, etc. Another benefit is that the policies can assist with public trust of the agency because they are based on science, experience, and public attitudes. While the policy holds staff accountable to decisions, it can also alleviate the scrutiny on individual staff members from the public and the media. There are many nuances to creating a policy and each agency will have differences based on history, demographics, etc, but reviewing current policies being used may spark ideas and encourage cohesiveness throughout the country.

Is a Bite Worse Than a Bark? The Best-Use Method of Karelian Bear Dogs in Hazing of Black Bears in Nevada

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Conflicts between humans and black bears continue to increase with the expansion of black bear populations into historic ranges coupled with growing development of the human-wildland interface. As these conflicts increase, the public is demanding more non-lethal methods for management of black bears.

The Nevada Department of Wildlife uses Karelian Bear Dogs (KBDs) as the main tool for hazing of black bears. Little scientific evidence is available, however, regarding the effectiveness of KBDs nor the best way to use them to help keep a bear on the landscape and out of conflict longer. With multiple agencies considering the use of KBDs for hazing of bears, the opportunity exists to evaluate the most effective way to apply the KBDs during releasing and hazing bears.

The goal of this project is to determine the effectiveness of hazing of black bears with KBDs on-leash versus off-leash when releasing bears that have been involved in conflicts with humans. We equipped 37 bears with GPS collars to provide post-release data on temporal and geographic changes in movement patterns following treatment. We compared responses of bears to determine the effectiveness of KBDs in changing behaviors and reducing conflicts between bears and humans, along with which treatment keeps a bear on the landscape and out of conflict longest.

Early analysis indicates an increase in the time before a bear re-enters conflict after treatment with dogs off-leash compared to using the dogs on-leash. The results of this project will provide guidance to other national and international wildlife conservation and management agencies that may be considering the use of KBDs as part of the best management practices available to them when managing bears in conflict with humans.

Lessons Learned: Thirty Years of Human-Bear Conflict Mitigation

Jay Honeyman, Alberta Ministry of Environment and Parks (retired)

I have worked in the field of large carnivore conflict for over 30 years in a variety of land bases including both public and private lands and protected areas in Canada and the United States. I worked as a private contractor and government biologist and focused primarily on grizzly bears (and by default black bears). It has included long-term aversive conditioning programs on both protected areas and private lands, educational programs targeting communities, government agencies, various stakeholder groups and individual landowners. Attractant management, both natural and unnatural, has been a centerpiece of the mitigation work across multiple jurisdictions.

These experiences have provided me a unique opportunity to see first hand what appears to work and what does not when it comes to preventing conflict between people and bears. The majority of mitigation successes over the years are a direct result of securing or removing both natural and unnatural attractants from bears. While this may seem obvious to many, examples abound of how we continue to focus on other techniques without adequately managing attractants first. Generally, the short answer to all of this is: Don't feed bears – intentionally or otherwise if we want to effectively share the landscape with bears. I would like to share examples of the successes and failures I've experienced over the years through a PowerPoint presentation and follow up discussion with workshop attendees.

Follow-Up Evaluation on the Effectiveness of a Large-Scale Effort to Use Bear-Resistant Garbage Cans, Including Automatic and Manual-Locking Cans, for Limiting Conflict in Durango, Colorado

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A major challenge in conserving American black bears (*Ursus americanus*) is to reduce conflict between bears and people in developed areas, where the greater availability of anthropogenic food sources, particularly garbage, can create an environment highly attractive to hungry bears. Bears that enter residential areas have a much higher probability of mortality due to vehicle collisions and encounters that can lead to their lethal removal. People are also impacted, including threats to human life and injury, damage to vehicles and property, and development of negative attitudes towards bears and wildlife management agencies. This problem is often exacerbated during periods of drought or because of late spring freezes, both of which can limit natural forage.

Over the past decade, Colorado Parks and Wildlife, the USDA National Wildlife Research Center, the City of Durango, and Colorado State University have collaborated on a large-scale experiment that tested the effectiveness of wildlife-resistant garbage containers to reduce conflict in Durango, Colorado. In 2010, a city ordinance requiring residences and businesses to secure attractants was issued in Durango. In 2013, manual-locking bear-resistant containers were distributed to each household in two residential sections of the city, while researchers monitored paired control areas. The experiment proved successful at reducing garbage-related conflict with bears in the treatment areas, relative to control areas. Consequently, after the study ended in 2016, the city bought thousands more automatic, self-locking bear-resistant containers and distributed them to residents in 2018 and 2019.

In this study we aimed to 1) provide updated information about garbage-related conflicts in the Durango study area, 2) evaluate the effectiveness of using automatic containers over manual containers, and 3) explore the use of occupancy modeling to better evaluate patterns of conflict. We systematically monitored: resident use of garbage containers; compliance with the city ordinance by fully locking a wildlife resistant container or by keeping all trash inside a secure structure; and the location, type, and frequency of occurrences of residential containers tipped (attempts) or spilled (conflicts) by bears following methodology used in the earlier study. We used a dynamic multi-state occupancy model to investigate the effectiveness of the automatic and manual containers in reducing bear use of Durango by using occurrences of tipped cans as signs of bear presence.

We found that the majority of garbage containers used by residents within the study area were wildlife-resistant in 2021. Of these containers, two thirds were automatic and one third were manual. Due to the city and CPW's efforts, the proportion of wildlife-resistant containers within the study area was higher in 2021

than any year between 2011 and 2016. The average number of weekly conflicts in 2021 was lower than any year between 2011 and 2015 but similar to 2016. Attempts followed similar patterns than conflicts but were more frequent than conflicts for the first time in 2021. The percentage of automatic and manual containers spilled by bears were similarly low in 2021. Using occupancy modeling could improve our ability to detect differences between both types of containers in reducing the probability of conflict. Preliminary results indicated that automatic cans had a lower probability than manual cans to be involved in either conflicts or attempts. Resident compliant use of containers, a major factor in the success of this intervention, increased across the study area from 2013 to 2021. Compliance was higher with automatic containers than for manual containers in 2021.

Our results show that efforts to provide Durango residents with wildlife-resistant containers have successfully increased garbage bear-proofing of the study area, lowered garbage-related conflicts relative to areas with little bear-proofing, and increased resident compliance with the city wildlife ordinance. Attempts still occurred in 2021, showing that bears were still present within the study area but for the first time since monitoring began attempts were higher than actual conflict, which likely is the result of automatic latching garbage containers. Using automatic rather than manual containers significantly increased the number of residents securing their trash, elevating compliance above the threshold of 60%, estimated by previous research to lead to a significant reduction of conflict in the city.

These results support previous findings that bear-proofing garbage is an effective technique to reduce human-bear conflicts in residential areas. Our method of quantifying attempts and conflict using occupancy models also provides a unique and potentially useful methodology for monitoring other areas attempting to reduce garbage-related conflict with enhanced infrastructure. Such findings should encourage cities experiencing problems with black bears to focus on bear-proofing garbage, particularly with the use of automatic containers when available.

Fence the Chickens and Lock-up Trash! Reducing Human-Bear Conflicts in Small Bites Through the Loaner Program

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Jay Honeyman, Alberta Ministry of Environment and Parks (retired)

In landscapes where carnivores and people overlap, conflict and human-caused bear mortality result. The majority of conflicts occur around non-natural, unprotected sources of food such as garbage, small livestock, poultry and grain. In Southern and Central Alberta, Canada, this is particularly true as the thriving economy allows people to move out of Calgary and settle in green zones and in small communities, in prime bear habitat.

Additionally, in the past decade, there has been a significant trend in rediscovering the pleasure and benefits of growing your own food. Many people raise chickens or other small livestock in their backyard and harvest their own honey, vegetables and eggs.

One of the biggest challenges in reducing these conflicts is that people react only after the damage has occurred and rarely play proactively. Furthermore, accessing a bear-resistant container or having the knowledge and the tools to build an electric fence creates a barrier and prevents the solution from being readily adopted and used by stakeholders.

In 2014, Alberta Environment and Parks (AEP) staff created two pilot projects for a loaner program. The objective of the program aims to reduce the financial and/or logistic barrier in accessing a prompt solution to resolve the immediate conflict. AEP staff would deliver residential bear resistant containers or arrive at a location to build an e-fence. After the initial loan period, AEP staff and the landowner discuss options to buy/replace the loaned equipment.

We will discuss our findings regarding the effectiveness of the program in: 1) addressing the conflict in the short term; 2) providing education and buy-in from residents; 3) lower the probability for the bear to return/cause more damages in the short and in long term; and 4) reduce the probability of the bear being killed or relocated. This collaborative approach is key to enhance education about human-carnivore coexistence, build momentum in proactive and preventative programs and get buy-in for the conservation of large carnivores.

Human-Bear Conflict “Hot Spots,” Conflict-Reduction Infrastructure Needs, and Information, Education and Outreach (IEO) Mapped in the Bitterroot Valley of Montana

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The Wind River Bear Institute-Wind River Karelian Bear Dog Partners (WR), in a collaborative effort with federal and state agencies, and local private landowners and businesses, have been assisting Montana Fish Wildlife and Parks (MFWP) bear managers to mitigate human-bear conflicts (referred to hereafter as “conflict”) and verify grizzly bear sightings, in Montana since 1996, and throughout the Bitterroot Valley (BV) of Montana since 2019. The work is conducted through on-site assistance at conflict sites and community education and outreach (IEO) efforts.

This project is a first effort to record data for spatial and temporal characteristics of bear observations and conflict reports in a shared database accessible to project collaborators for management actions and recommendations. This ongoing project will use the recorded data to create a layered map that includes conflict “hot spots,” conflict-reduction infrastructure needs, and IEO in the BV of Montana. The BV is situated between the Bitterroot and Sapphire Mountains, and is part of the broader Bitterroot Grizzly Bear Recovery Ecosystem.

The BV is considered a critical linkage zone between the Grizzly Bear Recovery Ecosystems (GBREs) of the Cabinet-Yaak, Northern Continental Divide and Greater Yellowstone areas. The BV has a large population of black bears, chronic and increasing conflicts, and within the last five years has seen an increase in documented grizzly bear signs and observations. For grizzly bear habitat linkage between the GBREs to be successful, it is critical that communities in the BV linkage zone are prepared to proactively mitigate conflicts by preventing bear access to human-associated foods and increasing public safety with bear-resistant infrastructure and non-lethal bear management techniques.

As grizzly bear and human populations expand simultaneously in the BV, understanding the spatial and temporal characteristics of these conflicts will facilitate targeted and effective management strategies for agencies and enhance public awareness of their role in reducing conflicts, increasing safety for bears and people. The data collected includes the conflict calls received/responded to, assistance and bear-resistant infrastructure needed/provided, and IEO presentations, which will be collated and projected on a layered map to share between wildlife agencies and the public.

The ongoing mapping effort will be used to create “bear buffer zones” (targeted conflict mitigation zones that are safe for both bears and people in the wildland-urban interface) in the BV. These bear buffer zones and conflict hot spots will be designated on the map in collaboration with current and historical data from James Jonkel (MFWP, R2).

WR biologists use Karelian Bear Dog, “Wildlife K9s” (WK9) as a management tool that provides more accurate and comprehensive data results, a bridge for facilitating open communication with the public, and increased safety while working. Key uses of WK9s on this project are: On-site assistance in identifying and securing attractants, finding bear sign; identifying presence or absence of bears; pushing bears out and away from human-occupied spaces, added safety and backup “manpower”, non-lethal deterrent method; and as IEO ambassadors engaging with the public to deliver bear safety messaging in a noteworthy way during on-site visits, presentations and field trips.

The introductory mapped data was collected during the 2021 field season and includes IEO and infrastructure assessments for the U.S. Forest Service - Bitterroot National Forest in Montana, responses to conflict calls and assistance provided to private landowners and businesses in the BV to secure attractants, and IEO focused on the communities of the BV from Lolo to Sula.

This is an ongoing effort that will serve as the basis for my Master’s in Geography Thesis at the University of Montana, which I expect to defend and publish in 2024. This ongoing effort will target human-bear coexistence, conflict prevention, management priorities, resources, and efforts in the BV.

The resulting map will be published and printed in the local newspapers, posted at local State Parks and superimposed on Missoula Bears’ Ordinance map and Bitterroot Bears’ website online, for public viewing. In addition, I will explore how to best utilize social media to share this information with the general public more broadly.

Collaboration between multiple agencies, organizations, and local communities is critical to the success of this project. Current collaborators include: Defenders of Wildlife, MFWP, Vital Ground, International Association for Bear Research and Management, Missoula Conservation District, Kodiak Cans, Bitterroot Disposal, Republic Services, Interagency Grizzly Bear Committee, Ravalli and Missoula County Schools, Ravalli County Resource Advisory Committee, and BV state and county representatives.

Numerical Model Approaches to Assess and Manage Human Injury Risk by Asiatic Black Bears

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The annual number of human injuries by Asiatic black bears (*Ursus thibetanus*) has been an increasing trend over a few decades in Japan, especially in the Tohoku region in the northern Main Island. For example in Akita Prefecture in the northern Main Island, 201 persons were injured or killed by bears between 2001 and 2020, whereas, more than 100 bears in average, and more than 800 at maximum were caught annually in the same period, of which more than 70% were conflict bears. The most significant cause of the increasing human-bear conflicts is a quick bear habitat expansion, however, its factors have not been clarified yet. Moreover, the other causes including human factors such as depopulation and farm abandonment are possibly influencing the increasing conflicts.

Quantitative approaches have not been practiced to assess and manage the human injury risk which can potentially support the policies and decisions balancing human security and wildlife conservation, although the similar approaches are already introduced for the other human security issues such as natural disasters. This study attempts to develop numerical models for use in human injury risk assessment and bear population management and to demonstrate the validity and limitations of the model approaches to support the policy and measures to reduce the human injury risk by bears.

The first approach is the geographical human injury risk assessment applying the MaxENT model. MaxENT (Phillips et al., 2006) was originally developed as a species distribution model and has widely been utilized in the species distribution prediction and its change analysis of both fauna and flora. We used MaxENT to model human injury risk i.e. the probability of accident occurrence from the explanatory variables of bear factors (habitat, habitat quality, vegetation, etc.) and human factors (population, urban area, roads, abandoned farms, etc.). The total of 196 accident points over 20 years in Akita Prefecture was used for the model training and validation.

Separated models by beech mast production levels (rich-beech and poor-beech years) achieved better model predictivities than an overall model. The most significant explanatory variable was commonly in-bear-habitat. Predicted human injury risk showed different dependency on the explanatory variables between the rich- and poor-beech years; the risk was higher and more depended on the human factors such as abandoned farm area and road density in poor-beech years. The human injury risk changes by the factor changes were predicted using the model to direct effective risk management measures. The smaller bear habitat extent in 1978 showed the lower risk than present, whereas the predicted farm abandonment increases in future showed the higher risk in poor-beech years.

The second approach is the dynamic and spatially implicit bear population simulation using an agent-based model which simulates the autonomous behavior of agents in a given environment. We modeled the life history (cub delivery, independence, migration and aging) of agents (female and male individuals) on cells having changing food conditions. The vital rates of reproduction, litter size and survival were defined to respond to the food condition (beech and oak productions, and the population of a cell). Individuals were allowed to move to the habitat cells of better food condition within a maximum migration distance, where the

priority of habitat selection was defined by age and sex. We experimented in several cases implementing food conditions (constant or probabilistically fluctuating) and hunting rules (random hunting or conflict bear kill). A set of the 100 simulation runs initialized by the observed habitat in 1978 and terminating in 2018 for each case was averaged to derive the ensemble mean population distribution.

All run cases reproduced the trend of bear habitat expansion by time as observed, however, no case reached the latest observed habitat in 2018 which partially covered the no-natural food cells. The cases considering beech and oak production fluctuation showed the strong influence of the food condition change on population size. Hunting cases demonstrated the stabilization effect of population size. The conflict bear kill case that hunts the individuals entering human residence zones was more effective to control the bear habitat expansion than the random hunting case, however, it may deform the age composition and decrease reproduction rate by killing more individuals of younger generations than random hunting.

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New Interagency Map Promotes Human-Bear Safety on the Kenai and Russian Rivers, Alaska

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The Kenai-Russian River Complex is a popular sport fishery on Alaska's Kenai Peninsula. Over 150,000 visitors arrive each summer to fish, photograph wildlife, camp, hike, and learn about cultural resources. The Kenai Peninsula is also home to over 600 brown bears (Morton et al 2013). A bear hair study found 39 individual bears utilized the Kenai-Russian River Complex throughout a single summer. This combination of bears and humans leads to daily encounters and opportunities for trouble. In 2008, eight bears were killed in defense of life property. In 2003, a major mauling left a young man blind.

To improve safety for humans and bears at the Kenai-Russian River Complex, the managing agencies formed the Russian River Interagency Coordination Group. The group consists of the US Forest Service, the US Fish and Wildlife Service, the Alaska Department of Fish and Game, the Cook Inlet Regional Corporation, and the Kenaitze Indian Tribe. These agencies work to establish communication protocols, mirror agency regulations, formalize laws, and develop educational materials that decrease human-derived bear attractants. I hold the position of Russian River Interagency Coordinator. My role is to promote cooperation and coordination in pursuit of these mutual goals.

In 2015, we developed a new map brochure for the Kenai-Russian River Complex. This comprehensive interagency effort provided an overview of the entire area. It allowed visitors to see options for recreation, cultural interpretation, fishing access and regulatory requirements on the same page. Previously, this information was spread over several regulatory booklets and visitor guides. This new map is available online at AVENZA, as well as provided to each group of visitors as they enter the campground and recreation area.

The new interagency map became available to visitors in 2017. Since then, we have had overwhelming positive feedback. It helps people navigate the area and comply with multi-jurisdictional regulations in place to minimize bear-human conflicts. Staff references the map when answering questions and enforcing regulations. Emergency Service personnel use the map to respond to emergencies. Lastly, by including the native language, the map raises awareness of the Sqiłantnu Archeological District and Native culture. By understanding the 10,000-year history of use, visitors are inspired to act sustainably so that future generations might also experience the natural beauty and richness.

This effort brought agencies together and strengthened partnerships on the Kenai and Russian Rivers. Every land management agency and owner can look at this map and see their resources represented in a holistic manner. The new map builds on many years of improvement in human and wildlife safety along the Kenai and Russian River area. Law Enforcement does not have to enforce regulations aimed at reducing attractants such as backpacks and retained fish as often as we once did. Visitors have an enhanced understanding of where these regulations apply and why they are important.

Bringing this project from an idea to a reality has been a huge learning opportunity and source of pride. It is useful to see how state and federal regulations overlap one-another. It also provides an overarching picture of this complex area. Minor improvements to the map have been made with each new batch printing- including adding handicap access areas. In 2021, we installed two new types of informational kiosks: Bear Safety and Ethical Angling which complement the information on the map and provide additional information.

These interpretive materials provide a sense of appreciation for this special place. They are both beautiful and functional. The new map and kiosks provide a foundation upon which we can develop additional informative material that will help spark public stewardship and conservation.

PANEL DISCUSSION

Overcoming Barriers to Electric Fence Uses for Mitigating Bear Attractants

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Gillian Sanders, Grizzly Bear Coexistence Solutions

Russ Talmo, Defenders of Wildlife

Jared Marley, Margo Supplies

Grizzly bear populations have been increasing in some areas of North America in the last decade. For example, the Alberta population of grizzly bears increased from an estimate of 700 individuals in 2009 to between 865 to 973 individuals cited in a 2020 Alberta Environment and Parks DNA survey. However, the repopulation of bears into historic ranges has the potential to increase conflict with food producers, rural settlements, and residents in the expanding wildland urban interface zones.

As Jay Honeyman said, “Bears are in a constant search for food and with that comes conflict with people who do not secure food from bears. And that really is the gist of our problem.”

Electric fencing has proven to be an effective and versatile tool to secure a wide range of attractants found in human development. While bears respond relatively predictably to electric fencing the human reaction can be much more diverse and challenging. Humans tend to select the easiest and cheapest option; which is often to do nothing.

This roundtable will provide an engaging opportunity to focus on the human element. How have the presenters worked with various stakeholders to promote the installation of functional electric fencing? What common objections have they faced and how have they overcome them?

Our roundtable brings together four experts from government, non-governmental organizations, independent science, and private industry who have all contributed conflict mitigation programs using electric fencing. We focus on the practical steps that have contributed to success. Specifically, we will focus on the importance of interagency cooperation, landowner participation, financial support, outreach and education, as well as the practicalities of fence installation and function.

This multimedia presentation starts with a short 3-minute screening of a segment of “Zapped! Managing Bear Conflict in Southern Alberta” after which each presenter will discuss their unique contributions and regional perspective in more detail. The following discussion should leave the audience with new ideas, specific areas of concern to work on, and exposure to a model that has worked in Alberta, Montana, and British Columbia. While the work of the presenters is primarily centered on grizzly bear conflict and recovery, electric fencing is a viable solution to conflict with all three of North America’s bear species.

TRANSCRIPT

Alright. So, we're going to have an electric fence panel discussion and I'm going to introduce the panel. I'm on the panel, this is Russ Talmo, Russ and I met in Kananaskis Country, if you can believe it. He's now a Montana guy, we've known each other for a long time and he's doing a bunch of stuff with Defenders of Wildlife. He's going to talk a little bit about what he does and then, the man of the hour, Jeff Marley, who's been around since the beginning of time with Margo Supplies. He really is the fence guru, in my opinion. The three of us are going to be up here and we're going to do a little intro about electric fencing. I think the idea for this session is to just try to tap into as many people in the room as possible, to just hear about the good, the bad and the ugly of electric fencing; basically, people's experiences and what went well, what didn't go well, and what do people generally think about it. So, it's not for us to be answering questions so much as it is about just discussing electric fencing and maybe other things too. So, to start off, we have some slides that Jeff's going to walk through.

Jay Honeyman - To a lot of people, this landscape probably wouldn't be considered bear country, but believe me, it is. I worked as a human wildlife conflict biologist with Alberta Environment Parks. I guess my main responsibility was to do conflict mitigation. So that basically means I'm trying to prevent carnivores from getting into conflict with landowners. I've been doing this job for probably close to 30 years, and the main theme with all the conflict that I've been dealing with over that time is food. Food in the form of beehives, chicken coops, silage, horse feed, livestock feed, calving pens, alpaca ranches, all these places we were able to put some fence up and we haven't had a recurrent reoccurrence. By reducing conflict and removing these attractants so that bears aren't interested in coming onto people's properties, we're not having to euthanize bears. We're not having to relocate bears. We're not having property damage to the landowner, and we're not having public safety issues with bears hanging around property. We don't have any of that, again, by removing the food source. It's a win-win for everybody. And it's something that we should be doing more of. Okay folks, this video is much longer, this just an edited down version for a time; about a 14-minute video and links are available in many places. What we're going to do here is just go through some objections that all of us, and all of you have probably, run into when you're dealing with stakeholders and the arguments why they don't want to do these things. Oh, I couldn't do that. I can't do that. That's the idea. This is a big one -I'm scared of it. It's going to cost too much. It's going to cost too much to run. We'll go through the answers to all these, and we hope you guys will have some fresh ones for us too. I don't have time to go on a minute monitor. Maintenance is a big deal with electric fences, they don't want to maintain it. Fences only need 2 to 5 wires but again, the solution is easy. I've also heard things like it's going to kill or hurt my children. It's cruel and it hurts the bears. Well, it hurts, but it doesn't harm. That's the important factor. Horses and wildlife can't see electric fences. Bears are just going to charge through it. Adding to that, I've often heard, then it makes them crazy, and they'll go kill the first person they see. None of that is true. I've also heard things like grandpa just shot them. It's not my problem. It's the government's problem. I can't access the inside of the fence without getting shocked myself. It's a pain to have to open a gate. I have a good answer to that one, a guy told me this in his kitchen, he said it's no different just than walking across the room and opened the refrigerator to get a can of coke. What's the difference? You get it and that's it for now, lets move on to Jeff.

Jeff Marley – Hello, my name is Jeff Marley. I started Margo a long time ago. My background is farming, and my approach to the wildlife business was created with a farmer's mentality and practical solutions. When we opened in the very early eighties, when I started, I got friendly with the Saskatchewan Wildlife landowner

assistance program leader, a very creative guy. We solved the problem for Saskatchewan Commercial Beekeepers, which had about \$100,000 a year in compensation damage. The short story is that they were offered preventive material in lieu of money and it worked fabulously. These guys are businessmen, they saw it as cheap insurance, and a lot of these guys are still our version of friends. I've spent a lot of time in the last few years working with some NGO groups and guys like Jay giving some advice and pitfalls to watch out for when they're putting up their electric fence. The biggest thing, and I tell people this a lot, is that people don't respect the bear's ability to solve problems or their enormous brute strength. If you have a weak point in the fence, which they'll find, they'll destroy part of the structure, which usually causes a short and then there's no more electric fence. And when you put up a structure, the other thing I stress is that you should be thinking like the bear. Look at the fence you are building, stand back and look at it. If you see a weak spot, stop, and fix it. Because if the bear's going to find it for certain.

Russ Talmo – Hi. Ok, why am I up here on this panel? Well, that's the government guy, that's the industry guy, I'm the NGO guy. I work for Defenders of Wildlife, a national nonprofit organization in the States here. And I live in Missoula, Montana. We have field offices around the country, but we focus on endangered threatened species recovery and protection, and my role within that is I manage a lot of our field programs for conflict prevention. Some other colleagues with Defenders are also here today. I am also an electric fence nerd. My baby at Defenders is our Electric Fence incentive program and I've been with Defenders for about a decade. This program has been going for about 12 years and it's a technical assistance program to serve anyone who is interested in securing attractants on their property with electric fencing, and that includes landowners, hobby farmers, commercial livestock producers, etc. I'll mention a little bit more about the program here in a second. My previous life before Defenders was chasing bears around Kananaskis with Jay and bear management with Montana Fish, Wildlife and Parks. Dick mentioned the short list of electric fence pioneers, Jeff's certainly on that list. Mike Madel was also on that list with Montana Fish, Wildlife and Parks. Mike was my mentor and we primarily focused commercial livestock, electric fencing up and down the Rocky Mountain front. But my role now in our program at Defenders really caters to everyone, and a lot of these conflicts are happening on private lands. They're also happening in people's backyards. The guy who has a chicken coop, or a garden, or a compost bin, or a fruit tree; that conflict in many ways is the exact same as if a bear is killing somebody's livestock. For management agencies, that means the bear involved is going to get a strike against it or have to be removed. So, we're treating all these conflicts the same and our program started that way. We are trying to address all the human bear conflicts that are leading to grizzly bear mortalities which are directly flying in the face of grizzly bear recovery. So that's the origins of the program, my project area, and I'm trying to keep this short, but my project area is all western Montana, northern panhandle of Idaho, northeastern Washington, and Greater Yellowstone. For those that are counting, that's four states and I'm one guy and we've done 570 projects over the decade that I've been doing this. I have not gone out and built 570 myself, I've helped people build 570 fences. And to address Chad's question earlier, we cannot do that without partnerships. That's working directly with state, federal, tribal agencies and other NGOs. Again, one guy can't do that. One agent or one organization can't do that. It requires the whole teamwork approach. So, today's conversation is supposed to be about overcoming barriers. And I will lead that by just saying you cannot do it alone or you shouldn't do it alone. If you're trying to scale this electric fencing easily, I'll just say that electric fencing done well is a little bit harder. Electric fencing done to scale across the whole state is pretty difficult. Again, unless you lean into that partnership aspect. So I'll leave it at that for now. We can start this conversation.

Jay Honeyman - I just wanted to add that for the last ten years, for myself as a conflict biologist, the focus of that work was the proactive piece to conflict. Like all the other agencies I'm sure, we're pretty traditional in our response to conflict and it was primarily reactive. Catch the bear and move it or kill it. There is a whole piece that was missing and that was the proactive piece. So, my position was created to try to deal with the

proactive mitigation piece and I would always be in these competitions with the officers. They would bring the trap and I'd bring the fence to see if I could stop the bear first and they wouldn't need to catch the bear; It was literally a competition to see who could get the bear first. And quite often I was winning. Since that time, the officers were not bringing the traps like they used to. They'll call first and try to do the mitigation piece before the reactive approach of trap and/or remove. And so, we've come we've made significant progress in the last ten years to what was it what is now. I don't know if Jeff wants to talk about some of the basic do's and don'ts of fences?

Jeff Marley – Sure. Well, the most important thing and one of the biggest reasons for failures of the electric fence, which does happen, is the grounding. You can't overdo grounding. And it's not only the ground rod. I see everything including a 12-inch common nail with wire wrapped around it. In the past I two guys that work for me from the power utilities corporations so a lot of the grounding we do is from power pole grounding. In other words, it's a matter of surface area of the rod, hopefully into soil with humidity and a bonafide ground run clamp, not hose clamps, not alligator clips. I mean, again, it depends on the site. I've always used the model of landfills of the past. We've probably done about 50 in Alberta and BC because they were always the hardest places to keep bears out of mostly because they were born and raised there. So, the big thing is grounding. If you have poor ground like really dry, sharp ground, frozen ground permafrost, it's tougher. And so you have to use more ground rods. If the electrons must flow from the positive terminal through the animal and back to the ground. So that's why I use the standards of the power utility corporation. Ground rods and ground plates, and tight wires are important. So that means your structure, especially the corners, must be strong enough so you can keep the wire tight. And the reason for that is the wire must separate the fur. My hair, your hair, the bear's hair is an insulator. And the other failures are as I mentioned when people don't build it with respect to the animal's ability, especially bears. I can think of a dump site where the electric fence was poorly grounded. The bear got a shock, but not a good shock at full capacity. He had been living in that dump landfill the whole winter. And the guy finally tried to install an electric fence but most of it was nonconductive material. The bear was an enormous bear. He just grabbed hold of this gate frame fence and he just jerked it to where he pulled it apart and then chucked it like 30 feet. So, I like to say, like I said earlier, think like the bear, walk around, look at it. Is that a weak spot? I mean, sometimes you can address gaps in the ground underneath the wire with physical obstructions, not necessarily more hot wires. And lastly, to move away from the fencing, maybe you don't always need an electric fence, maybe you can take care of the problem another way, like with a sea can or whatever. But mostly, with fencing, I see that people are in a hurry to put it up and they just don't pay enough attention to the details. That's the bottom line. But we'd like to hear from you folks that this kind of work, what do you hear from people and how you deal with some of those 10 or 12 objections on why they don't want to do anything.

Unknown – Not so much of a question but the objection that I hear the most is probably the use of electric fencing in campgrounds or in urban settings or the interface with urban settings for which, you know, kids are close by. What kind of messaging do you put out around this?

Jed from Margo - It's a really challenging question to address because the reality is, is that there hasn't been any recorded injuries tied to modern electric fences. I've worked a great deal searching and I can't find any. And so it's a hard one to answer because say, well, there's no reports of it.

Unknown - I have a few questions. The first question is I've seen some pictures depicted with an attractant on the actual wire, like a piece of bacon or something to attract the animal to the fence. So, I wanted to get your feedback on that. The second question I have is regarding fire risk and what kind of things people are saying regarding fire risk in the areas that you're working in and whether you have any experience protecting vineyards with electrical fencing. And then the last question that I have is I've seen some people, especially in areas where it's hard to ground the hot wires to put chicken wire or something like that in front of the fencing.

So, the animal has to stand on top of that wire to provide an additional grounding opportunity. And I'm curious about your feedback on that as well.

Jeff Marley - Yeah, I used to do that a lot. In a landfill for instance, people like to bait to teach the bear quickly which can be effective. If it's a campsite, I would never do it. Why attract a bear to the site with that smell? But again, it comes down to experience building your fence? Right. Why do you need to attract a bear into it, or to a certain side? I mean, the fence is going to do its job when the time comes and therefore it feels unnecessary to me.

We've done a bit of baiting. When we get bears digging under the bottom wire and we might add a sardine can and another wire into the hole because you don't want them digging too much. The sardine can just kind of direct them to where they were digging and they lick it or whatever, and they get a jolt. And I think in my mind it just gets the bear to think, oh I better not screw around in that hole that I was just digging in. So, it prevents them from basically digging a bigger hole. That's the one time when we've used bait, you know, something like a sardine can, to get them to come and access it. But as Jeff said, these are in campgrounds and rural properties where you have control over the people that are accessing the site and things like that.

The other question was fire, I've had that question a lot. They had these so-called weed burners, an electric fence energizer, but they basically outlawed them. And if you know what a feeder line is, ranchers do in the winter, they have a hot wire in front of bales and then the cattle can only eat so much, and it controls the feeding. But those wires could throw a spark about an inch. And after a few haystacks burned down, these guys quit doing it anyway. But as far as a modern, solid state electric fence energizer now, I don't believe I've never heard of one that started fires anymore.

Jay Honeyman – There are times you can see evidence of vegetation being cooked on the ground right underneath the wire. In Kananaskis country, we fenced the visitor's center area and one year they didn't mow/weed whack, and they can't use herbicides, and it was a fairly powerful unit, 10-12 joules, and it burned its way through the grass where you could see the brown line burning up the chlorophyll in the plant itself. But that takes energy, so you don't really want that to happen. But it could never start a fire if that was the point of the question.

Russ Talmo - Then your last question about the ground skirt. There's a thousand different ways to build an electric fence but there's only a handful of ways to do it that work very well for bears. And there's even a smaller number of ways that work that are also user friendly enough to where the person is going to continue to use the fence. But that ground skirt idea is very effective for areas that are dry. I deal with a lot of folks who I'm trying to empower to build their own fence with guidance, technical assistance, and financial assistance through our program. And very few people understand the grounding components. I'm glad Jeff touched on it, but that just flies over a lot of people. And the best way I can describe it, and the same goes with this ground skirt idea, is if you touch an electric fence, you're standing barefoot in wet grass, it's going to slap you. If you're standing on powder dry gravel wearing rubber soled shoes, you're still going to feel it. But they are night and day apart. And so, we are trying to replicate that wet grass barefoot aspect by building those ground systems, whether that's alternating positive negative fences where if a bear is passing through, it's going to hit a hot wire and a ground wire at the same time. Whether they're standing on that grounded skirt around the fence when they touch the electrified part, or there's several other ways to build those grounded systems that really make the fence slap harder and make the bear really pay attention.

Seth Wilson – This is for Russ. So, you said yesterday that you have a two-and-a-half-year-old, maybe a two-year-old son. So, when you think about your son's future and, you know, taking attractive management through fencing to the scale and you've done, 20 years from now, what is it going to take? You know, how

much, if you were to think big and you know western Montana just for example, is changing? If you just took a moment and thought about, you know, your son's future and the future of bears, what would that really take? Have you thought about that? I have.

Russ Talmo - I'm a pessimist, so I don't like the outlook. But more directly to your point, I think about this a lot. We are talking about overcoming barriers and how I look around the room. There's a ton of agency folks in this room from different states and different places and I know that not every place has an electric fence program in place and operating. And my first question is like, well, why not? And I say that sort of tongue in cheek, because I know ten years ago electric fencing was a novel idea for how to keep bears out of stuff. But in the past decade, that's changed. Now it's just commonly accepted as an effective and rather simple tool to be using and to apply statewide. I'm sure most agency folks say, well, how are we supposed to do that? We don't have the capacity to do that or the funding to do that. And so, to answer your question, it comes back to like, well, where are we going to find a durable funding source to be able to apply this on a broader scale across multiple states, across big projects? It's one thing to build a \$300 chicken coop fence. It's another thing to build a \$50,000 livestock operation fence. And those things are 90 miles apart. So, yeah, first answer to that question is we need to find durable funding, and my organization and others are working with folks like Wildlife Services for federal appropriations, funding for non-lethal staff to be out doing electric fencing work, working with NRC's federal and asking for funding through how they operate and how they're providing funding to livestock operations, which is currently outside of human wildlife conflict mitigation. So, the hope and there are other avenues following that same sort of track for how we find durable funding long term for bigger projects, more funding available to the public and for those that want to do it, that's the long and short of it. The other piece, though, is there's a lot of folks are like, why should I have to fence myself and why do I have to put a fence around my place? Come on, get your damn bears off my damn place, and that's where the social psychologist folks come in, which is not my forte. So, you know.

Dick Shideler - I'm formerly with Alaska Department of Fish and Game. A couple of things regarding children and electric fencing. One response I heard from somebody is that they put just a plastic construction barrier fence around the inside of the electric fence, and that keeps their kids from and dogs or whatever, from ever contacting that fence. So, if you have people that are worried and don't believe you, that that it's not going to affect that, that's maybe one solution to look at. I have a question which I'll get to in a minute. I'm like Jeff, in a way. The other thing is rest for your benefit. Thirty years ago in Fairbanks, Alaska, we got wildlife services to put electric fences on their list of approved techniques for mostly small-scale livestock owners. That way they could get good funding through the federal government. I don't know if it's still in place, but that's a positive example. Okay, so now to my question which refers to digging under fences. I think you mentioned Jeff, this has been of the issues that people have had or thought they were going to have problems, can you just give us some examples of methods that would reduce that or eliminate digging under the fence?

Jeff Marley - Well, first, build it right. And that's important. And know the lower value. We had a site very recently with a panel member that could make it to this that had a history of bears in this silage corn. The fence was put up haphazardly, and put up late, it should have been done two months earlier. Several grizzly bears did a lot of digging around that fence. Normally that doesn't happen. It can happen, but it's not the norm, especially when it's crowded. You need to pick an energizer that has enough joule output for what the length of fence is that you're building. You don't want to have a mile of fence wire and have an energizer that takes flashlight batteries in to run it. You know, you want something in that case, up to three joules. But digging doesn't always happen. When it does, that's when I use the baiting technique to make sure they get shocked. Like Jay said at that site, that's the first step. The second step is I build a mini fence about a foot outside, maybe two strands of hot wire around it. I can think of a landfill that a bear went to this corner, and

he dug. We did what I just explained, and he dug under both. We did a third one, another foot out and he quit. In other words, we just kept being persistent than the animal. That's key to this whole deal. But first, have a good plan and understand what you're trying to keep out and what the attracted value is. Also, you know, build it right. Like I said, think like the bear and don't have a weak spot. That's usually what happens with digging. You've got your hotwired here and the ground is here, and then all of a sudden there's a little dip. And instead of having that 6-8 inch spacing, suddenly, it's 10-12 inches. So, you've encouraged them. And once you've encouraged them, then it becomes way harder to deter them. And again, this cornfield fence in the photo, he had swing gates where he'd put a hot wire on the bottom, it was like 12 inches. You could see the bear tracks and where we went, he went underneath. And unfortunately, the fence was underpowered and a poorly grounded fence, so they had already learned how to get in.

Russ Talmo – Regarding digging, you hit it on the head with the attractant value. It seems like, at least in my experience of it, bears are not digging under things unless there's something desirable on that other side, like a carcass or a boneyard or something like landfills. I just haven't experienced bears digging a lot under the fences I build. And that's not to say it doesn't or it can't. But if you build a fence, if your wire spacing is correct, if it's close enough off the deck for that bottom strand, they're going to get shocked trying to dig under it enough to where that's going to stop it from happening.

Jay Honeyman - I was just going to mention the topic of kids near electric fencing and some of you may be aware of it and maybe some aren't, that there's been an electric fence around one of the campgrounds in Lake Louise in the middle of Banff National Park for years now. It's been up for 22 years. It's around the public campground and there is all this talk about whether it is going to hurt people and kids and everything else but nobody around Lake Louise campground has been injured or killed. And the interesting issue about it is that now we have people on one side of the fence and bears on the other side of the fence, and they're getting quite close to one another, but not interacting. And it's in one of the busiest campgrounds in the country.

Unknown - Yeah, I'd just like to add to that most zoological parks use electric fencing to contain their animals and people can easily access and get shocked if they wanted to. Also, just about every ranch kid has been shocked by an electric fence, and they're all doing fine. So that question has been pretty much put to rest. I did some research and the earliest electric fencing in North America that I was able to find was in the mid-thirties, 1930s, almost a hundred years ago, for agriculture, beekeepers, and cattle. We're way behind Europe and Australia and New Zealand for electric fencing. But it's not new. It is more accepted, and more and more people hear about it. And again, zoos have been doing it as long as I know.

Unknown - I'd add one more piece that there's often questions around liability and safety concerns, whether that's the energizer or your kids and so forth. But there's also some things that are just best practices. So, a lot of the fences people are working on are retrofits to existing fencing and a lot of folks have fencing that has barbed wire. They think they can just replace two of the wires with hot wires and we'll call it good. No, no, no, no, no. You don't want to mix barbed wire and electrification. Back to the safety issue. If someone gets tangled in an electric fence and is being shocked at the same time, you're running into safety concerns and liability issues. So, again, not to get into the weeds on this, but don't put two answers together or say you can let folks do it.

Unknown - So, I was going to mention a similar example regarding children and electric fences because I've had that as well. And personally, I've had situations where I've walked up to a cattle fence with my dog, which is about the size of a child, he got shocked and it he didn't enjoy it, but he was perfectly fine. So, I think sometimes if you have an example that you can share, it makes people understand a little more. But since that's already been touched on, my question is this. Pennsylvania has an electric fence program where we can either loan them out or provide some level of reimbursement for individuals to purchase electric fences. But almost nobody uses them which is kind of wild. And it's not so much that we don't actively advertise it, we do,

and it's a good option in areas where an electric fence would be a reasonable response and solid management strategy. We tell our public that if they purchase the materials we'll even try and help you set them up. But people don't take us up on it. So, do you guys have any suggestions for getting people involved in those programs? I mean, I think a lot of times it's not just agriculturalists. Those people are more likely to participate, it's the folks with backyard chickens that don't want to do it for whatever reason.

Jay Honeyman – That's just what we're going to do. I think in a couple of sessions we're going to give a talk about a loan or program system that will get into the details of that question. But I will say now that the people responding need to be familiar with your program and the availability of it. Those responding to conflicts need to have that information and distributing it accurately to the public. So, if it's game wardens or biologists or whoever it is responding to the conflict. The conversation needs to go like this. Look, even if we remove this bear, you're going to keep having this problem. Here's what you can do about it. We have this electric fencing program, we can loan you an electric fence, you can talk to people that are very knowledgeable about electric fencing if you need to. And that's fair. That's how you get the word out. People who have just experienced a conflict are freaked out, and they want it to happen again, this is the best way to not have that happen again. So that's my best advice for you on that.

Bill Stiver – Hi, I am with Great Smoky Mountains National Park. You've talked a lot about permanent electric fences, and I was wondering if you could talk a little bit about portable electric fences. We recommend them a lot to workgroups in the backcountry in the Smokies dealing with black bears. There are a few different designs out there so I was wondering if you could talk about this a little bit.

Jay Honeyman - We use them a lot in areas where we think the issue is not going to be a long-term issue. Fruit trees, a perfect example of leaving it up for a month or so. And it's been very effective. I mean, it's I think it's as effective as the other stuff if done properly. And so, there's a place for it and I know in our park systems in Canada, at least out west. If you're a commercial group working in a park, you're required to secure your food and other things within an electrified system. So portable fences that can be backpacked in are now a requirement in some of the protected areas. These tools are proven, and they work really well and it's becoming a standard way of doing business in some of the parks. Now you have to take portable fences and to use them, I don't know, Bill, is that the case in the Smokies as well?

Bill Stiver –In some areas, it depends on application. This also touches on another problem, which is our food storage orders. And they all have different requirements for what qualifies and what doesn't. And back to the strength of Energizer conversation. If it's a backpack version, then you got one that's running on little diesel batteries or whatever. I'm not trust in that. And so, it might work, or it might meet or satisfy the criteria by law. But you're not going to get me putting anything behind it.

Unknown - Thank you so much, all of you, this is very informative. I'm just wondering, we heard yesterday from Michael in his presentation about bears in Slovakia that the government does not issue compensation if electric fencing has not been tried. And I had never heard of that in another jurisdiction. So, my first question is, have you heard of that condition of compensation for livestock depredation? And then I'm just wondering, because electric fences cost money to install, is there a way to sort of tie these two ideas together like some kind of predator compensation program with a condition of electric fencing or additional funding to install electric fencing so that it doesn't happen again in the future? Just how do those two concepts link together?

Jay Honeyman - I would throw it out to the room. Is there anybody that's got experience of providing compensation or not providing compensation because they're not using things like electric fences. Are there any agencies doing that?

Unknown - So in a little bit of a response to that, not for livestock but with apiaries. We do have that law that we will compensate you for the first apiary. But afterwards, if you don't put up an electric fence and

something else happens again, you're done, we don't compensate. It's on them and it's to encourage people. There's only so much we can do until you help yourself. And that's Pennsylvania.

Unknown -I have a little bit bigger of a question for you, sort of looking into the future. We heard a bit of discussion about bigger properties, large, large fencing projects like grain fields and corn. I have a lot of people requesting perimeter fences in my area and they don't have a ton of attractants within that large property. Can you guys touch on the potential problem of fencing out the world, fencing off habitat?

Jay Honeyman - We've been dealing with this a little bit in Alberta and one concern with maintaining the bigger the fence is they are harder to maintain for sure. But another one of the issues that we have in our area is just with the level of development in some of these places and disrupting wildlife patterns. We're bouncing animals all over the place now and potentially directing them into places where we maybe don't want to. That's one of my biggest concerns with doing large scale fencing is how is that may be impacting not just bears but other wildlife as well. And then certainly the struggle of trying to put up and maintain some of these larger enclosures.

Unknown - Can you talk about the process of how you get your work? And is there any talk about how state wildlife agencies in other states can implement a program like this with an NGO?

Russ Talmo - Sure. It's working very well in Montana. For me with Defenders of Wildlife, I've always had a good relationship with our state agency prior to me coming on because I was a bear specialist prior to moving into Defenders. So, I immediately had rapport with the bear managers in the state. Conflict is going to continue unless you do something about it. In my experience, probably more than 50% of our projects come as referrals from state, tribal, and federal agency folks responding to those conflicts. And then we're stepping in to help sort of backfill that where they can't. The other important piece I wanted to bring up today too, and somebody else mentioned this, is to know which hat you're wearing or who the messenger is because as a wildlife NGO guy, I can reach a certain segment of the population sometimes more easily and comfortably, than maybe other entities. There's another segment of the population that does not want to work with an NGO, but they will gladly work with their state agency bear management specialists because that's who they have a relationship with. There is yet another segment that doesn't trust my organization, they don't trust their state guys, but they have a good relationship with their federal government, like Wildlife Services. Well, Defenders of Wildlife and Wildlife Service are used to having an adversarial relationship. They're lethal control guys and we're the opposite side of that. But we found the common ground that we both want to stop conflicts from happening. So let's work together on it. And now we partner up and it works great. But again, they're able to reach people that I could never get to. And so now you're getting the tools into the hands of those that need it through the right outfit, and then we can all work together on it. So, for those are like trying to start these programs in other places, don't thank you need to try and take it on yourself. By working with your fellow agencies and organizations, you're able to do so much more to reach such a broader segment of the population, and it doesn't all fall on you.

Unknown - Pardon my ignorance on this. But I'm curious if there are impacts on birds or other wildlife.

Unknown – If birds land on high voltage lines they aren't electrocuted because they're not grounded right? I once had a fence in a landfill where a seagull got between the chain link fence and the hot wires. We did get it out there. And it didn't die. Would it have died? I don't know. And some of you guys know that with a powerful energizer it can hurt animals that get trapped, it can happen. But I mean, again, think of the agricultural and the zoological community, they don't want their critters dying so I don't think that happens all that often. I think the same could be said for solar versus battery powered.

Jeff Marley - Right. Solar is battery. Remember, the panel charges the battery and there's still a battery involved. The only place we have problems with solar power is in winter in certain areas where, November till

the 1st of March, there's just not a lot of sunlight and you must switch batteries out. The more powerful the energizer output, in other words, the higher joule rating, the more power it needs coming in. So, if I take a 16-joule energizer and put it on a deep cycle, 110 and hour for about a week, if I have a three-joule energizer on that same battery, I'll probably go 10- 12 weeks. So, then you have to have a regimen of battery swapping out when the panel isn't enough. What we did in Vancouver International Airport, Kyle says.

Unknown – Would it be better to have a plug in than a solar?

Jeff Marley - Absolutely, for several reasons. One, you don't have to worry about charging batteries. The hotter it is the more output, the more current, the more amperage.

Thanks everyone. That's it.

GENERAL SESSION

PATHWAYS TO COEXISTENCE: UNDERSTANDING PEOPLE

Reducing Livestock-Grizzly Conflict: Uncovering the Symbolic Meanings of Conflict-Reduction Tools in the High Divide

Allegra Sundstrom, Idaho State University

To accommodate the spatial needs of grizzly bears (*Ursus arctos horribilis*) we must also accommodate the livelihood and cultural needs of people. This is especially true in the High Divide, which is comprised of 40% private lands with landowners holding a range of social, political, and environmental values. The High Divide is also referred to as “the land in between” given its critical location between the Greater Yellowstone Ecosystem and Northern Continental Divide Ecosystem, two of the six Grizzly Bear Recovery Zones designated by the U.S. Fish and Wildlife Service.

To facilitate the spatial and genetic connectivity of the two major grizzly bear populations within the GYE and NCDE, it is imperative that landowners implement grizzly conflict-reduction tools—specifically ranchers, since the livestock central to ranchers’ livelihood are an attractive food source for bears. Though conflict-reduction tools have deterred conflict in many settings, some ranchers are still hesitant about them.

Limited research has been conducted in regards to grizzly conflict-reduction tool adoption, but there has not yet been a universal integration of these tools onto ranch operations. The low adoption rate, despite conservation groups and wildlife managers increasing efforts to help ranchers implement these tools, indicates that whether or not people adopt these technologies is not solely based on their effectiveness. Aside from a tool’s direct effectiveness, the material effects of implementing tools include the potentially unintended consequences, such as the maintenance required after installing an electric fence on an operation, that may influence the likelihood of tool adoption.

Whether or not ranchers adopt these tools is also influenced by the underlying symbolic meanings for their use, which could further be described as what an object represents and how the interpretation of that object influences human interaction and technology use. Thus, increasing adoption of these tools requires understanding the symbolic meanings ranchers hold for these tools and the material effects of using them, as both are important factors that shape whether or not ranchers will adopt and continuously use these tools.

To address this, we assess how sense of place and community values and identity impact ranchers’ symbolic meanings for conflict-reduction tools and how those meanings play a role in tool adoption. We conducted semi-structured interviews with ranchers across the High Divide and found that ranchers’ sense of place and cultural identity shaped the symbolic meanings they held for conflict-reduction tools and influenced tool adoption.

In particular, tools were symbolic of broader notions ranging from government control of land and livelihood to a means of maintaining ranching across the West. Further analysis demonstrated that the diversity of conflicting symbolic meanings for both landscapes and conflict-reduction tools had a determining effect on ranchers’ adoption of them in the High Divide and played a role in the divergence between tool effectiveness and tool adoption in ranch operations. This work builds upon the growing recognition that successful conservation programs and policies require attention to the social factors that shape people’s willingness to, or conversely, their resistance to adopt new practices for sharing landscapes with wildlife.

Grizzly Bear Impacts on Rural Well-Being in Montana and Idaho

Morey Burnham, Idaho State University

Sara Halm, Swan Valley Connections

Katie Epstein, Cornell University

Darci Graves, Idaho State University

Alex Metcalf, University of Montana

Jessica Wells, Boise State University

Matt Williamson, Boise State University

Conservation success and the expansion of anthropogenic landscapes have led to range expansion for grizzly bears, bringing humans and bears together in places they have not co-occurred in generations. Why are some people able to coexist with grizzly bears in these changing landscapes while others come into conflict with them and how do we encourage coexistence in places where conflict is prevalent?

In this presentation, we attempt to answer these questions in two ways. First, we draw on preliminary case studies from two regions of Idaho and Montana that have seen recent increases in grizzly bear populations to highlight how varying landscape contexts—the palimpsest of cultural, livelihood, institutional, topographical, and ecological processes that comprise current landscape configurations—shape both how people are affected by and make sense of emerging grizzly bear populations.

Our central findings suggest that people experience both positive and negative hidden and unhidden impacts as they navigate living with grizzlies, and that people describe living with grizzlies in ways that suggest they experience aspects of conflict and coexistence simultaneously. These include negative impacts to livelihoods, mental health, loss of mobility and the ability to engage in culturally valued activities, and feelings that their cultural identity and rural way of life are threatened, as well as enhanced mental, spiritual, and cultural well-being.

Second, we draw on our interdisciplinary expertise to develop an analytical framework that brings together aspects of rural and cultural sociology, rural health, and global environmental change to interpret why different people in the same landscape differentially make sense of grizzlies and report contradictory positive and negative impacts from living with them.

In particular, we demonstrate that interactions between 1) culture, or the set of symbols, ideas, and practices people draw from to make sense of and respond to grizzlies; 2) other social and ecological changes processes, such as loss of livelihoods and amenity migration; and 3) the formal and informal micro, exo, and macro level support systems that enable or delimit people's ability to solve problems in part determine how people report being impacted by and make sense increased grizzly bear populations.

We conclude by suggesting that to achieve coexistence, we must attend to how the emergence of large carnivore species interact with the multiple, interacting stressors the people who live with them face and provide people with the institutional resources they need to successfully navigate these stressors.

Advancing Sloth Bear Habitat Management to Mitigate Human-Sloth Bear Conflicts in the Aravalli Ecosystems of Western India

Arzoo Malik, The Maharaja Sayajirao University of Baroda, Navrachana University, Vadodara, Wildlife and Conservation Biology Research Lab

Geeta Padate, Department of Zoology, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara (Gujarat) India

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Nishith Dharaiya, Wildlife and Conservation Biology Research Lab, Department of Life Sciences, Hemchandrachrya North Gujarat University, Patan, (Gujarat)India

Michael Proctor, Birchdale Ecological Kaslo, British Columbia, Canada

The increasing human population on the Indian subcontinent has escalated the degradation of forest lands which has resulted in the fragmentation and loss of existing sloth bear habitats. Thus, bears are more likely to cross into human landscapes where they are more likely to encounter humans and get into conflicts.

Human-wildlife conflict often gives the public a negative image of the species involved. There has been a spike in sloth bear attacks since 2005; in Gujarat itself around 300 attacks have been recorded from 2005 to 2018. Therefore, it is essential to understand the factors involved in human-bear interactions in order to undertake necessary mitigation measures.

This study attempted to develop different habitat management models to mitigate human-bear conflicts. Ecological corridors were identified between all the protected areas using geospatial and niche modeling techniques. Sloth bear habitat suitability was determined by integrating remote sensing-based land use and land cover preferences of the Sloth bears in Gujarat.

Our study suggests around 1.45% of the forest land designated as sloth bear habitat in Gujarat is suitable for building potential corridors. A total of twelve corridors ranging from 12km to 77km connecting five major protected areas and unprotected bear habitats were identified. Further, a species distribution model was created to identify potential conflict zones. The model revealed that forest was the most influential predictor (AUC=0.907) of where the conflict zones would occur as measured by the gain.

We conducted a regression analysis on bear presence signs in relation to variables such as food resources, distance from nearest human settlements, slope, elevation and type of habitat and found that frequent bear movement was observed around water bodies. Although the movement of bears to water sources was found to be independent of environmental variables, it is commonly observed that erratic rains often lead to a shortage of water within sloth bear habitat and cause bears to seek water outside of forest habitat increasing probability of human-bear encounters. Therefore, it is imperative to maintain water bodies inside sloth bear habitats. Through hydrological analysis, we identified 26 potential points where water accumulation structures could be built so that rainwater can be retained for longer periods of time during the dry season. Implementing such measures will reduce the bears' need to leave the forest and thereby reduce the number of human conflicts.

The Evolution of the World’s Most Dangerous Bear: How It Can Inform Safety Messaging in Sloth Bear Country

Thomas Sharp, Wildlife SOS, Director of Conservation and Research; IUCN Co-chair Sloth Bear Expert Team

Dave Garshelis, IUCN Bear Specialist Group Co-chair

Wes Larson, Yellowstone National Park

Sloth bears are believed to be one of the most dangerous wild animals in India and arguably the most dangerous bear species in the world. They are well known for their propensity to attack humans, rushing quickly in a burst of energy, causing serious, sometimes fatal injuries. Though the exact number of annual attacks across their range is not known, it is likely that they are responsible for more attacks annually than all seven other bear species combined.

The defensively aggressive nature of the sloth bear towards humans is likely related to their evolved behavior towards tigers and other large predators. Other Asian bear species that overlap with tigers are either excellent climbers, such as Asiatic black bears and sun bears, and climb trees to escape predators, or are generally larger than tigers, such as brown bears.

The sloth bear is a medium sized bear that evolved to become largely myrmecophagous, roughly 50% of their diet is made up of termites and ants, and as such became better adapted for digging rather than climbing. While this allowed them to take advantage of a prevalent food source, it potentially made them more susceptible to large felid predators. Additionally, due to their focus on digging and foraging for termites they are often caught off-guard by potential predators and thus must react explosively to a threat that is already at close quarters.

Sloth bear anti-predator behaviors include becoming extremely aggressive, very often chasing the would-be predator off or engaging in combat before being able to safely retreat. The aggressively defensive behavior of the sloth bear has served them well for hundreds of thousands of years if not several million. However, in the modern world this behavior has become a conservation issue. The explosive behavior of a sloth bear to a tiger at close quarters, namely standing huffing and charging have all been reported by people that have been attacked. A sloth bear's defensively aggressive behavior appears to be a hard-wired reaction to imminent danger, and the bear must react quickly for the behavior to work. Sloth bears do not rely on vigilance to avoid predation and therefore it is not surprising that the majority of sloth bear attacks are due to surprise encounters at close range.

The extremely aggressive behavior that sloth bears engage in has one purpose, to extricate themselves from a potentially life-ending situation. If the same motivation can be attributed to the motivation for attacking humans, then it may have some implications as to how one should react to an attacking sloth bear. Fighting a bear may lead to the bear fighting back harder, just as they do with tigers. Running from a bear may cause the bear to chase, again just as they do when tigers turn and run. Most human mortalities occur when the victim of an attack attempts to fight or run from the bear. Falling to the ground and covering up, as suggested by several papers, removes the perceived threat, and gives the bear a chance to escape. It also gives the attack victim the best chance to survive.

Beyond Perception: Dread Among Locals Towards Sloth Bears on Prevalent Human-Sloth Bear Conflicts

Shalu Mesaria, Wildlife and Conservation Biology Research Foundation, Patan (Gujarat) India

Dr. Nishith Dharaiya, Wildlife and Conservation Biology Research Lab, Department of Life Sciences, Hemchandraarya North Gujarat University, Patan (Gujarat) India

Pratik Desai, Wildlife and Conservation Biology Research Lab, Department of Life Sciences, Hemchandracharya North Gujarat University, Patan (Gujarat) India

Sloth bear population is said to be increasing in Gujarat and a large population resides outside protected areas in central Gujarat. Frequent visits of bears towards human dominated areas result in negative interaction leading to hostility and retaliatory killing of the sloth bears mainly due to fear.

Our study is to comprehend the perception of sloth bear attack victims and non-victims to seek possible ways to reduce the probability of attacks. To understand the locals' consciousness about bears, we collected information on the demographic and socio-economic background of the respondents living around sloth bear habitats and discussed their experience with bear encounters along with their perception on prevalent human-bear conflict.

A structured questionnaire survey was carried out in the 56 villages in the vicinity of sloth bear habitat and a total of 805 respondents were interviewed of which 121 were the sloth bear victims and 684 were the locals who were not attacked by the sloth bear. Apart from this, consultative meetings with forest staff and direct field observations (sign survey and camera trap survey) were carried out in the study area to know the sloth bear occupancy and movements in the human dominated area.

Majority of the sloth bear victims are males of the age group of 30-60 years who are mainly the farmers (70%) and migrant workers. The attacks were due to sudden and impulsive encounters in response to self-defense by the bear. 52% of victims mentioned that they were inside the forest for cattle grazing and collection of firewood and sloth bear attacked them. 34.7% of victims said they were in the farm for harvesting and protecting crops from wild boars and blue bulls. The rest of the victims were attacked on the forest edges. Among the non-victims, 25% are females and 75% are males and most of the respondents have seen the sloth bears in the wild, indicating the regular encounter with sloth bears.

Most encounters occurred during their visit inside the forest, especially women, who visit forest early in the morning for collection of forest products. According to respondents, sloth bear populations have increased in the last ten years. 49% of our respondents consider the sloth bear as a threat to humans, while only 17% of locals agreed that bears need protection. Locals in the study area are insensitive and ignorant towards bear presence with a lack of knowledge about the importance of bears in their habitat. With the prevalent bear attacks and increase in the bear encounters it is important to enhance the possibilities of human-bear harmonious coexistence.

Bear safety education programs and awareness campaigns are much required in this area to disseminate the true and scientific knowledge and replace myths with facts about the sloth bear. Forest officials agreed that there is a need to formulate the mitigation measures as we cannot hinder the regular activities of the locals. By disseminating effective and accurate scientific knowledge we can reduce the attacks on vulnerable age groups. Connecting sensitivity with education can ease the conservation challenges in the study area, enhance positivity and reduce the dread towards bears.

Social Media, an Economic Enabler for Proactive Education and Outreach

Gerald Hodge, Appalachia Georgia Friends of the Bears

The Appalachia Georgia Friends of the Bears, Inc. has successfully leveraged our social media capabilities to promote events, advocacy, education, and safety. Facebook and Instagram allow us to reach a wider audience at minimal cost. Interesting content, photographs, relevant news stories, and short video clips that appeal to our audience tend to generate the most comments on our Facebook page and Instagram.

In our presentation we will show how social media is a major enabler for our mission. It enables us to gather information, gain and maintain situational awareness, project a strategic message, identify and target “high risk” neighborhoods, communities, towns, and counties and in turn proactively reach out to them. Social media also enables others to reach out to us for assistance.

We look at how to identify your audience and how to generate content into order to do a daily post to maintain your social media presence.

We will look at our 2022 Spring Media Campaign as a case study. We had two audiences for this campaign, tourists, and residents. Beginning with a Facebook “Paid” boost on Sunday, March 13, 2022, a News Release on Friday, March 18, 2022, and another Facebook “Paid” boost on Sunday, March 27, 2022. The campaign concluded on Tuesday, April 11, 2022, with the termination of data collection. Each component had a specific strategic message tailored to the targeted geographic area and demographic.

Worthy of note, the News Release was sent to thirty-three legacy newspapers in Appalachia Georgia and two in Tennessee. It was picked up by eight and all of them have a digital component. The legacy audience, i.e., paid subscription, is 103,997 humans.

We feel that the campaign was a success. The social media “Paid” boosts generated discussion, had a total of 3,452 “engagements,” 1,473 “reactions,” and 157 “shares.” The Average Industry Standard Click Through Rate (CTR) for Facebook “Paid” boosts is close to 5% and up to 6.75%. The March 13th “Paid” boost was calculated at 4.51% and the March 27th “Paid” boost was 6.89%. The campaign allowed up to meet three of our Key Performance Indicators (KPI’s); being counted as “part of the conversation,” jump in social media activity, and to gather pay-per-click data.

Resources Expended: \$300.00 plus forty human hours staff time. Human hours include, but not limited to, content development, social media posting and monitoring, e-mail composition and distribution, in progress reviews, data collection, analysis, follow-up email or inquiries, and final report.

Community Ambassadors for Collective Action: Opportunities to Scale Up Behavior Change to Reduce Human-Bear Conflict

Dr. Megan Jones, USGS Oregon Cooperative Fish and Wildlife Research Unit,
Oregon State University

Dr. Stacy Lischka, Social Ecological Solutions, LLC

Dr. Rebecca Niemiec, Department of Human Dimensions of Natural Resources,
Colorado State University

A core challenge for conservation is the issue of preaching to the choir: outreach and education campaigns often engage only a small population of already motivated individuals, and can fail to achieve a normative shift that reaches people who are less engaged or unengaged. Given this communication gap, how can we successfully encourage community-wide action to reduce human-bear conflict?

In communities with human-bear conflict, one approach is for motivated individuals to encourage their friends, neighbors and others they know to adopt conflict reduction behaviors. Conflict reduction behaviors include acquiring and properly using residential bear-resistant garbage bins, or bear-proofing other food sources such as fruit orchards, vegetable gardens, chicken coops and bird feeders.

This kind of peer-to-peer encouragement is known as relational organizing, which relies on community members being ‘ambassadors’ to others in their social networks. Relational organizing can help behavioral information reach hard-to-reach audiences who are not seeking it out. It can also increase the social pressure people feel to act, since they are learning about the action from someone they already know. Lastly, it can signal to people that a relatively novel behavior (such as using bear-resistant garbage bins) is becoming more and more common, which can increase people’s likelihood of adopting the behavior.

In this session we will first present findings from social psychology research about how to motivate relational organizing for these kinds of conservation behavior changes. We will then share preliminary results from research we ran in four communities across the western US that are dealing with human-bear conflict, including our findings about the history and potential future feasibility of relational organizing. Lastly, we will invite discussion from audience members about their experiences mobilizing community-wide conflict reduction efforts, in order to co-create a list of lessons learned and data gaps that could be addressed to design more effective relational organizing outreach campaigns moving forward.

Assessing the Future of Coexistence with Grizzly Bears Around the Beaverhead-Deerlodge National Forest Using Photovoice

Marley Held, Idaho State University

Stakeholders who live and work around the Beaverhead-Deerlodge National Forest (BDNF) are challenged with living on a shared landscape with grizzlies (*Ursus arctos horribilis*) as the bears move out of their designated recovery ecosystems. Conflict between bears and stakeholders in the BDNF occurs in several ways, including livestock depredation, crop raiding, and fear when recreating, which results in the need for wildlife management that addresses the needs and safety of both humans and bears.

Coexistence is a term broadly invoked in scientific literature and wildlife management to reframe discussion about living with grizzlies away from conflict towards a more positive framing. Its proponents argue that if we conceptualize and discuss sharing landscapes positively rather than negatively, human and grizzly conflicts will be resolved.

Coexistence is generally defined by researchers as something that occurs when the interests of humans and wildlife are both satisfied. However, this definition is somewhat vague and often fails to account for questions such as who gets to determine when humans and wildlife are satisfied or to what extent are stakeholders willing to tolerate living on a shared landscape with the bear. As such, a distinct and agreed upon definition of the term remains elusive because what coexistence is will likely vary among different stakeholders due to differences in individual experiences through time that shape what coexistence means to them. Without incorporating the perspectives of those who live with and are most impacted by grizzlies into definitions of coexistence, stakeholders and wildlife managers may lack the ability to engage in effective dialogue and make progress towards management solutions that enable successfully sharing a landscape.

As currently defined, stakeholders are not often able to see their visions of coexistence reflected in the concept, which has resulted in a call for bottom-up research to produce a more precise definition of coexistence that is meaningful to all stakeholders. Scholars have attempted to understand stakeholders' perspectives on current and future grizzly coexistence in western Montana but have found that stakeholders' visions of coexistence were often ineffable to themselves and others.

To help combat this problem, I used the photovoice method in conjunction with the concepts of time stories and imaginaries to allow participants to actively explore the experiences and deeper meanings that form their visions of coexistence with grizzly bears. Photovoice is a participatory action and arts-based research method that asks of participants two things: to take a photograph and to interpret the narrative behind the photograph. Photovoice is different from traditional social science research methods because it does not just situate participants as research subjects in an interview, but instead it allows participants to be actively engaged in the research and assist the researcher in attaining knowledge throughout the study.

I used photovoice in this study to examine stakeholders' time stories, which are narratives that connect an individual's past and present experiences to their ideas about what should be happening in the present, as well as what ought to happen in the future. In addition, a time stories approach allowed me to understand not only how stakeholders have lived with and been affected by grizzly bears in the past, but it also enabled me to reveal stakeholders' future imaginaries of coexistence with grizzlies. The concept of imaginaries calls attention to how an individual's vision for a desirable future is grounded in moral terms. Thus, a stakeholder's imaginary for future coexistence is grounded in their ideas about how the landscape should look, for who, and to serve what purpose.

The primary objective of my research was to identify the different visions of coexistence with grizzly bears now and in the future among stakeholders around the BDNF. To do so, I explored how stakeholders' visions of coexistence have been formed by their experiences and imaginaries. Through conducting semi-structured interviews with stakeholders using the photovoice method, I found that photovoice provided a way for participants to nurture self-reflection about and awareness of coexistence with grizzlies, as well as deep reflexivity of their personal values and lived experiences. Capturing and interpreting photographs actively allowed stakeholders to become aware of and reflect on the meanings and experiences that have formed their visions of coexistence. Ultimately, using photovoice to examine time stories and imaginaries allowed me to identify different visions of coexistence with grizzly bears currently and in the future around the BDNF.

Using Reporting Trends to Develop More Effective Human-Bear Coexistence Messaging

Alexander Heeren, Wildlife Health Laboratory, California Department of Fish and Wildlife

Victoria Monroe, Wildlife Health Laboratory, California Department of Fish and Wildlife

Ryan Leahy, Wildlife Health Laboratory, California Department of Fish and Wildlife

Risha Karnawat, Wildlife Health Laboratory, California Department of Fish and Wildlife

Regginette Whitson, Wildlife Health Laboratory, California Department of Fish and Wildlife

Taylor Dutrow, Wildlife Health Laboratory, California Department of Fish and Wildlife,

Tiffany Chen, Wildlife Health Laboratory, California Department of Fish and Wildlife

Helen Bowman, Wildlife Health Laboratory, California Department of Fish and Wildlife

Communication and outreach are critical components of any strategy for human-black bear coexistence. State wildlife agencies often use outreach materials developed by other agencies, stakeholder groups, or organizations (e.g., non-profits). While these materials can be a valuable resource, materials developed for other situations will not necessarily be tailored to the types of human-bear interactions most reported to the agency for response.

Understanding reporting trends of human-bear interactions can help an agency update and revise its communication and outreach strategy to be salient to the audience that is reporting the interactions. Additionally, understanding who is reporting incidents with bears, and who is not reporting incidents bears, can help an agency develop a more diverse and inclusive communication strategy.

The California Department of Fish and Wildlife (CDFW) uses an online “Wildlife Incident Reporting” system to track human-bear encounters statewide. By examining the trends in this system, the Department can identify what types of interactions are most reported and develop materials to address these specific concerns. For example, CDFW receives very few reports about bears from people camping. However, many of the bear related pamphlets, brochures, and messaging in California pertain to campsites and campers. For CDFW purposes, materials about preventing home break-ins by bears, or keeping backyard chicken coops safe, would connect with a larger audience.

This presentation will summarize the trends in the reporting of human-bear interactions over the last ten years. We will then discuss how CDFW is using the reporting data to revise and update its “Keep Me Wild” campaign. Finally, we will conclude with a discussion of how the reporting system can be improved to increase inclusion and better represent the diversity of Californians who encounter black bears.

Approaches to Communicate and Evaluate Learning About Safety Around Wildlife

Jill Bueddefeld, Wilfrid Laurier University

Ramona Maraj, Parks Canada

This presentation will discuss findings from a social science study conducted in Elk Island National Park of Alberta, Canada – which is part of the Beaverhills Biosphere. Black bears are relatively new to the park and as such human-wildlife coexistence education is increasingly needed. This study took a mixed-methods approach to develop and evaluate a dialogic-based narrative approach to educating visitors about wildlife safety in the park. The larger study included a focus on both bears and bison, however, for the purposes of this presentation we will focus exclusively on the outcomes related to bears. The findings from the study reveal that the program was effective for teaching visitors about safe behaviours around wildlife.

Several adaptations were made to the study due to the Covid-19 pandemic (see Bueddefeld et al., 2021 for details). However, the project was modified to enhance participant and research team safety and was able to proceed. In total there were 132 surveys completed and 68 participants engaged in on-site comprehension assessments, and 9 follow-up interviews were conducted with the research team.

Paired t-tests indicated that all measures of learning and behaviour change were found to be significant. There were significant reductions in the perceived barriers to safe human-wildlife interaction. However, there was still some uncertainty about what actions to take and their effectiveness.

This study provides important insight into understanding learning and behaviour change of park visitors in relation to human and wildlife safety. We utilized survey items that have been previously tested in their effectiveness to measure learning and behaviour change. By combining this data with on-site comprehension assessments (a novel method of data collection created for this study) we provided a direct measure of both learning and ability to practice the correct behaviours.

We further triangulated this data to corroborate the findings with personal meaning maps and interviews to get a better understanding of what visitors were learning and if they implemented the wildlife safety actions they were taught. These findings all indicate this approach to interpretation was successful for all items of learning and behaviour change. As this study had several changes in data collection due to COVID-19, and our final sample size was smaller than we hoped for, additional research is needed to determine if these findings are generalizable across contexts and locations. We recommend future studies compare different mediums of communication (e.g. videos, static images, or in-person interpretation) and include direct observational data of visitors on trails after the learning intervention.

A key take-away from this study is the novel method, the comprehension assessment, which was developed in response to the Covid-19 pandemic. This presentation will share how to utilize this approach to “test” visitor behaviour and knowledge regarding learning about wildlife safety and highlight how this method can be replicated in other contexts.

PANEL DISCUSSION

Changing the Channel on Bad News Bears: Communications and Media Tips

Clive Desiré-Tesar, Clive Tesar Consulting

Mark Hart, Arizona Game and Fish Department

Peter Tira, California Department of Wildlife

Amy Alonzo, Reno-Gazette Journal

Ryan Canaday, KTVN Reno Channel 2 (CBS)

No matter how much we all do to try and prevent human-caused interactions and conflicts with bears, we will never eliminate them completely. When people and bears interact, it inevitably makes the news. How that news is reported by the media and received by the public can make everyone's jobs much easier or much harder.

Communications and media planning can help shape the public perception and appreciation of bears overall as well as the roles people play in avoiding or exacerbating conflicts and help everyone on the frontlines of communications deal with both non-critical and critical situations.

Our expert panelists will give you the view from both sides of the microphones, cameras and smartphones and will leave you with time to ask lots of questions on how to make the most of the opportunities you have to put communications and the media to work for bears.

TRANSCRIPT

Linda Masterson - Today, we are going to show everyone how we can change the channel on Bad News Bears. We have put together an amazing media panel and a giant thank you to Nevada's POW Amy Alonzo, who helped us coordinate everything and persuaded some members of the Nevada media to join our panel and share their secrets. We will leave a lot of time for questions, and hope this will be a very interactive panel discussion. So, this is your chance to ask all that stuff you really want to know about; how can you work more effectively with the media and get out the messages we're trying to get out. Our panel consists of many folks so let's start with Clive Desiré-Tesar. Clive is a former journalist who also headed up communications for Canada's National Inuit Organization and the World Wildlife Fund's International Arctic Program. He now teaches in Carleton University's Master of Northern Studies Program and consults widely on policy and communications for a variety of clients. Next, we have Mark Hart, who is the Arizona Game and Fish Department's Public Information officer. These will hence forth be identified as PIOs. He serves on the agency statewide Category One Incident Management Team for wildlife conflicts and attacks. He is also certified in the incident command system by the Arizona Department of Forestry and Fire Management. So, this is a guy who really does know how to put out fires. And one last fun thing, Mark, is also BearWise's National Communications PIO. Then we have Peter Tira. Peter is the public information officer for the

California Department of Fish and Wildlife. He's responsible for media issues in Northern California and SAC from Sacramento to Oregon, east all the way to Lake Tahoe. That's a lot of people and a lot of territory, so he should be very proud of his work. We know he is very proud of the work he did in 2019, participating in the reintroduction of the California Paiute cutthroat trout that was absent for more than a hundred years. Then, the guy who looks exactly the way you'd think he'd look, is Ryan Canaday. Ryan is an Emmy Award winning journalist and evening anchor and producer of the Nightly Your 2 Cents segment on KCTV and two News in Reno. He's been covering the Nevada area for more than eight years and has reported live from fires, floods, presidential rallies and more than one beer incident. And last but certainly not least, is Amy Alonzo. She is the outdoor environment and wildfire reporter at the Reno Gazette Journal. She is passionate about outdoor and wildlife issues. She's worked for six newspapers across the country in various positions including photographer, editor, and reporter. She says one of her standouts was being caught in the crossfire during a drug bust gone wrong in a large-scale marijuana grow on federal land. And she rode in a homemade bottomless boat across a wastewater treatment in rural Nevada. So, for anyone that thinks media people just sit behind their desks.....and with that, I turn it over to Clive Desiré-Tesar.

Clive Desiré-Tesar - Okay. Thank you, Linda. Greetings everybody. I've learned in the last couple of days that you all know an impressive amount about bear behavior. And so today, we hope to illuminate a little more the other side of the human-bear conflict equation, the human behavior as modern, regulated and moderated through media. So, what I'm going to do today is give you an overview of some of the key concepts. I'm going to give you some tips about dealing with media from my time, both in front of and behind the microphone. Then, we're going to illuminate it further through the other members of our panel who are going to give you some practical tips and experience related to their lives working with bears and media, which are not mutually exclusive.

I want to start by saying that “framing” is absolutely critical in terms of how you're going to reach people. So, the next question, of course, is how? How information is packaged and presented strongly affects how it's interpreted by an audience. So, the framing of something is really important and will affect how people will understand and we hope to help illuminate that a little more.

So, here's a couple of possible “frames” of the story. One is that bears are a problem. Notice I didn't say “problem bears”, just sort of. Another is that people are creating problems with bears. So whichever way you frame that discussion, it'll predicate the sort of actions that are likely to follow. Therefore, if you say that bears are a problem, people will focus on the actions that will affect bears. If you say that people are creating problems with bears, they'll focus on actions that will affect people. So that's just a very simple way of looking at it - and each word that you use regarding your framing is really important.

Now let's talk about who does the framing. Let's assume that you, as an individual or as an agency, have chosen your words and you know exactly how you want to frame this issue of conflict. Or, maybe you want to reframe it as coexistence, as I've been hearing a lot over the last couple of days here at the Workshop. How does that frame get through to your audience? That might depend on how directly you reach your audience, what sort of channels you use, as we heard in an earlier presentation. You know, channel selection is important. So, what sort of channels are you using to get through to people? Are you using social media channels or are you using legacy media, which is just an expression for the media that most of us grew up with. Thanks to Pew Research Center, who do a lot of research on media in the U.S. (which is quite similar in other markets in other countries), this can tell you about the platforms people tend to use to get their news. So, as any of you who've been in a commuter car or on a train or anything like that know, nowadays everybody's on their phones. Right? So, a lot of people are getting the news digitally and that has effects on what sort of news they're getting because news is reframed into that digital device. You know, more of a quick headline. Another figure from Pew Research is that people who “often” and “sometimes” get news from social

media, is 50%. So, does this mean in at least half your audience is likely to get your news the way you framed it, because you put your news out through social media? Not necessarily because although half of them might be getting their news regularly from social media, where that news originating is another question. And earlier, Pew Research found that roughly half of the content that was shared on social media by users was from legacy media. So, they're basically just resharing things that have come from through legacy media. So, the takeaway from this is that you're the direct communication where you get to frame the story through your Facebook or your Twitter or your YouTube or whatever platform you're using. Most people are still most likely to be getting their news filtered through news media, the legacy media where we're talking about. So, you can see that sort of change there.

Which brings us to effective media relations. This is a picture from when I was at the Copenhagen Climate Coop a few years ago, and I was working with WWF's Arctic Program at the time. Our spokesperson was about six foot four inches tall. The person interviewing him, the reporter there, I think, was under five feet tall. So of course, the cameraman wants to get them both with their heads and shoulders in the frame, so he's wandering around distracted, trying to figure out what to do. And he finally finds a milk crate and stands up on it, so he can get his good two person shot. But I think it's also a good visual metaphor for the way in which media and organizations who work with the media can work together to create a story.

So, for the biologists in the room, I've used this example as a symbiotic relationship. You'll probably tell me why that's wrong after I finish my talk, but the idea is, of course, that you need each other. Media need stories and they need people like you to bring them the stories. You need the media to get those stories out more effectively. You more you understand the media, the better this relationship is likely to work.

I'm going to take you through a series of quick tips. Tip number one is don't talk to the media, talk through the media. Remember that the people you want to reach are on the other side of that microphone, the other side of that notebook. So, talk to the audience in a way that you'd want them to understand, this is your opportunity to talk to that audience. Don't get distracted by the fact that the media person in front of you may be very knowledgeable about your subject and can talk about it like an expert. That doesn't mean you talk to them like an expert. You still use the same basic language that you want to reach your audience with. The next tip is to speak plainly as much as possible. We all speak different languages, and I don't mean we speak Spanish, or Hindi, or English, or French, although I know several of those languages are known by people in the room. What I mean is, don't speak vocational languages, or academic speak, or politician speak. The point is that we must monitor ourselves to make sure we're not doing any of that when we're speaking to the media. Don't use acronyms. Don't use complex terms. Don't use terms that are only found within your vocation. Third tip is to have a plan. Have several plans. What are the most common events where you're called on to talk to the media? Look at your media coverage for the last couple of years, assess how things went. Then, make plans to prepare to improve those situations; and they don't have to be complex plans. Often, they just need to be sticking to the script and highlighting one or two key messages that deal with that particular situation. Think about the sort of headline you'd like to see result from those situations and make that your message. Make sure that your spokespersons know that those messages exist. Make sure that they're handy. That they're not just sitting on a shelf in some binder somewhere that they've got to flip through madly to access. Tip #4 - say what you want to say, then stop talking. I should have used this slide at the end knowing media will not likely use everything you hope they'd use, but you can increase the chances that they'll use your framing if you've said what you meant to say. Think of it as a buffet. If you've gone to a salad buffet and find out they have lasagna and bread too, chances are you'll walk away with all three of those things, even though you intended on only having salad. In other words, restrict the buffet by saying only what you need to say; then your framing is more likely to get through that media experience as intended. Tip #5 - Get to know the media. They're mostly nice people. Talk to the media people in your geographic area who might cover

your particular beat. Find out what interests them, pitch them stories. Occasionally they may not ever end up being your best friends, but they're certainly not your enemies. They're people you can work with, and developing a good working relationship with them will be useful for both of you. Tip #6. Cut the media some slack. When I was a reporter, believe it or not, I did occasionally misinterpret things, even get things wrong. On one notable occasion, I magnified the size of a forest fire by ten times because I was trying to change it from hectares, which I figured only farmers and forest fire experts understood, to square kilometers, which I thought everybody understood. I got a call after the newscast from the local head of the fire department saying "well, thank you for covering our fire, but could you please make it ten times smaller on the next newscast?" And that's the way in which to deal with media that, they're not getting things wrong on purpose. It's a high-pressure job with multiple deadlines and reporters are called on to be experts in seven different things on seven different days of the week. It's a hard job. Cut them a little slack. If you think a reporter has got something wrong or misinterpreted something. By all means, call them on it. Call them and just be respectful, polite, and explain why you think that they've got something wrong. And if they agree, they'll often agree to correct it somehow. It's important to note that it's not necessarily the reporter who spoke to you that got something wrong. If it was a print reporter, their editor or subeditor could have written the headline and they had nothing to do with that. If it's on electronic media, it could have been an editor who cut out some vital context that the reporter you spoke to had put in there, but the editor cut out. So, you know, these things happen. But you do what you can to deal with them and just be polite, be respectful. And sometimes you can get corrections up. Sometimes you can get them changed. So, I'm now going to take my own advice and say no more and pass it along to Mark Hart.

Mark Hart - Good afternoon, everyone. Great conference you're having here. I've been able to sit in on some of the presentations so far and it's been great. Just to make it clear at the outset, I'm only here to talk about black bear management. Hats off to those of you who manage grizzly and polar bears. I don't know how you do it, and I think if I were in your shoes, you might be having a slightly different conversation. While we're pulling up the presentation, let me say a couple of things at the outset. This is a hard topic to talk about in the time allotted, but I'm going to do my best. I'm not going to get into how we use the incident command system. I'm not going to talk about how we deploy our Category one incident management team. I'm not even going to talk about our policy, which is very good, very detailed, regularly updated, but which ultimately does not reduce very well to a 15 second soundbite, although if I had to, I would say this about it. Our management decisions are governed by how wildlife behaves in the presence of humans, and if we ever handled it before. That, I can handle in a 20-minute phone call from an irate citizen. I've handled hundreds of those over the years from people who want to talk about a management decision that we made that they didn't agree with. And the goal of all those conversations is just to get what we consider to be informed consent. In other words, we're going to explain to you in detail what we did, and we understand you're still not going to like the decision we made. But if we've explained to you as best we can what we did, all we can do is move on to the next call because there's somebody waiting in the queue. The most important thing to know about crisis communications is it's just not about media relations. We get so focused on what the press is saying about us when we're dealing with a critical incident that we forget the other important public's equally important, our direct communications with the public officials and the communities we serve. And increasingly, it's about how effectively we use social media; or ineffectively as the case may be. Now, how do we get here? I'm fortunate to have worked on this kind of stuff for 12 years. I'm going to do a little historical retrospective for you so you can see how things have changed over the years and what Arizona Game and Fish has learned as an agency about how to do this. We may not be the masters at it, but we've certainly improved.

The year 2012-13 was a very, very tough time for human-bear conflicts in the state of Arizona. The most serious thing we dealt with is a bear attack in Pine Tar Pits in the White Mountains in the northeast corner of the state. A woman was out walking her dog, startled a bear that was in a dumpster, and it attacked her. She

did not die right away from her injuries, but she died subsequently about a month later from a bacterial infection. That public information officer job was a three public information officer job. We needed a public information office on scene, we needed one headquarters in Phoenix, a major media market, and we needed one at the hospital whose sole job was to be a presence there for the family while they waited for information about on their loved one. We also had three other bear attacks in that area. Also, others in the northern part of the state. As you can see from the map, where our highest concentration of bears is, it's east central to northern Arizona. But I'm down in southeast Arizona, in Tucson. You see these little pockets here; they're known as "sky islands" because they're not necessarily connected to another mountain range, and plenty of them are over 5000 feet elevation. We had a lot of bears in the area, and it was down there that another type of drama was unfolding. We had three additional bear attacks. Nobody was seriously injured, but they got a lot of media coverage. And then in the little community of Sierra Vista, we had a crisis of of another kind altogether going on. Sierra Vista is about 30 minutes from the US-Mexico border. It's a bedroom community of about 50,000, there's a military installation there, and it abuts right up with the eastern slope of the mountains which extends almost from I-10 to the border. The year before, in 2011, the Monument Fire swept through the eastern slope of the Yucca mountains and burned vast acreage of excellent bear habitat in that range. We didn't have many wildlife losses in that fire, but this one bear shown in the photo is the only one that we know of. Most wildlife got out of the way, but the habitat was burned up and we were just waiting to see what wildlife impacts would be from the fire, especially with bears. In 2011, It never happened. It seemed the bears scrounged what they could for food in that general area, went into dens hungry and emerged from dens in 2022 starving. And so slowly over a matter of months, they began to use the drainages (the wash systems we call them in southeast Arizona) and eventually that led them into the city to forage. The first one of these calls came in July with a male bear up a tree. He was the first bear call of 100 bear calls we fielded in 90 days, mostly bears moving into the city of Sierra Vista to forage. We had all sorts of things that were at the level of what some would term "unacceptable behavior". We had a bear attempt to enter an occupied home, waking sleeping residents inside. We had a bear charge one of our own officers on a golf course. And one early afternoon we had a bear just walk into a picnic that a bunch of soldiers were having on Fort Huachuca. Based on their policy, if a bear shows up, you get out of there. So, they did, and the bear had a great lunch. But the agency had to take some action, and unfortunately, we had to remove four bears from the Sierra Vista area, and we relocated four other bears; only one of which stayed where we moved it to. And of course, we were getting horrible press coverage at this point, right? It couldn't get much worse. Or so we thought. What else could we do? We were using our management tools to the best of our ability, but public opinion is swinging way against us. So, we went to visit the Sierra Vista City Council twice and met with city officials and said, look, this is why we're taking the management actions we're taking, and we need your help. We need to get the word out through all your communication channels about attractants, about hazing, about how to stay safe, and what people should do if confronted by a bear. And then we took it a step further. I got a phone call in the office one day, as I often do, from an Eagle Scout candidate who was looking for a project. I said, oh Sonny, have I got a project for you. He mobilized his troop and with our help, went to Sierra Vista, to the areas most affected by this bear incursion, for lack of a better word. Bear in mind was that it wasn't the bear's fault, right? They got burned out the year before. So, we let the Scouts go door to door in those affected areas. We equipped them with living with black bear brochures and copies of the County Wildlife Feeding Ordinance, which prohibits wildlife feeding and carries a hefty fine. And we also had them hang signs. It was a bit of sleight of hand, right? I mean, if we just showed up with badges and guns, people would have been a little put off. But it was the Boy Scouts, and people really were receptive to that kind of velvet glove approach. It worked. Things got better. People started doing a better job of policing it, not putting out their garbage till the day of pickup, placing up the fruit falling from trees, taking down the bird feeders, the hummingbird feeders. It was ultimately effective.

That playbook of media, community and government relations is one we repeated in the following years. We had a bear in the Santa Rita mountains south of Tucson that quite by accident one day discovered that backpacks sometimes contained food. How about that? And so, the bear approached every hiker carrying a backpack that it saw. How did that happen? Again, not the bear's fault, but now it had learned how to obtain food, so it was a two month struggle to manage this particular bear. We worked with our partners at the U.S. Forest Service to close the trails leading to the area that we know in the bear occupied. That ultimately didn't work because, as you can see from the network of trails on the graphic at the upper right, there were just too many ways into that area. We couldn't really close all the access points to that particular place. But we also went there, and I personally went there, and spent many weekends at the trailheads with signage, and living with black bear brochures, talking to hikers, sometimes getting useful information, sometimes just reassuring them, running them through the drill of how to stay safe around a black bear.

Something similar happened the next year when we had a black bear, one that had previously been relocated, walk an extremely long distance to the mountaintop community of Summer Haven. He was looking for food, peering into cabins and such. So, we went up there, took the media with us, and went door to door, or cabin the cabin I should say, to explain what was going on with the bear, hand out the brochures, post signs, and we got a really good news feed out of that. It showed us that being proactive and dealing with the issues head-on and being involved worked. And we repeated that process a few days later when the bear came down the mountain and wound up in an exclusive Tucson subdivision. I went there, went door to door again, I calmed neighbors down because for some people this can be a very scary experience to have a black bear in your community, and they even helped us by giving us location specific information about where the bear was. We regularly briefed the news media at the gates of the community, so that they felt informed, and when we couldn't get to the gate to brief the media, we posted updates to social media. But something changed. In the ensuing years. Actually, two things changed; the rise in power and influence of social media during that ten-year period I've just covered cannot be underestimated. It was absolutely a game changer. But one of the downsides of it is that social media is so fast that information is out online before you know it, and you've got to be ready to respond to it. And you can spend a lot more time than you want to on your phone keeping track of what's going on. But here's the other thing, and I don't know whether my counterparts in other states or nations have had this experience, the rise in use by homeowners of security cameras like ring and trail cameras has exploded. And this has really kind of changed the way we work on crisis communications. Here's why. As the slide says, this little bear led the Arizona Game and Fish Department on a four-day, 20-mile chase. And the way we came to know of its presence was through social media. Homeowners were getting the imagery, they were getting photos, getting videos, and they were posting them to apps like Next Door and to Facebook. The media was getting ahold of them, and so were we. And so, when we got these materials, these images, we would repost them with relevant information, like what you should be doing around your home to prevent that bear from lingering. It had obviously been habituated by human food and was going to keep foraging in neighborhoods if there was access and we put it out every time with a call to action. Do this, you know, be proactive. Haze the bear away, remove your attractants, here's where it was, and we repeated that process. And to their credit, they reported the story accurately. This bear was not menacing to anyone. It was just in the wrong place, and it never stopped moving. So, we would get a call about its whereabouts, and we'd make a B-line to that place, only to see that it had moved someplace else again. But it was kind of a perfect storm, right? Because I can honestly say there were times during this process that I felt like the community and the news media were helping game and fish via social media to avert a crisis with this bear. It was really a phenomenal experience, all thanks to a citizen's phone call. And I should add, the media also encouraged people to call us. What's one of the big things we always deal with in crisis situations? People say there's a bear in my community, but I don't want to call Arizona Game and Fish. They're going to just going to kill it. I'm sure many of you know that phenomenon, but the way the information got presented on social and news

media made it easier for people to call us. So based on a citizen phone call after four days and 20 miles, we finally caught up with that little bear. We captured it, took it to the remotest location we could find within our region to let it go. But then we doubled down and we created an animated graphic for posting to social media that showed the bear's troubles. I'm playing it right now. As you can see, it's annotated with specific locations so that viewers can see where the bear was proximate to their home or to their workplace or to their church. And this was so positively received by the news, by the public, you can't believe it, because now they could say that bear was by my church around the water cooler, or that bear was just down the street from me. It really worked. And it was a very simple social media tool to convey that information. There's a lot more technical stuff I could go over with you on crisis communications. We've all got a decision point to make with that. Are we going to be proactive or reactive? Better to be proactive. You want people responding to you as opposed to you responding to them. But if you're going to go proactive, tell everybody at the same time and before you do, fake is another way to do this. For example, some of our wildlife officers have email lists of the community communities they serve. Some communities have a Facebook group just for that community. Is that a better way to get out the relevant and relevant information than putting out a post or a news release? We think so. We've tried that with great success. Remember that media relations alone won't get it done. Due respect, but social media is as important or more important because social media in this era tends to drive the news media coverage. It's an incredible change for somebody like me who's been doing this gig for 12 years to see this happen. But it's and you should use that as a tool in your favor, not look at it as something that's just one more impossible thing you've got to deal with while you're trying to communicate in a crisis. But number one in my book and has always been my practice, be accessible and be available if it's your responsibility to speak to the news media and the public about a crisis communication situation your agency is in, go to the scene, talk to everybody you can talk to. You become as informed an expert on the situation on the ground as you can. You'll be more effective as a spokesperson and much more help to your teammates if you go there. And finally, remember crisis communication slash issues. Management is a three-legged stool. Media relations, government relations, and community relations are the three legs. That's all I got. Thank you.

Peter Tira - Some good media tips we've heard from Clive and Mark already, and I especially like the point about the plain language, I think it's easy during interviews to get a little nervous and sucked into science-speak and acronyms. And so, the plain language point's a good one. The power of social media is certainly powerful. I know in California, at the California Department of Fish and Wildlife, we have a lot of media entities following our social media and a lot of stories generated from our social media posts. So that's a very powerful vehicle for you and also a vehicle to tell your own story. Not always just responding to media inquiries. Again, I'm Peter Tera from the California Department of Fish and Wildlife. A little context about California. Thank you all for having me here today. We have a lot of people in California, and we have a lot of bears in California. About 40 million residents right now and 25 - 30000, black bears. That's the only species we have today in California. We are also home to some of the major media markets, the largest media markets in the country, L.A., San Diego, the San Francisco Bay Area, and Sacramento. So, all of this creates a lot of opportunity and a lot of real-world human-bear conflicts. As an information officer, I'm one of several information officers we have at the California Department of Fish and Wildlife. And there's not a week that goes by in our working life where we don't deal with the media on a human bear. Conflicts somewhere and human-bear conflicts can dominate our work lives, sometimes two weeks at a time. Every day around the clock and after hours where we're fielding media calls on human-bear conflict. With that said, there are some hotspots within the state where we deal with human-bear conflict all the time. Certainly, Lake Tahoe area is among them, if not at the very top of the list. Generally, our approach as an organization is to be as truthful, forthright, and as transparent as possible. That might sound like a no brainer, but it can create some management problems for our biologists and our leadership. But again, we're a public agency. We feel the public, the taxpayers, have a right to know how their tax dollars are being spent. They have a right to know

how their wildlife is being managed in that sea of the wildlife. So that's our general operating philosophy. So, a little more background on me. Again, one of several information officers at the California Department of Fish and Wildlife. One message I'd like to share with you is that the media really doesn't want to talk to people like me, Ryan, and Amy. They don't want to talk to me. They don't want to interview me. They'll call me for some help with the story, but they really want to talk to the experts. The bear experts in this room are in the audience. They're not us, okay? We are former journalists. We are hired because of our media experience, our communication skills, etc.. We're not scientists. We're not bear experts. That is you folks. So, it's really our job to help connect Ryan and Amy with the experts. They are good reporters, and they want to speak to the experts; so, this can be, you know, a little disconcerting for some of our scientists when I say, hey, we've got the media here. We ask, can you, you know, help us out with the interview? And they say, well, I thought that was your job, so just be aware. I know we're lucky in California. We have a deep roster of scientists who are willing to work with us and go in front of the media and communicate our messages. So, I'm very thankful for that. There are advantages to doing that, and it's beyond just providing an expert for the media. We have tremendous scientists and tremendous biologists, but it's an opportunity to communicate an expert opinion. But, you know, our folks are passionate. They've devoted their entire careers to the well-being of California's wildlife of Fish and Wildlife. They are knowledgeable. They are articulate, they are authentic. So that is nothing we can manufacture or manipulate as public information officers. You know, that resonates with the media, and it goes through to the public, as Clive says, and it instills trust in your agency. It sells credibility, instills confidence. They see that we're caring. They see that we are committed. They see that we are passionate. They see that we are knowledgeable. Again, that's nothing I can do as a public information officer. Certainly, in a crisis, certainly in a deadline I can stand in, I can get up to speed, I can help any immediate needs the media may have. But my goal as a public information officer is always to connect our tremendous folks with the media, with the public. It's not something for everybody. Not everybody's good at it. Not everybody's comfortable at it. But where you do have those folks who are good and who are comfortable, it's a real opportunity you should take advantage of. These are skills everybody can learn. And in this day and age, I think it's really important terms of, again, instilling confidence in your organization, instilling credibility with the public.

So, let's talk a little bit about Lake Tahoe. It is the absolute perfect storm of human-bear conflict. Okay. This area has among the highest black bear densities in North America. We have a year-round resident human population here, about 40,000; and I think that's a little low. On peak peak days, we could have as many as 300,000 people in the Tahoe. About 15 million people a year visit Lake Tahoe from all over the world. So, you can imagine the attractants, right? The food, the garbage, the restaurants, 24-7 access to human-sourced food. So, everything is amplified in Tahoe. We have very wealthy people here with political connections. We have a large community of immigrants. It's a Spanish speaking community. We have multiple languages. Again, tourists from around the world. Everybody is walking around with a camera and a phone and a social media account. So, it's really kind of the perfect storm of human-bear conflict. Again, we have local media here, but it's nothing for San Francisco reporters to up here on a bear story. They do it all the time. Sacramento media happy to come up here on a bear story conflict story. So, again, it's quite the media storm and the media focus point for a human bear conflict that we deal with regularly. There are complicating factors in Tahoe, right? It's not just the purview of the California Department of Fish and Wildlife. Part of the basin is under the jurisdiction of Nevada. So, areas like Del Ray have multiple agencies with land ownership including the U.S. Forest Service, two state parks from two states, two state agencies, you have city and regional agencies. Almost all these agencies have their own individual independent law enforcement agencies. So, they all have public safety under their mandated responsibility and they all may respond to bear and do respond to human-bear conflicts. So not everything is reported or managed by one agency, which complicates things, certainly. Amy or Ryan can call me and say, hey, tell me about the bear break-ins in Tahoe. Well, I can give you a sense

of what's happening in a couple of California counties, but we don't have the whole picture necessarily, because not all conflict reports come to California. They may go to Nevada, they may go to the city, they may go to the sheriff's, they may go to the Parks. So, it complicates the management and the media response. Certainly, in Lake Tahoe, we're also seeing a phenomenon of fewer hibernating bears and there's several potential reasons for this. Right? I mean 24-7 access to food and human-provided food, human-sourced food, etc. all possibly interfering with hibernation. We have milder winters that might be contributing. So, we have more bear activity, more bear-human conflict year-round. People might let their guard down in the winter thinking the bear issues are going away. Not necessarily the case in Tahoe. Again, more challenges. Then we had COVID 19. We had it pretty severe and extreme shelter in place mandates in California. A lot of people went to Tahoe to take up residence to work, to move into the vacation homes. More people, more garbage, more food, more attractions for bears, more conflict. We also have well-publicized wildfires in California, again, affecting bear behavior, but also affecting media behavior. When the wildfire hits, we get calls. How is it affecting bears? During the COVID 19 pandemic, how is that affecting bears? How is all this movement or the lack of people on the streets affecting bears? So, we're dealing with a third year of drought in California. Again, calls from the media. How are bears reacting? How is wildlife responding? What are they doing? Is it impacting bears? So, all these factors complicate the situation in Tahoe, and the media challenges. So how do we deal with that? Again, truth and transparency. We try to be truthful as forthright as possible. What does that mean on a day-to-day basis? It means we have a statewide bear policy recently updated this year. It's on the internet for everybody to see. It spells out our management, our responses to different public safety events, to different human-bear conflicts. It's there for everybody to see. We take the event. We also make ourselves available to Ryan, to Amy. When the public calls, we are forthright. We try and be responsive. It's an opportunity to educate the public on bear issues. We can't control the final product. Not everything, not every story comes out perfectly correct. This is a bit of a disconnect. You as scientists, do you get everything right? When you're producing papers and doing research you have peer-reviewed publications. With the complexity of people and the world, we're happy 85% correct. We look at a news story and say that's pretty good, right? The main message is out there. But that will drive biologists crazy because it's not 100% perfect. So, we have to kind of manage that. But generally, we want to be transparent in what we're doing. We talked about all the different agencies, which could be a challenge. It's also an opportunity. Thankfully, we can collaborate with Ashley and Heather and, you know, tremendous colleagues. And so, while we can get overwhelmed and frustrated with some of the challenges, we can also leverage our colleagues from other states, other agencies, to put our resources together, put our minds together, and kind of tackle some of these solutions collectively so we can have cohesive messages across different states, across different communities within the basin. We can do things in English, we can do things in Spanish, and we can kind of coordinate these efforts collectively to have a unified message about securing garbage and attractants and hazing bears and whatnot. So that's an opportunity as well.

We're doing some interesting work in California. We are a mission-based agency at the California Department of Fish and Wildlife. We are a science-based agency, a science-driven agency. And we're doing a lot of really interesting work. And so, these are opportunities to tell our stories. This is why I like to get our scientists out in front of the media to explain some of these things. Just for example, we have an internationally recognized wildlife forensics laboratory down in Sacramento. And so, when there is a bear conflict or, say a break in in a home or residence here in Lake Tahoe, our biologists can collect DNA evidence, hair, blood from break in and take it to our forensic laboratory. They can cross-check it with a database of Tahoe Bears because we are building a catalog of DNA from various bears that we interact with, and we will be able to see if we have handled that bear before. Is it in our system? Is it in our database? Do we know and can we identify that bear that's involved in the interaction? Is it ear tagged? Have we handled it? Same thing goes for a bear involved in a public safety incident. If there was an attack by chance, we're able to collect DNA evidence from a victim.

We're able to trap bears and compare the DNA and make 100% match whether we have the bear responsible for a break in or an attack and those kinds of things. So, you know, we're making science-based decisions, and we certainly want to communicate that with the public. And yeah, so those are opportunities. Again, you don't have to wait for the media to tell your story. The media is interested in more sensational stories, certainly. But again, you can use the tools and means you have available to tell your own story. For example, a couple of years ago we started our own blog. It's called the Bare-Naked Truth Blog. You can Google that. It will come right up. It's an opportunity for us in the department to tell our story. It's very Tahoe based because in Tahoe, again, you have a lot of social media going on, a lot of misinformation, oftentimes going on about different bear issues and crisis and conflicts. So, this is a way for us to tell our own story in a way to get our message out. It's a way to follow up the media may have covered a bear that we darted and removed from an urban setting and returned it back to the wild. And maybe they don't follow up and they never report on what exactly happened with that bear. But we have the vehicle and the means to post a video and show that the bear was released in wild habitat nearby. That's the rest of the story. We get the opportunity to tell the rest of the story. You likely have those tools available within your own agencies. You have social media accounts, you have sophisticated marketing email possibilities, you have websites, you have press releases, you have many tools at your disposal in this day and age to tell your own stories, in addition to whatever stories the media may do. Again, your scientists may not be comfortable doing a one-on-one interview with a TV station, but you are likely to have some video resources, some videographers within your agencies, and you can go out in the field and do your own interviews and tell your own stories in a more comfortable setting. So again, look for opportunities to tell your own story. Be transparent in what you do if you can. It can certainly create some complicated management situations, but that's just how we roll in in California and how we kind of deal with the challenges we face. Thank you. Thank you very much.

Ryan Canaday – Thank you everybody. I work at KATV in Geraldton News. First off, thanks to Linda, Ashley, and Clive for putting together this team. I have to say, I like seeing a plan come together. I mean, we've only met in Zoom and now we are watching everything on this just it's all connecting so perfectly and so cohesively. So anyways, I'm an anchor at Channel 2, I've been there for eight years. I've only been an anchor for three years. My first five years, I guess, I was boots on the ground. A reporter doing live reports. And it was at that time when I was doing more bear stories and I think they reached out to me. But nowadays I'm behind the desk a little bit more. So, in my presentation I want to go over what appeared to be some popular questions. I believe they were coming out of this conference in the past as well as showing you some examples from the news. And I think some of the things have already been touched on by Mark and Peter and Clive as well. But now I guess we can kind of put some visuals into that, which is kind of cool. So, what makes a good story is a compelling video, something that you can see, something that's tangible and real-life interviews from officials - we've talked about that, right? You heard that. We want to hear from the experts. The PIO is kind of the middleperson who helps set it up. And we want to hear from the people who know their stuff. But the other thing that I think can be a little scarier, and we haven't heard yet, is we also want to hear from real people, you know, people who are impacted by these bear stories. You know, someone who had a bear in their backyard or a bear who broke into their house, someone willing to tell their story and say, oh my gosh, you wouldn't believe what happened to me. And then the neighbor who's watching that and can relate to it or see that as a resource and know how to react and what to take away because, you know, when you see something happen to your neighbor, a lot of us, I think, relate to one another. Then, get resources to help them get to the right people or social media accounts, which can help folks when they aren't watching us on the news.

So, I do want to play this video. The reason I like this one is it has a couple of things that, I think, make a good story; and a couple things that would make the story even better. So, let's see if we play this here:

Audio - Good evening, everyone. I'm Ryan Canaday. Kristin has the night off. Thanks so much for keeping it here with us. Some of you have been calling us about bears popping up in Tahoe or here in Reno. The Nevada Department of Wildlife told us this checks out since bears are starting to get all the food they can right now before they hibernate. Take this video, for example. Look closely. This is in South Lake Tahoe where you can see the bear slowly approaching the house, then walks pretty close to that girl you see swinging in there on the top, right. Someone saw this happening and started banging on the side of the house, which then ultimately spooked the bear away. The person who sent it to us says a family member accidentally left cooking grease outside the home. Wildlife officials say bears are following their noses all over right now, so it's best to be especially careful what you leave outside with the drought. Natural food sources are as bountiful as they've been in the past, so we're seeing a lot of them turning to unnatural food sources, which is unfortunately, things like our trash, you know, left out food, open garages with food in them, things like that. And we really must be careful. Wildlife officials say do a good look around here in your yard and clean up what you can. And if you do see a bear, make some noise like the person did in this video. It's possible the bear had their head down and didn't even know that the person was there.

I feel like that video touched on what Mark was mentioning about the ring video. I mean, that was captured on Ring video camera from a viewer who sent it to us. I know the audio is kind of hard to hear, but basically, it showed the bear just kind of walking onto the property. There was a girl swinging in the background. The mother of the girl made some loud noise and then the bear ran off. Compelling video, right? I mean, when you see a girl in the background on the swing and a bear coming up behind, then we have the expert talking about what's going on with the bears hibernating, which makes a good story. But imagine if we had the mom on camera, right, saying, oh my gosh, I saw the bear coming behind my little girl, so I started making a loud noise and the bear ran off. I mean, I feel like that has such a huge impact on the viewer at home who's watching that. So again, the Ring doorbell is definitely an increasing trend that we are noticing right now. So, we are encouraging people to submit, you know, our viewers have videos, and we want to see that. And if you know of something that helps tell a story, be sure to send that our way. Another thing that's been touched on, too, and one of the other questions that's come up in the past is that the media rely on agencies for information 100%, ten out of ten times, in just the last three months. I know it's hard to read on the screen, but these are three social media posts from CHP, South Lake Tahoe. One of our sergeants was on patrol when this big old bear tried to cross US 50 S.R. 89. He chose to take the bike path, so use caution when traveling around Lake Tahoe Basin. It's not uncommon to see wildlife on the roadways. That wasn't the story we were going for that day. But we saw the tweet, we retweeted it, and we put it on the newscast that night. We're absolutely following the trends that we're seeing in the community. The next one, Lake Tahoe, this is the U.S. Forest Service saying effective Monday, overnight visitors to Desolation Wilderness required to store food, trash, other scented items. And then there's a link at the bottom. We talked about those resources, right? Pointing people to those resources is important. Then there is this one, which is about the electric mate. The bear touches it and immediately hops up heads the other way. All three of these were not stories we planned on doing that day, but we saw the Facebook posts. I think maybe you guys reached out to us on that and then it got in the newscast.

So that's how we're going about it at my news station. Trust me, and like Cliff said, when we're doing so many different stories and trying to be the expert on each story every single day, we're not always thinking about the bears. We're thinking about, you know, what's the latest on campaign 2022? It's almost time to elect some new folks or whatnot, or folks who are currently in office. So next point here; how to be a better partner with the media. Again, we're not always thinking about bears on a day-to-day basis, so it's up to you guys to pitch those stories to us. If you are seeing trends out there that you want us to know about, let us know. Send those

press releases, reach out to us. If you are noticing a certain trend and you want to get on top of it before it becomes a problem, and again, help people find those resources, contact us. But the real people, and I want to drive this point home, it's important to get them on camera, but at the same time, counter misinformation on Twitter or social media with expert advice. Similarly, maybe someone said that that bothered you, something that's not necessarily correct, contact us, let us know, let us help you fix it. I also have to say, bear stories are by far, I think, the most popular stories around here. People absolutely love them. They go crazy for them. I mean, we've seen videos of bears hopping into ponds and people's backyards and it'll have thousands of shares and retweets and whatnot. So, I think it's easy to generate positive stories with the bears if you just kind of notice, again, what those trends are, and you can be proactive about it. This one, I thought, was a positive one where you get those real people, so we'll play it.

Audio - Bears are spotted all over northern Nevada in campgrounds, parks, even neighborhoods. More people are capturing them on home surveillance systems. So really, are there really that many more bears out there walking around our neighborhoods? Landon Miller shows us some of the footage and asked officials if we should be concerned. It was 438am last week when this bear got into the trash at this home on Daniel Drive, right off California and Mayberry, west of downtown Reno, saw a bear. I thought at first it had to be a dog. I thought, you know, it had to be, it couldn't be a bear in this area that there's this video showing one strolling the sidewalk Saturday night near Skyline Boulevard. And those videos don't stop there. So, are there more bears or more videos? A DOW official says what we're seeing happening is more people have cameras now, so more people are starting to notice that bears are in our neighborhoods. But they've always been there. And DOW says there is not a spike of bear sightings. In fact, the number of calls is the same as last year. The bears are gearing up for hibernation. Do not panic. All they want is food. Right now, they have so many calories to build up to get ready for the winter. The chances of seeing a bear during the middle of the day are rare, and DOW says that the bears will do their business in the middle of the night, and that's when bears are most active. And they don't want anything to do with people, they're just looking for easy food. Make it more difficult. They recommend protecting your trash cans and picking fruit from trees. And if you see one, don't panic. Move to a safe place. If it's on your property, in your yard, head inside your house, open the window and just start clapping your hands. Yell at the bear. You know, it was a little scary, I guess. But as for Karen, she's happy the bear only wanted her trash and she's hopeful it will not make a repeat appearance. I'm just hopeful the bear didn't find anything exciting. There really wasn't anything in her trash and it wouldn't be a reason to necessarily come back to this house.

So, can you kind of see how when you get the people, the neighbors who were impacted by the interaction, you can change the story? I mean it was a great job having DOW in there. It helps, right? Yeah, you need to get that info in there. But when you have the people who this is happening to, I mean, they can just take it to another level, I think. And obviously we have the compelling video of the bears knocking down trash cans. So again, that's something that I think checks all those boxes. And it's a positive story, too. You know, nothing bad is happening yet. You have the resources there to prevent something bad from happening. So, if you're noticing those trends, with bears knocking down trash cans, you can get that word out.

But then how do you deal with a crisis, right? We do know that these unfortunately happen on occasion. And we find in this situation, when this crisis happened, that I heard about it from the viewers first. I've wondered how the story would've been different had we heard about it from the agency first and the whole thing was transparent. I don't know if that necessarily could have changed things. I think what had already happened was done, unfortunately. But it's one of those things that when you can get in front of it, do so, you don't have

to be reactionary with this kind of story. I think what you're seeing too is that the story almost made an example of someone who did something wrong, and that can have a huge impact too. After this call aired, someone mentioned the idea of getting educational resources, and we provided that. But a lot of folks said why would they do that? They should know better. We're in bear territory. It sounded like NDOW had a similar reaction. So, I'm going to play this last video. This one is a little different. It's from our listener line where people call with questions, comments, concerns. It's an opportunity for people to just get things off their chest, grieving, airing grievances, whatever the case.

Audio - Next caller says she's said that NDOW had to take a bear away from her property. First of all, I live on at least a quarter of an acre on the river. I had a bear here on my property by the river. He wasn't hurting anybody. He was a good bear, a very shy bear. He was my friend until the wildlife department came and captured him. They told me they were going to move him to the Carson range. I don't believe a word they said. I think they were going to kill him. So, this one's pretty tough. I spoke over the phone today with Jack Robb, the deputy director with the Nevada Department of Wildlife, and he was very aware of what he called a sad situation here. He tells me this bear was being fed on that property and became habituated. And what that means is the bear was not fearful of humans and would approach humans looking for food, even entering houses, he says. Now, he tells me habituation is what gets these animals into trouble so often. And so that's why this bear had to be euthanized, Robb told me. If they'd been able to get to the bear sooner, they could have done aversive conditioning, as he called it. But he says for this bear, it was too late. He says it's a really sad situation, but it's what needs to be done for public safety. So, NDOW says feeding bears, really any wildlife, is highly discouraged to keep these types of situations from happening again in the future. As always, if you have two sets you'd like to share, feel free to give me a call on the hotline.

This is sad, isn't it? We don't ever want to see this happen. I was upset too, you know, that that had to take place. But I think, again, when something like that does take place, it's better to not try to hide what happened. I think try to get upfront, be honest about it, and just let the folks know. Because again, with the reaction, what I learned that day is that there are far more people who know the right thing to do. And then there are folks who think that the bears are their friends, like a dog, who can come over and be fed. You know, in the end we're asking scientists, very smart people, to get on camera. And I think it's not a natural thing. My boss used to tell me all the time when I was nervous to just do it. It's just about saying what you want to say, right? Clive said that too. Just getting on camera and being able to know what it is that you're trying to get across is a great way to tell the story. I think you can create memorable sound bites also with triumphs and success stories. You guys remember the Tamarack Fire? I think that was last year, The little bear that was burned and got hurt. Right? Terrible. But it was released later, and a positive story came out of that in the end. You know, that's a memorable soundbite.

You have all talked about hazing bears as well. If we as the media can go to the site, you know, for a bear that's not been relocated yet, and get the video of what's happening and the experts saying yeah, this was a terrible situation but now look at him. Look at where he's going as well. You know, we want to be there, we want to capture that video, we want to hear those success stories happening. That's all I have, thank you everybody.

Amy Alonzo – Hello everyone, I'm from the Reno Gazette Journal, and I'll either be a breath of fresh air or a giant disappointment because I have no slides and I'm probably not going to talk about bears at all. The Reno Gazette is the second largest print publication, or I guess print coverage area, in Nevada behind Las Vegas. We cover all areas throughout the Reno-Sparks area and the Tahoe Basin. My coverage extends into northern California and rural Nevada. So, we probably cover about 1 to 1.5 million people. Our readership is much smaller than that. But I do outdoor environment and wildfire. For the record, I am way more comfortable

being on the phone rather than talking to people in person. So, I'm a little nervous right now. Ryan is very professional looking, very pulled together because he is an on-air personality. Me? This is what you get when you're talking to people at the newspaper. And this is a good day. Usually, we're in running clothes. We must wear real clothes into the office now that we're back from the pandemic, but we are very casual people by and large. So, when you're talking to us, I think the best advice I can give is to imagine you're on a date, or imagine you're at a job interview, where somebody asks you the same five generic questions that they asked the previous two candidates before you. And they're going to ask the two candidates after you. Nobody's going to glean any pertinent information from that. So, we need to exchange meaningful information to have a real conversation and have a real dialog.

Often, I get asked by federal or state organizations who I work with to provide a list of prepared questions. I'm 43 years old and I've worked at newspapers basically since high school. I don't think I've ever had a prepared list of questions in my life, mostly because I don't know what I want to talk to you about yet, because I'm not an expert. I do outdoor environment and wildfire topics. Like I said, just pretend you're on a first date, pretend you're on a job interview and you're trying to impress us with your depth of knowledge. And in general, I want to learn from you guys. The highlight of my week is going out on assignments with you guys or just having a great conversation where I can turn around and share that information with my readers. I'm not just kissing up, I really like working with the Department of Wildlife, it's probably my favorite entity to work with on my beat. Just doing the biology thing out there which is amazing work, you know, really uncovering interesting stories throughout the region. And you guys always have a lot of interesting stuff to share. I recently wrote a story working with the Department of Wildlife that was pitched to me by one of their biologists and it ended up winning first place for the State Press Association for business news. I think you guys, most of you locals, would know about the large cryptocurrency company that was preventing the Department of Wildlife from monitoring bighorn sheep on what recently became private property in the Virginia Range, which is a complicated area. It's a combination of public and private land and the state agency had recently reintroduced bighorn sheep several years prior and they just wanted to monitor how they were doing. They asked this business, hey, how are sheep doing? We'd like to know what's going on with the animals that we worked so hard to reintroduce here. Would you mind if we did a survey? And this private entity was like, no, we're not letting you come up here. You don't get to monitor animals here on our private land. One of the biologists brought this to my attention and I thought that it was interesting and that is how this story came about.

I feel like I have developed a pretty solid relationship with the Department of Wildlife. I believe they have a decent level of trust in me that they can share information with me on or off the record, and if it's off the record, they know I'm not going to print it. So, they can have candid conversations with me. Their biologists gave me a thousand times more information than I could or would ever print in the paper just to really help me understand the issue. Just being able to have that dialogue, and that trust among the biologists, and trust between the PIO, and with their upper management, to understand that I'm not intentionally going to write something or put something out there that's malicious is valuable. Reporters are just trying to understand the issues and trying to understand how stories are told to the public. So, I think just having an honest and open dialog between people is helpful. So, as you're pitching stories to us or as you are having conversations with the media, really think about your news feed. Sometime when you're sitting down for breakfast in the morning, pull out your phone and scroll through the stories. Try to figure out the stories that are catching your eye? What are the things that you're clicking on? And why? And pay attention to the headlines. Pay attention to the first sentence or two. I can't speak for television, but in print media, we are happy just to get people to read the headline and the first couple sentences. After that, people clicking on hyperlinks, they're off on ads, they've scrolled on to another news story. They feel like they've gathered all they need to know because they're not a subscriber. And that's as much as they read, they don't want to pay \$0.99 for a subscription. So,

we really need to get people in the first couple sentences and with the headline. Last week I got tasked with writing a story that was pitched to us by our local humane society. They were having an outbreak of disease. I'm going to read you their headline and their first sentence, and then I'll read you my headline and my first sentence. Their headline is Nevada Humane Society Needs Support to Manage. Then their first sentence is the Nevada Humane Society Reno Animal Shelter is experiencing a Pamlico Leukemia outbreak, prompting the organization to implement immediate increased safety protocols and ask for the community's support. Now that a lot of words that don't give a lot of information. I translated that headline to Deadly Outbreak at Nevada Humane Society Sickens Dozens of Cats, Suspected Cause of 1111 Deaths. My first sentence was that the Nevada Humane Society's Reno facility is suspending its intake of cats and kittens while it handles a deadly outbreak. What I am trying to do is take what they have just told us and really condense it. Readers need to know what is going to impact them. There are going to feel bad for the cats and kittens. There are other people who are going to be curious about why they're dying, how many have died, etc. how can they help. But really the big takeaway is you live in Reno right now, so you can't take a cat down to the Humane Society or the shelter, and that's like the nuts and bolts of what we need. And so, when you're having a conversation with the media, keep the language simple, I mentioned I love to work with the Department of Wildlife. I have gone out with some of the biologists who can't talk in English, they talk in biologist. The media is never going to write the phrase recruitment and retention, which you guys seem to love. We want birth. We want birth and death. I have called Ashley several times and said, "I don't know what this press release says, we just want simple, plain language.

I'm going to leave you four quick tips for dealing with the media that I try to share with people I work with. First off, know that we're just regular people. We love learning. We love research. That's why we got into journalism. We are not experts, that's what you guys are for. So, we want to ask the questions and we want to get answers from you.

And we just really want to hear in plain, simple language, don't ever leave us guessing what you are trying to say. This interview for the SPCA should have been a five-minute phone call, 10 minutes max, but it took about 2 hours because they were talking in government speak and I couldn't interpret what they were saying. And then afterwards they called me because they were upset with part of the story and I said, I just needed you guys to answer the questions simply when I say how many cats have died or gotten sick and it takes you half an hour and we still don't have a number, you're leaving me guessing. If you don't know what number exactly, ballpark it. There were about 50 animals impacted. It doesn't have to be 50 or 52 or 51. Like in general. We just need a ballpark. Was it all 200 cats? Was it one cat? And then the last thing is Clive mentioned it. We can't do math at all. No journalist can do math, ever. So anyway, that's my time because we need to have time for questions. Thank you.

Question & Answers

Comment - Dick Shideler, formerly with the Alaska Department of Fish and Game. I've got a couple of comments for you guys. One is that in my agency, I've been involved in three human fatality investigations in my career. We are not allowed to speak directly to the press. We always have a person running interference for us, and there's a lot of good reasons for that. I can go into more details privately. But the second thing is I have never seen a story by the press about how emotionally difficult it is for us to have to kill bears. It's like that's out of everybody's mind, we're not robots and we don't enjoy this. I'd like to see a good story done on that. And I think there are an awful lot of people in this room that you could get information from, including folks right here, you know, in the Reno and Tahoe areas. That's it. Thanks.

Question- Julie Bless, Nevada Department of Wildlife. I have two questions. One for Clive and one for Peter. For Clive, you brought up some statistics on how we're getting information, and I was curious where podcasts landed on that because you had digital devices and radio. I'm a proud millennial, so I do not listen to the radio

or watch live TV, but I do get my news from podcasts and social media, etc. So, I was curious where podcasts landed on that.

Answer: It's obviously been a long time since I was working in radio, which is what I used to do. The materials I was using were all from Pew Research and they didn't have podcasts in there yet, so thank you. I cannot tell you any clearer than that.

Question - Peter, your blog, the media pull information from that site. Have you seen anecdotally that the blog gets shared on other venues? Especially when there is disinformation out there and people say hey, we've got the truth right here in this blog. Here's the blog.

Answer - Absolutely. On both occasions I mentioned, if there's a situation, oftentimes we'll post a blog and put out our take on it, our view, what we you know, and what's happening. And as much as we can, communicate with the public and direct other media to the blog. They will use it and often follow up with questions, so it is a good resource. And we need to, as agencies, tap into all those resources and the Nevada Department of Wildlife does an amazing job with their podcasts. California is looking at doing that too. YouTube channels are another important resource. So, we have all these tools out there and we do need to leverage all of them because people consume media differently these days.

Question - Hello, thanks for being here. My name is Katie. My question is for Amy and Ryan. I was hoping you could just speak to what it looks like for you, in your shoes, to tell how a story develops. In other words, are you walking in with a headline in mind, or does it develop? Or is it all over the map and differs every time? Could you speak quickly to how that unfolds in your process? Thanks.

Answer - I would say I never go into anything with a preconceived notion or a preconceived headline. I've been working on a project in Nevada, and how it's been changing, and working with some local ranchers, producers, and state agencies. When I started, I had an idea in my head of what the story was going to be, so I worked with the Department of Agriculture. But I wasn't getting anywhere so I went out and started meeting with the ranchers and producers. That's when I found out that the story was heading in a completely different direction. And when I wrapped up, I was spending a day out in rural Nevada and one of the producers said to me, well, I hope this fits with what you wanted to write. I turned to the person and said, well, I don't have something I want to write, I want to write what you guys are telling me. So, I think there's a perception that news can be skewed, have biases, etc. and I think any of us worth a grain are trying really hard to be objective. At some point we're all going to have some unconscious bias, but we do try hard to not go into anything with a preconceived notion.

Comment - I just wanted to address the gentleman in Alaska really quick and say thank you. That's an excellent story idea. Along those lines, it's very hard for us to write those stories when we don't have access to the people. We don't cover Alaska. My coverage area doesn't reach that far, but it is hard for us to write those stories when we don't have access to the people who are immediately involved. But along those lines, just to reiterate how important a good PIO is and how important it is to have PIOs to make their staff accessible to us. I pitched a similar story relating to wildfire this summer. I wanted to cover the emotional toll of being a firefighter during California and Nevada's crippling fire season. What is it like to miss your kid's first birthday because you're away on a fire? What is it like to be awake for an entire week working overtime? What is that like? And I pitch that to our local hotshot crews. I pitched it to the state. I pitched it to the Forest Service. I did everything I could. I couldn't get anyone to even call me back about the story. So, it is imperative for your agencies to have, if you want your side of the story told, someone responding to the media when we call or email; just some common courtesy, just call us back and say, hey, we don't want to do that story, but in general we want to do those stories. We would love to do those stories. A lot of times it comes down to access.

Comment - Ryan I would ditto that. I can give a brief example in a nutshell. Going back to the woman who I will call Ginger, who was friends with the bear, you know, the bear ends up being killed. I didn't know how that story was going to end. I had no idea what I was going to say on the other side. For all I knew, the bear was alive and well. Or if this lady was never even feeding a bear, just making it up in her head. I don't know. You never really know how a story is going to turn out. I don't know how many times I thought, man, this is going to be such a great day. I'm going up to Lake Tahoe for whatever the story is, and then just say a sunken ship for example, but then you run into something entirely different, and it was not what you thought your day was going to be. So that's, you know, that's usually how stories go in. So, if I could jump into the comment by the gentleman in Alaska. In California, that's one of the advantages that we see is that our scientists can speak to the media, because you can see that they're knowledgeable, but also that they're caring and they're passionate and empathetic, both obviously with wildlife and the community, and that authenticity comes across. Certainly, the situation you outlined is dramatic, and that would really resonate with the public. So, that's kind of where we see an opportunity to communicate some of that.

Question - My name is Chad White with the Montana Fish Wildlife and Parks. Thank you guys for doing this. My question is for Mark and Peter, it's a difficult question for me to ask because it sounds pessimistic, but it's rooted in optimism. I have a kind of issue with the low tolerance for bears in my area, and as a result, it seems a lot of the media outlets like to sensationalize and twist the messaging that I give them. And that leads to me only having one consistent source because this outlet does not twist or sensationalize the messaging I provide. And as an agency representative, I'm curious how you would avoid giving preferential treatment in those situations.

Answer – Mark -That's easy. Look, I've been in the Tucson market for 12 years and I've been around long enough that I've seen the next generation of reporters come into the market from when I started. As a general rule, I tell everybody the same thing at the same time. Occasionally the news, or some news media organization, will have earned an exclusive. They enterprise the story on their own without the benefit of a news release or a social media tweet. And my feeling about that is they should be able to break that story if they've earned the exclusive afterwards. But I think you should take the time to cultivate relationships with all the news media, you really don't want to play favorites, because you can't really afford to alienate anybody. And all news media are not equal. Some have huge viewership and readerships, and you reach more people when you talk to them. And maybe, if I've got to make three phone calls, I might rank order things that way. But once I've talked to one, I'll talk to the next. It's just a good way to stay out of trouble.

Answer – Peter - As a public information officer. I would echo those comments. We try and accommodate all the media inquiries. Last night for example, we got a call from CBS National News down in Los Angeles. They said they needed a bear expert to talk about being safe and bear country. They had a breaking news story and called around. All our experts were unavailable, so we started probing, well, what's the story, maybe we can get you to someone? And they're like, well, you know, we're covering that grizzly bear attack in Wyoming that attacked two college wrestling students right over the weekend. So, we obviously declined that interview because it's not our state, not our species of bear. And there's really nothing we can contribute to that story. But there are reporters, you know, like Amy, who cover the environmental beat, put a lot of time in, have worked with us in the past, have done a good job, are interested, maybe have some time to put into a more investigative piece. And so we will on occasion, give them certain stories. Maybe they're a little more complex, maybe they're a little more nuanced or we worked with them in the past. We know they'll do a good job, and they can't always do them. But we will. We have those relationships, and we will on occasion reach out to certain reporters for certain stories.

Question- Thanks, you guys. I kind of forgot what Dick's comments were and my experience with the media up in Canada, and not suggesting that it's special or different up there, I suspect is similar down here. At times, it just changes with the government of the day. We've had situations where I can talk to the media about just about everything and then a new government will come in and I can't see a thing and it goes up to the the hierarchy at the state level, capital level, and it's just generic speak that happens for four years until we get a new government. So, your concerns about generalities, I mean, you know, you're not getting details, but it's not because we don't want to give them to you, but because we're essentially handcuffed by the powers that are above. So, I guess the question is to maybe to all of you, or certainly the agency folks, do you see that happening over time with yourselves, with newly elected, new political bodies above you? Have you been lucky enough to have a standard, consistent approach to how you deal with the media?

Answer - That's a good question. I've had some firsthand experience. There was a time that no one in the federal government would address the impact of the proposed border wall on wildlife. So, I got the calls, and worked with our program staff, and we devised a set of talking points to address that issue that shot right down the middle, because we need to be politically astute and neutral. But yes, that happens from time to time. And, you know, if one unit of government isn't taking up the sword, maybe another one does. That's what happened for us with the border wall. We have a lot of cross migrations in Arizona from Sonora.

Question - Hi, I'm Shelley Blair with the California Department of Fish and Wildlife. I just wanted to make a quick comment about I understand that the media or the PIOs want experts to speak to what's happening, but the downfall of that is then the expert becomes the face of the controversy their name is put out there, they're bashed on social media, name called and threatened, and so I think that's a little bit of our hesitation with being on camera and being the face of what's happening, especially in these really high political, highly controversial situations. And so, I'm just curious about what your feeling is about that. I understand you want experts out there talking, but we must protect our reputations and families as well.

Answer – Amy - So I can't speak from the state level, but I can speak from a writing level as bears are controversial in Nevada in the Tahoe region. Our wild horse situation is also extremely controversial. And going back to the prior gentlemen's comment, that is something that people will or won't talk about depending on the current governor and leanings. I recently wrote a piece about wild horses, and I couldn't get anyone from any state agency to talk to me. And what we eventually settled on was the state referred me to experts who are not affiliated with a government agency, but who they respected as experts, who I was able to talk to and who were able to give me reliable information. And then off the record the state provided background information that I could just attribute to the agency, not a person. And that was helpful because I was still able to get the information that I needed. I was still able to fact-check and make sure that things were correct. And I was able to talk to people who were experts in the field who I wouldn't have known how to find on my own. So that could be a workaround if it's a controversial topic that you are worried about having your face associated with.

Answer - I'll jump in harshly. When I talk about deep rosters of scientific talent and biologists, Shelly is top among those. I put her on camera many times and she's been a resource in situations where there is a superheated controversy. You know, that's probably an appropriate time for the professional to go out front and just deal with it. And you should have that relationship with your peers, with your communication shop, to say, hey, this is sensitive. And we see a lot of this, especially in Tahoe. We have a very active, bear-activist group/ environmentalist group/animal rights activist group. So, in those heated moments, it may not be the best time to be out front or be the face of a controversy, that may be where you let your PIO handle those issues and let your communication shop take the heat, if you will. But it should be a collaborative process, it

goes back and forth. A lot of times peers will reach out to experts and that's not necessarily always appropriate. We don't always know the background or how controversial something may be behind the scenes, so having that dialog and being able to communicate is important.

Linda - I know you all would like to have at least a few minutes to go out there and talk and have some coffee and some snacks and drinks. So please join me in thanking these people for coming and spending so much of their time. I think if we're lucky, they might be available while mingling so you might be able to corner a few of them but we do need to stay on schedule. So sorry, but we are going to have to break – please come back at 320.

South Lake Tahoe, Black Bears, and Creating a Positive Path Forward For Both

Toogee Sielsch

Over the last twenty years the population density of black bears has skyrocketed in the Lake Tahoe area, and has also seen the emergence of a thriving urbanized black bear population. The Lake Tahoe Basin has not only become an epicenter of human/bear conflict issues, but also has at times elicited an adversarial relationship between some in the community and those government agencies tasked with managing our local black bear population.

The land mass within the Lake Tahoe Basin covers 205,000 acres and lies within two states, five counties, and an incorporated city, and has no top down uniform rules and codes/code enforcement pertaining to ever increasing wildlife issues. The local residential population inside the Lake Tahoe Basin is roughly 54,000. Due to Lake Tahoe's attraction as a destination recreation/vacation site it can see the population grow to well over 100,000 people on any busy holiday weekend, and is enjoyed by 15,000,000 visitors a year, according to the Tahoe Prosperity Center.

It's an uphill battle trying to educate the 54,000 local residents about the facts, realities, and best practices of living within black bear country. When you add 15,000,000 visitors a year it creates a highly dynamic and nuanced situation, to say the least!

As social media has blossomed and become an almost pervasive part of our daily lives over those same twenty years, it's given rise to a form of wildlife advocacy/activism that isn't always completely honest or truly informed, and it's given those advocates/activists the bully pulpit in some situations. Oftentimes these passionate, and maybe even well intentioned, folks can have a negative effect on the bigger picture.

Through my presentation I hope to show the evolution of a forty-year resident of South Lake Tahoe, myself, who once viewed the human/bear issue myopically, but now sees the larger picture based in reality. It's also my goal to stress the importance of community members working cooperatively with the official folks tasked with black bear management in our area to achieve a safe and educated coexistence between our community members/visitors and our local black bear population.

The Encouraging Story of How Maroon Bells-Snowmass Wilderness Went from Backcountry Crisis to Backcountry Cohabitation

Katy Nelson, US Forest Service

In 2015, the Maroon Bells-Snowmass Wilderness reached a crisis level between black bears and people. Extensive conflict included backcountry visitors being attacked, tents ransacked, areas closed, and bears being euthanized.

Reported incidents of bear and human interactions were numerous and serious, reaching a tipping point.

Now, seven years later, human-bear conflict in the wilderness has decreased considerably. What did it take to turn the corner from crisis to success? How did the community, partners, and Forest Service come together to create a better situation for bears and people? What lessons from this case study can other areas and land managers take back to their unique situations to create positive change?

Legislative Perspectives and a BearSmart Wildlife Attractant Bylaw/Tool Kit

Rich Beausoleil, Washington Dept. of Fish and Wildlife; IUCN Bear Specialist Group - Co-chair, North American Bears Expert Team

Sylvia Dolson, Get BearSmart Society

A free Wildlife Attractant Bylaw/Ordinance Toolkit is now available to local governments, organizations and concerned residents. The goal of the Toolkit is simple: reduce negative encounters between humans and bears using enforcement options.

The Toolkit, developed for the Get Bear Smart Society, is a result of a multi-stakeholder collaboration and captures the common goal of supporting communities in their efforts to manage and reduce anthropogenic food sources. While the Get Bear Smart Society operates out of BC, Canada, the Toolkit can be adapted for use in any community regardless of region.

Creating a wildlife attractant bylaw/ordinance is inherently within the scope of local government responsibility and this comprehensive Toolkit clearly outlines the need for attractant bylaws/ordinances and the steps to implementation and enforcement. This Toolkit will help community leaders reduce negative encounters with wildlife and support human coexistence with bears and other wildlife species.

The Toolkit is robust, including sections on:

- Why wildlife attractant bylaws/ordinances are necessary
- Methods to reduce human-bear interactions
- First Nation bylaw considerations
- Considerations for presenting to a council or board
- A sample bylaw/ordinance with a step-by-step guide to understanding each section
- A comprehensive bylaw/ordinance reference list

The Wildlife Attractant Bylaw Toolkit can be found on these websites:

Get Bear Smart Society www.bearsmart.com

BC Bear Alliance www.bearalliance.com

WildSafeBC www.wildsafebc.com

PANEL DISCUSSION

Engaging Communities in Human-Bear Coexistence Research

Sarah Elmeligi, Sarah E Consulting

Courtney Hughes, Alberta Environment and Parks

Annie Pumphrey, University of Northern British Columbia

Allegra Sundstrom, Idaho State University

Human-bear coexistence is a growing field of knowledge and one of considerable importance to bear conservation. As human populations grow and the types of activities that people engage in diversify, bear habitat availability and security is becoming increasingly threatened. This leads to people and bears sharing the landscape more often, although not necessarily by choice.

Many bear species are also threatened in parts of their range and there is not always a clear path regarding when peoples' priorities are prioritized over bears', even in the cases of human-bear conflict. For conservation and coexistence to be effective and possible, the needs of both bears and people must be simultaneously addressed.

Rather than an afterthought or a sentence in the conservation/management implications section of a paper, the "human" in human dimensions of wildlife should be addressed before, during, and after a research project. However, this is a difficult and often complicated task, for multiple reasons. Building relationships founded on trust, respect and reciprocity with community members is challenging. Different cultural norms, beliefs, perspectives, and biases can further exacerbate these challenges. While public consultation is becoming more common, we are proposing that research is strengthened through community engagement in setting objectives, collecting data, and writing up final reports and papers.

This panel will feature speakers who will discuss how their research has benefited from meaningful community engagement and how that engagement has improved human-bear management effectiveness in their communities. Human-bear coexistence recognizes that both people and bears have a place on the landscape; thus, communities must be meaningfully engaged in coexistence strategies in order for them to be effective.

We will conclude with recommendations for improving community engagement and a call to action for researchers, scientists, and managers to more fully incorporate community engagement into their coexistence efforts. We suggest this can help ensure a more holistic and applicable approach to conservation science, established on a foundation of strong community support and thoughtful, robust interdisciplinary science.

TRANSCRIPT

Sara Elmeligi – Thanks, David. And thank you, everybody, for still being here. Congratulations. You've made it to the last presentation of the conference. We're going to keep it a little light up here because it's been a pretty heavy three and a half days. So, we each have some very short presentations to share with you. But

we're going to leave lots of time for discussion, hopefully, at the end. It's really nice to see everybody in person. Everybody has said that already, but I just want to echo how lovely it is to see your faces.

We were going to be an all women panel, which I was pretty stoked about, but Courtney Kearney couldn't attend. So, we have Nick, and I mean he's okay, so be nice to him. The title of this panel is Engaging Communities in Human Bear Coexistence Research, and this really stems from some collaborative work I've been doing with Andrea Morehouse and Courtney Hughes. Andrea and Courtney and I are Albertan and quite proud of it.. This presentation comes from a workshop that the three of us did with the Alberta chapter of the Wildlife Society talking about community engagement. That workshop turned into a publication in *Frontiers of Conservation Science*, which just came out a few weeks ago. Courtney and Andrea and I are three very different women coming from very different parts of Alberta, doing very different research. And I wanted us to have a team name because I think we're so awesome. So, I suggested Grizzlies Angels as our team name, you know, like Charlie's Angels, like fighting the good fight for coexistence. Andrea and Courtney, we're not 100% supportive of our team's name, but they're not here, so that's too bad for them. But they do send their regrets. And of course, if you don't know them, their emails are there, and you can ask them questions about their work.

I'm going to start first by sharing Andrea's work. Andrea works with landowners in southwestern Alberta and her work with the Carnivores and Communities Program (CACP) is part of the Waterton Biosphere Reserve Program, and this is an example from Southwest Alberta of a community-based landowner-driven conflict mitigation program that works to reduce conflicts between people and large carnivores. They have three main program streams. First is attractant management, second is dead stock removal and third they also conduct bear safety workshops. The Carnivores and Community Program has been a bottom-up approach since its inception, and Andrea says that she thinks that is a large part of why it has been successful. A main component of why the program got started is that there was a dedicated group of people within the community that saw an issue that needed to be addressed and began working together to try and figure out solutions and some of the community leaders that have come forward over the years and really advocated for change within the community. Andrea chose this quote from Dick Hardy, "We wanted to steer the boat rather than be told how to steer it." Andrea chose that quote because she thinks it really encapsulates the community driven conflict mitigation work. Nobody likes to be told what to do. And if you have teenagers at home, you know that that is a fact. Engaging communities in the work ensures individuals have an opportunity to actively participate and be part of the process. So, Andrea's role within the CACP and the Southwestern Alberta community has been to provide a science-based perspective to conflict mitigation work. She joined the community first as an MSC student and then subsequently as a Ph.D. and they've pretty much suckered her into staying on as an independent scientist until the end of time I'm assuming. She's worked hard to engage the community in her research because they bring knowledge and perspectives that are different from her own and ultimately improve the quality of work that she does. The two papers shown on this slide are recent publications from the area with landowners and ranchers as coauthors, an example of a truly collaborative research project.

Next, we'll move on to Courtney's work. Courtney works in Alberta's Northwest. So, this is sort of like the northern end of grizzly bear range in Alberta. Courtney is part of the Northwest Grizzly Bear team, which was brought together to address the data gaps and implementation requirements for grizzly bear recovery in Bear Management Area one. For those of you who don't know Alberta grizzly bear recovery, BMA1 one is a big chunk of land in northern Alberta that we knew very little about the bears there; a lot of data gaps. The diverse multistakeholder team included representation and solicited direct input on priority activities from across government, forestry and petroleum sectors, an electrical transmission company, nonprofit environmental

organizations, and the agricultural sector. Their main objective is to build a population inventory, but they were also working on building effective relationships, which we've talked a lot about over the last week, and increasing scientific literacy in the community so that everybody can start the conversation from the same page. Through this work, they were able to identify data gaps and other needs related to grizzly bear recovery policy and, through working groups, built scientific literacy through engagement in designing and conducting applied research. This included DNA, bear hair, scat sampling and other methods. While the intent was to address recovery gaps and needs, to more effectively plan for grizzly bear management and other land uses. Importantly, his approach also gave people a platform to share their voice, to express their concerns and needs, values and desires, as well as how they'd like to see relationships and coordination move forward. They were able to build respect and trust through transparent, timely, open communications. They were also able to leverage social networks to expand the reach of projects, engaging more people, getting them excited about grizzly bear science and applications of science and management. Courtney's role within the Northwest Grizzly Bear Team was to co-lead as a rep of the government of Alberta, along with the forest section co-chair appointed by the stakeholder group. Prior to her role with the government of Alberta, she had completed her Ph.D. on sociocultural perspectives and experiences of grizzly bears and their recovery in Alberta. In part, her Ph.D. work helped inform us of the need for a collaborative, community-based approach to addressing the data gaps, but also improve local relationships to develop more effective management planning. The two papers shown on this slide are recent publications from this work, which included co-authorship from the other co-chair, as well as nonprofit organizations.

I'll move on to my research now - doing public engagement in Alberta's Rocky Mountain National parks. So a lot of this is from my Ph.D. research, and the research took place in Banff, Jasper, Kootenay and Yoho National Parks, and I applied an interdisciplinary methodology to examine grizzly bear habitat use and habitat selection around trails, as well as to understand trail user support of different management options. Things like, how willing are people to change their recreational activities to give bears space? Because I was using interdisciplinary study, I had a lot of different data sources, and I needed volunteers and citizen scientists to help make that happen. So, I had nearly 197 volunteers, and they were working on remote camera deployment and moving cameras around the landscape. They also helped conduct trail user surveys at trailheads and I have some volunteers working on data entry. The big lessons I learned throughout this work is that many hands make light work, but also give you a lot of work. But it's a good thing. One of the most important things I learned is that people want to be engaged in grizzly bear research. You throw that out there to the world and they will come, they will flock to you. I was not expecting to have nearly 100 volunteers on my team. I thought I might be lucky to get ten.

One of the reasons why my citizen science program was so successful was because I had a variety of ways for people to participate in the project. I had some volunteers that only wanted to do remote camera work in the backcountry. I had other volunteers who, for various reasons like mobility challenges, could only do data entry. Everybody felt like they were engaged in the project, and one of the ways that everybody felt engaged was through early and regular communication. I maintained a blog. I emailed my volunteers once a week with recent camera trap photos as well as funny things that people heard at the trailhead or whatever. And that regular communication was key. The other thing that was important was consistent two-way training. So, it was important for me to train my volunteers, obviously, so that I could have consistent data collection and robust data to enter into my analysis. But my volunteers also trained me. Many of them had experiences in the park that I hadn't had that improved the process. And so that two-way communication and being open to learning from them was probably equally as important. But probably the most important thing I learned is the value of kindness and the value of listening more than talking, which has been kind of a recurring theme. I only have one paper from this work because it's hard to write them when you're working full time. But this

one is really important. So, the paper from this work would not have been possible without the support of those 97 volunteers. Not only did I end up with a really massive dataset that I could analyze that I wasn't sure I'd be able to do, but people talk to volunteers at a trailhead a lot differently than they talk to the lead researcher. And so the debriefs that I had with my volunteers when they were conducting trail surveys, it was very interesting for me to hear how scared people were of running into bears or what management options people expected Parks to take if a bear was in the area. That really helped me to guide my discussion and include a section on fear, which I hadn't really thought about before I started the Trail User survey. So that was valuable. In the end Courtney, Andrea and I are three very different people and we do very different work with different communities, but we have one very important thing in common. We've all learned how working with communities isn't only good for us professionally and personally. It's also made our research better, stronger, and more applicable. We are grizzlies angels. If you want to join the team, just email me. There are way too many people to thank, but I asked Andrea and Courtney for acknowledgment slides and it's going to look like the slide that Seth put up, which now I see I probably should have just done. But we are eternally grateful for all the support from government agencies and private landowners and funding groups and recreationists, and just all the people in general. And that's our paper. And with that, I'll turn it over to Annie.

Annie Pumphrey - Hello again. My name is Annie, and I am a master's candidate. I'm just going to talk about mostly online community engagement because that was a huge part of my project and some of the challenges, it's going to be a short presentation. We're kind of hoping to discuss some of these topics, so some of the challenges and opportunities with online community engagement. My project, and the reasons I did my M.S, was all rooted in the community of Canmore and also in the Parks community of Peter Lockheed Provincial Park. I lived in the park for about six years before I did my Masters. This whole project came out of living and talking to people in that area and seeing this issue and the impacts it was having mentally on park staff, on staff retention, the impacts on visitors and impacts in the community as well. I didn't want to do a master's degree, but it seemed to be the best route to tackle this issue and get more answers that people would actually listen to. This is an AI generated image, which is very cool, and I will talk more about it. So, most of my challenges were that everything was online and because of COVID, and I really only had a sample size of local visitors and people in the community. So all I knew going into the master's project was that roadside bear viewing was an issue. All of my research questions came from scoping out people and making this chart of actors in the community and in the parks who I knew were knowledgeable or were experts on the issue. And I think the definition of what we call experts is interesting, too, because there's a lot of experts in the community who have a different range of backgrounds, maybe biologists, maybe just community members. So I had a lot of phone calls and Zoom meetings in the early stages to develop my research questions because I wanted all of my research to come from the people who are experiencing these problems.

I developed my research questions following Wildsmart's lead, and spoke to volunteers in the area, current park staff, and most importantly, trying to find ex-park staff, I think was really helpful because they're more unfiltered and aren't afraid to say whatever they wanted. So a lot of it was building a large flowchart of who these actors were and asking people to recommend other people. to talk to you, to develop the project. And there were two parts. There was a survey online and then interviews as well. The survey was mostly conducted through Facebook. And we also used the local bear report put out by Wildsmart, newspaper ads and radio interviews. Visitor centers were also super helpful, but what was really surprising to me was how popular Facebook became in the Facebook community during COVID for talking about this issue, which brings up a lot of challenges. Obviously, people are very polarized on Facebook, but it is a huge opportunity. So surprisingly, most of our survey respondents 380 in total, would probably come from the e-newsletter or word of mouth, but pretty much most of the respondents came through all of these Facebook groups, which are really prominent, especially in the Bow Valley. So, these are some of the main Facebook groups we used, and

there are tons of challenges with using Facebook groups because it really does kind of focus your sample size to people who are using Facebook. But in this community of Canmore, there are, it's a huge use of Facebook, especially like the Bow Valley community The Facebook group here has over 300,000 active members combined. So what we did was look at the demographics of user groups based off of user statistics in the park and then tried to find Facebook groups that linked up to these user groups that had the big populations. And then we would get in contact with the administrators of these groups and talk to them and use them to help spread information about this project. So, I'm not a huge fan of Facebook, to be honest, but this is kind of what we had to do to get the word out. Engaging with the community online has been a huge part of everything from step one all the way to the end. So, we've been making videos, sharing with pretty much all online conferences, and we have a website and stickers, which is the most popular part of the project so far. And we're hoping to make a short movie in the spring about the project to get it out into the communities. So that's all I wanted to talk about and bring up. In the discussion we can talk about what some of your experience and challenges are with online community engagement because it is quite polarizing and you are really putting yourself into the middle of it, like people calling you and messaging you at all the time, about every issue. So, there are definitely challenges and benefits and I think it's an interesting topic to think about. And then also the idea of what constitutes an expert in your communities and thinking about who you go to and how you access these people when you're trying to find knowledge. And then navigating conflict and interpersonal challenges too was really interesting in this project, there's a lot of really heated voices in this community and a lot of finger pointing and name calling and people wanting to know, did you talk to this person? What did they say? And also just curious of people's experiences with navigating that in a small, small, tight knit community. So that's pretty much all I have to say. Thank you.

Allegra Sundstrom - Okay, So hello again, everyone. I'm Allegra. And as you all might have heard yesterday, I worked in the high divide community. I interviewed ranchers as well as some biologists, but I also attended quite a few public meetings. And so as Seth mentioned earlier, I am not an expert, but I am an expert learner. And I feel like attending those public meetings was one of the best things that I could have done to be able to learn about what people are experiencing on the ground and who's living with bears every day and what that looks like. Attending public meetings gave me the opportunity to listen to some of those folks without being maybe an intimidating research presence. And I could listen to more organic conversations within the community and so that was beneficial as well. And then I was also able to observe how people think about and make sense of conflict as well as tools. And I was even able to hear from people that don't use tools in that setting. So that was beneficial. Some of the things that I learned from these meetings were, that no one-size fits all, and that goes for tools, but that also goes for relationships. And then secondly, the peer-to-peer influence was pretty important, and we've heard a bit about that today as well.

When it comes to the messenger and the trust that they can build within, or that they have built within the community, one size does not fit all. I was able to work with people in five different valleys or watersheds and their associated conservation groups. So, cycling back to the cultural shifts and the different values that people hold within these communities, I just wanted to highlight one quote that somebody said, and that is that "some people use tools to save people and some people use tools to save bears" or vice versa. But I think that shows how we need to consider different values in these communities. And we may not be able to use the same tool or the same framework or even the same approach to messaging when trying to get the message across. And I think it's important to recognize that people don't all have the same level of acceptance for bears, which we're very aware of, but we don't need to have the same level of acceptance for bears to still reduce conflict. So, I think that was one point that I wanted to hit on at the end of the conference here. And then similarly, there is a dichotomy in success that applies across communities, across these valleys that I interacted with as well. One of the groups that I spoke with was the Centennial Valley Association, and they found success in their range rider program, which was a program that morphed out of years of conversations

with producers to figure out the common goals that they had throughout the Valley. But their program was really successful. The Centennial Valley Association would also be the first to say that their program wouldn't necessarily work for even the next valley over where the terrain looks different, and interactions with wildlife look different. And then secondly, that element of peer influence was important amongst producers in rural communities. And so obviously we have heard many examples about the importance of trust. And just as I imagine it would be beneficial to know someone who has Karelian Bear Dogs, if you've just adopted one. The same goes for producers when using new tools or also when adopting new livestock owning dogs or something of again, any tools of, in that realm. So another benefit of the peer influence aspect is that having somebody you know or a fellow rancher to go to if you need to do some of the troubleshooting with, say, a new livestock guardian dog or an electric fence or whatever it may be is really beneficial to, talking about those unintended consequences that may not have been explicitly mentioned before adopting the tool. And so people on the ground that have local knowledge will obviously be the best spokespeople for both problems as well as potential solutions. So, I'm keeping it short as well. But acknowledging the ranch manager who said that some people use tools to save bears and some people use tools to save people, how do we navigate messaging across those communities where we have people that believe and value different things? And another question that I think about often, which is also related to what Seth said about the proper pacing and not rushing the process is this question of how we balance meeting our proactive goals and letting communities drive progress at their own pace, even if that means potentially allowing the occasional reactive response. And that's just something that I want to encourage you all to think about as well. So yeah, these are some of the things that I've learned in my expert learner role. And as I said, it's interesting to think about how communities interact and make decisions and I would encourage you all to do the same. So, thank you.

Nick de Ruyter - Now, I don't know if I have a choice, but do I get to be Bosley, with the angels? Okay. I am part of the team. For those who don't know, the Biosphere Institute is a local nonprofit organization in Canmore, Alberta, and our mission is to empower community leadership to address environmental challenges. The two main areas we focus on are human wildlife coexistence, which is where the Wild Smart Program falls in and that what I manage or run. And then we also deal with climate change. So I want you to just remember that when you hear about the project or the study or research, we want to try and get community members involved and empower them to be able to make a difference and be part of the solution, which we've heard a little bit about already.

So we've heard the word "trust" several times, and that's the whole point of the project we did which is called the Trusted Messenger Project. And I'm hoping that some of the things I'll show later, some of the examples of what we created, will be useful for you, and feel free to use that information for yourselves, because there's no point reinventing the wheel, which many others have already said numerous times this week already. Basically the goal of the project was to work with trusted messengers or members from the community representing different recreation groups and user groups. And the goal was to work with them to design, deliver and then evaluate human-wildlife coexistence messages. And while we were doing that, we were also doing a pre-and-post survey for that evaluation, and we interviewed all the participants or trusted messengers afterwards to get their feedback on how the whole process went. And it went really, really well. And I guess to become trusted messengers, it didn't require they necessary knowledge to be a trusted messenger. We also ran a series of workshops. You've probably heard the name Dr. Jill Butterfield a few times from Ramona. She's a social scientist, an amazing, amazing woman, and worked with our trusted messengers, to help them become trusted messengers. We taught them a lot of the kind of materials and subject matter, mostly taught by me and others, in kind in the human wildlife coexistence world. She added the whole social science, human dimensions side to it. She also did the audience analysis with them, which you've heard a little bit about earlier, because every audience is going to be a little bit different depending on which group you're working with.

It's really important to remember that one one-size doesn't fit all, and you might have to do some tailoring. That's where this project used trusted messengers to deliver tailored messaging to make them those trusted messengers. We've talked about those "aha" moments and it was during those workshops in the training where those aha moments came for those trusted messengers. And that was important for them to be able to really feel like they have the knowledge to pass on to their user group. So that was the whole point, instead of Nick the Wildsmart guy going to mountain bikers or whatever, we wanted people from their own peer groups to be the ones delivering that message to see if that actually makes a difference. And it does.

These are the five different groups we use, and they aren't necessarily done randomly, and there's many other options for different groups that you could use, like anglers or hunters, just to say two examples that could be great user groups to talk to because the messaging is probably going to be different with hunters than with youth, for example. So, we used a trail running group, a local mountain biking group, the Alpine Club of Canada (which has climbers, hikers, mountaineers), a youth group called the Canadian Rockies Youth Network, and one of the local tourism agencies in our neck of the woods. So, before anyone needs to frantically write anything down, not that you guys are, but this is all on our website. Here is a screenshot. I'll give you the website address later, there's a link to our recreation and wildlife stuff under the wildlife or wild smart resources and everything I'm talking about, including infographics is available.

Some of the key takeaways I wanted to mention were that all the groups showed an increase in knowledge, which is great, that's what we wanted to see. And I should also just back up one little step. With human wildlife coexistence messaging, what we were trying to do is to get them to learn more and potentially adopt the behaviors and pass it on to their user groups. And it could be things like walking with dogs on a leash, recreating only during the daytime and not at night, avoiding areas during certain times of year, like during berry season in the summer. Those were the kind of behavioral changes we we're looking for. Also using designated trails only, complying with trail closures, that sort of thing. The groups also showed an increase in consideration for wildlife. And part of those aha moments were them thinking that maybe their decisions don't actually take the best interest of wildlife into consideration. In post surveys we found that it reduced the barriers to action. So, a lot of people wanted to do the right thing for wildlife, but just didn't know what to do. And so, in learning the knowledge that that they got through this project, it definitely reduced those barriers, and they had actual concrete solutions, things they could do to help minimize impact on wildlife.

Infographics are a great choice. We did a lot of different types of media with how we presented the information. And as you can see from the five different groups, they are quite different in the demographics. So one thing we found, and this is a key one, this is a tip for everyone, infographics worked really well because they tested really high in terms of effectiveness, but they're quite easy to make, especially using things like Canva. You can make an infographic quickly. Videos work very well as well, and I don't know if you guys have made videos, but they can be time-consuming, they can be expensive, and depending on how long they are, it can result in viewers losing interest. So best bang for your buck we found was that infographics work really well. Multiple media forms work well. If you can, try out a few different things and see what works best with your groups. Combining different types of messaging formats and media, like infographics in a blog article, works really well. So a good combination.

Curiosity is key. We found, especially in the groups like the mountain bikers and specifically the Alpine Club where it was a bit of an older demographic, more experienced that they didn't really like - surprise, surprise - they didn't really like to be told what to do. And so for them, their a-ha moments came when information was presented in a way that sparked curiosity and they thought "oh, how am I affecting wildlife when I'm going rock climbing" or things like that. And, out of that, our representative from that community wrote a most amazing blog article that actually got published in their national newsletter in Canada, which has many thousands of viewers. So pretty cool. And the last thing I want to mention, in case you didn't know this, is that

dog owners only really cared about the safety of their own dog. They didn't really care about the safety of wildlife in terms of having a dog on or off leash, just about the safety of their own dog. So that's good to know. And even if that's what their priority is, you can put that in the messaging that it's going to make them keep their dogs on a leash. So those are just some little tips.

Tailoring messages for the seasons is also important.. I think others have mentioned it a little bit as well at this workshop. Having one message for the whole year might not work very well and changing it for elk calving season, or the elk rut, or berry season or, in the winter when bears are hibernating can be beneficial' Focusing the messaging that there's other wildlife that are around is important so make sure you include that in your messaging. And I added the dog stuff there again. If you're creating messaging, really tug on those heartstrings of those dog owners and make it clear that the safety of their dog is so important and that they should keep them on a leash. So, whatever we need to do to make them believers just go for it. So very quick, we had infographics, blog articles, videos, even made some Tik Tok videos, maps, and memes. So there's lots of different ways to show those messages. We saw a total of 27 messages that were created, so at least three per group, but over 148,000 people saw these 27 posts. ' I'll just I'll quickly run through these and you can ask more questions about these after. This was one of the examples that we created for the Alpine Club. So this had a little bit more of that research in it. I don't know if, you probably can see it, but someone talked about it earlier this week, about how smart bears are in and that they can they figure things out. This was a study done by Cheryl Hojnowski and John Paczkowski, who are both here as well,. But the bears in Kananaskis country are pretty smart and they can actually tell what day of the week it is. So, here you got the purple dots and you've got the red dots. So the purple dots are where this GPS collared bear was seen on the weekends. And the red dots are where they were seen on the weekdays. And actually, where the red dots were, there's a lot of really good food sources there, really good prime habitat and food. And they figured out that if they go there on the weekdays, there's less people, it quieter, and they can feed better. And there's our Canadian bears for you, right there, they're pretty smart. You can find more about this study online. So for the Alpine Club they want to know some facts and data . So this is one of the things we shared in their newsletter and on Facebook, but just an example of, a little message that 'wildlife need to feel safe to stop and eat.' Let's give them the space they need. We did another one for the Alpine Club. about leaving the night for the animals. I don't know if you've seen it in other areas, but at least in the Bow Valley, a lot of people are recreating at all hours of the day, especially during COVID. So there was really no quiet time or downtime for wildlife to go be wildlife. There's just constant people everywhere. So we focused on getting people to think about that and also maybe saying, I'll just recreate during the day and leave the night for the animals. This was shared on Facebook, and was shared by Yellowstone-Yukon, and it's spread quite quickly, which is what we were hoping, to get some people thinking about these different topics.

Here's an example of a meme. I'll let you read that one. This was also done with the Alpine Club. Something like this takes less than 5 minutes, so very easy and you can get a message across or get someone to think about certain things quite easily. This was an infographic we made with the mountain biking group. This was one of the examples of the 'rules for runners' that we had for people running trails during elk calving season.' And there was three parts to this. So another example of an infographic, very easy to make. This example is the blog article from the Alpine Club, , this one got shared through the national newsletter and it was really great because she had her aha moment and reflected on this in the blog article and was just really great to read. This is an example of a video we created with the mountain biking group and a map we created with the trail runners, to reduce risk during elk encounters during calving season. And then the last one I just want to show you, hope you guys appreciate this one. This was made with the youth group. This was a Tik Tok video.

Video playing – *“Just outside of the beautiful Bow Valley area lives this small creature. This invasive species is known as the doggy poop bag. He may seem cute, but in reality, he's very dangerous. He can attract*

wildlife trails, making it dangerous to humans. It can take upwards of ten years to decompose. Even biodegradable bags can be harmful. Oh, he's on the move. It looks like he has found a mate. But the question is, will she accept him? And she does! This summer to protect nature and wildlife, pick up after your dog."

The real takeaway message I just want you to get is that messaging doesn't have to be fancy. I don't have 50 letters after my name, I haven't written any papers, but I'm working with your community members in the different groups, it's really easy to do simple research and find out some valuable information. There's many more user groups that that we'd like to work with and keep this going forward. So thank you very much and hope you have some good questions and discussions coming up.

Questions & Responses

Question - Linda Masterson - It's really interesting to hear about how you have to bond with community groups. You have to find the people that the peers will respect. How do you guys find the early adopters? Because those are the keys, right?

Response (Sara) – Okay, I'll kick that off. One of the things that Courtney and Andrea and I all agreed on instantly as we were preparing this collaboration of our work was that it was really important to meet people where they are, and little actions go a long way to building trust. So introducing yourself, taking your sunglasses off when you meet somebody, your body language is really key. Like being open and folding your arms, being honest about who you are, who you work for, and what you're doing, and then just asking them questions. The early adopters will reveal themselves to you if you just let them. And that involves, you know, kind of like what Jay said the other day, like "talk less, listen more". When you're standing on somebody's land or talking to a trail user in that moment, you are not the expert.. You're not, you're in their space and you want to know what they think. So let them be the expert and tell you what they know or don't know.

Response (Nick) – I'll just add one thing to that. I also make a very conscious effort of not finger pointing or public shaming anyone in the community. I want to be a trusted messenger as well. I don't want people to feel like they're doing the wrong thing. Some people just don't know that they're going to get shamed or anything like that. So, I think that's part of that trust in building those relationships. And for them knowing that we're genuine, I'm genuine when I'm talking to people there's no other agenda. I just want to hear what they have to say exactly.

Question – I'm inaudible from Alberta. I didn't see a lot of engagement with the schools. What do you see as kind of a long term goal for when we interact in different ways with kids?

Response (Nick) - Yeah. The younger children weren't part of this research. But as part of the Wildsmart program, on a regular basis I chat with kids from age two or three up to 93. So the whole gamut of different age groups. I love it when the kids come home and shame their own parents. Tell them why, 'why aren't you carrying the bear spray?' So we go into the preschools and the younger grades to not only have them bring information home to their families, but also to start that next generation off right with that knowledge. And in the Bow Valley, at least, I can't speak for other areas, it may be down in the States, but there's many kids that are 12, 13, 14 years old that their parents let them carry bear spray. They're responsible when they go hiking or biking with their friends. They let them carry bear spray. And I think that's amazing. But it all comes from the education and then the trust from their parents to be responsible., I think we put a lot of emphasis on that younger group so that as they get older, they have the right habits and knowledge going forward.

Response (Sara) - Okay. On the kid's topic, I think a few of us were talking about this last night and I also used to work in environmental education. And for us it was really important to look at the demographic of kids as well. One of our rules was no tragedy or consequence before grade five. There's a lot of anxieties right now, especially after COVID, like with children's counseling becoming more popular because there's a lot of

anxieties that we're placing on children, too. So I think being careful of how you frame messaging around children is super important and being careful of talking in very positive terms. And if you are talking about consequences, I'm framing them as opportunities and not just leaving it as a consequence or detrimental impacts because as adults we can understand those concepts more, but you have to be careful with younger children. Also for older kids, children like junior high level and high school are incredibly intelligent. So we had a workshop recently in B.C. about bear management and we gave a presentation and then let them come up with their own bear management solutions. And honestly, most of them were pretty comparable with a lot of things that are being done now. There's a lot of intelligence in youth too, so there's a lot to learn from them. So yeah, just being careful how we talk to kids about climate change and those sorts of things.

Question - Hey, first of all, thanks for your presentation. I'm curious if any of your work you worked with any brand ambassadors or influencers and if so, if you can just speak specifically to how you developed that relationship or what that looks like.

Response (Nick) - I can start. So if you saw that reach of 148,000 people, a lot of that was due to the tourism group we worked with. Tourism Canmore-Kananaskis who have many followers and so the engagement wasn't as personal with their reach or their peer group because it's tourism. And so that was a little bit of an odd duck compared to the other groups within the trusted messengers, because they were much bigger and weren't as involved, I guess you could say. But, that one post was shared with Y to Y, and I think a few of them were shared with some bigger Facebook groups. And actually part of that project, which I didn't talk about because of that COVID word was that we were hoping that we would recruit more volunteer wildlife ambassadors too. We have a volunteer program as well, which is another great way to get those early believers involved to volunteer for a for a good cause. But one example, one of our ambassadors we recruited this year manages a huge Facebook group with over 20,000 followers. I think it can be really helpful if you can get some of those influencers on board and believing the message and then spreading that message, it is very useful. But you've got to make sure that they understand the message and believe the message and are going to stick to what you're trying to do because as we've mentioned with social media, it can go off the rails pretty quick. But the good thing about things like those infographics that I created this summer is they got shared by bigger Facebook groups. If you keep things simple, just make the information useful, there's a bigger chance that it will get shared by those influencers from those different groups.

Response (Sara) - I also think working with citizen scientists, citizen science works best, in my opinion, when it turns into a word of mouth opportunity. So you put a call out for volunteers and maybe you have five or six people show up and express interest and now those five or six people, there's three people who have been waiting for this moment their entire lives. And they're like, 'Oh my God, you want me to put up a remote camera? That's awesome.' And I'm like, Yeah, thank you. That's so cool. And they will turn into your biggest champions out there on the landscape. They're members of hiking clubs or they mountain bike with their families or whatever and encouraging them to throw out that invitation to their peer group and be like, Yeah, bring your wife, bring your kids. Oh, you're having a dinner party? Why don't you tell your friends about what you're doing? The more people who are involved, the better. And creating a really open and welcoming atmosphere that welcomes literally everybody. So that's another reason to have a diversity of options and ways for people to get involved, because some people don't want to spend 8 hours hiking up a mountain to throw up a remote camera. Some people some people are like, I have an hour after work, what can I do for you? And I'm like, these cameras are generating tens of thousands of images, would you like to just do data entry for an hour? And they're like, okay. But it's helpful to have a variety of options and to really encourage people to share their experience and to be fun with them. Doing my PhD was really serious work for me, but it was actually one of my goals for all of my volunteers to not really ever see how serious it was for me. That they were coming out and just having a good time, meeting other people, playing in the woods with cameras or

doing data entry, whatever. They didn't have to know about how I was crying and pulling my hair out, trying to do analysis. I kind of keep that hard stuff to myself.

Question - On that topic. The question for all of you, Nick, if you can zoom in a little bit on the ambassador program and how it works, especially around insurances and volunteer work on trails, for example with specific tools. So that aspect so difficult, I find from working within an agency, to allow volunteers to take part in those activities. Can you help me understand how did you make it work?

Response (Nick) - I'll start. So for those in the wildlife ambassador program, we have community volunteers who go through probably about 12 to 15 hours of training, learning about all sorts of, just the different wildlife that we have, the different rules, but also how to talk to people, how to deal with difficult people, conflict resolution. We run them through different scenarios just to get them comfortable out on the trail. And what they do is they go out to trails, campgrounds, day-use areas, events, and they talk to people about human wildlife coexistence, the different wildlife, bear spray, how to be a responsible trail user, be a steward of the environment. So all of those things, and it's really amazing because you're enabling them, you're empowering them, they're really keen, they love it, and it's a huge help to the agencies like Alberta Environment and Parks who, especially over the last few years because resources have been tight, the number of boots on the ground has been lower. So it's another extra 25 people that could be out there on the landscape educating people. And that's a win-win for all the conservation officers and everyone else on the trails. And as you've seen during COVID, it's super, super busy out there. Not only are you enabling the volunteers, but you're also really helping all the state agencies and all the, you know, the wildlife managers. And I think it's been mentioned before as well, people don't always feel comfortable or like talking with the more official people in uniforms that are carrying a gun. So having their fellow community members to talk to about these things, it's a really gentle environment. And the ambassadors, they know that they're strictly education, not enforcement. They're purely there to just pass all that information, have just great conversations.

Sometimes it's two minutes, sometimes it's two hours. People are really super interested so it works really well. It's a great program. Now, originally it was, I'll just add one little caveat to that, is originally it was a jointly managed program between Alberta Parks and Wildsmart. And then two years ago we took over the full management of the volunteers. But that was a huge help having that partnership so that they could be on the provincial park lands and just work. And we still do work really closely with Alberta Environment and Parks to have consistent messaging and go focus on the areas where they're most needed. Where are there bear warnings, where there are lots of conflicts, whether it be in a campground or anywhere else. So there's a lot of communication there, working together between organizations to maximize the impact of the volunteer's work, because it's not fun if it's just a waste of time. So we want to make sure it's useful. Does that kind of answer your question?

Response - So my research was in national parks, which meant a lot of paperwork for Parks Canada because it's Parks Canada. And they love paper. Whether it's digital or print it doesn't matter. So I had to incorporate volunteers into my research permit, even though I didn't know how many I would be working with. But also in Banff National Park, there is a volunteer program and there is a volunteer coordinator. Her name is Tina, and she is one of the most amazing, hardworking women I've ever known. And so all of the park, all of my volunteers, technically were Parks Canada, citizen science volunteers just assigned to my project. And so that was important for a few reasons, but mostly for liability. As an independent researcher working for a university, I mean, I did have some liability through the university obviously, but it was really important for Parks Canada to kind of have the volunteers under their umbrella for liability insurance reasons. Also, all of our equipment was stored in a Parks Canada facility, which meant that the volunteers had to have access to the facility outside of regular operating hours. And so there are some security issues involved with that and sort of the conditions of employment, I'll say, even though they were volunteers, that was all part of the

annual training process for volunteers. And they all had to sign pieces of paper for Parks Canada, just saying that they would be good people and participate in the project. So there was already kind of a process there.

Question - I have a question about social media and specifically combating misinformation, and I'd be curious if anybody has any tips or guidelines on how to walk the line between combatting misinformation and as somebody referred to yesterday, not saying yes to every fight you're invited to, or not getting into tit for tat with folks on social media. It seems like that's a narrow, narrow walkway. And I'd love any insights on how to do that.

Response - My advice is delete and block. I think it's a full a full time job. I think if you want to go down that route of engaging those conversations with people, you need to have someone in a role who's doing that constantly. And I think, I guess with my personal opinion, is humor is often a great kind of calmer in situations because it quickly gets people on your side and it's an easier way to kind of like settle the bad feelings. I know there's certain state parks that some people showed me here. And in Canada, certain municipalities like the city of Prince George does an incredible job of not making fun of people who are commenting, but almost doing it and walking the fine line of using humor to kind of settle disputes. But it's really, really hard. And I think it's better to either have someone doing that role full time for you who knows what they're doing or not doing at all. Or making like an undercover account and just doing it on the side. So, yeah, I don't know. There's no real answer to that. It is very complicated.

Response (Allegra) - I would also just mention that the Island Park community specifically has a Facebook page where one of the agency members gets ahead of comments and actually makes their own posts initially. And I think sharing the information before somebody else has the opportunity to bring it up about relocating a bear or whatever, that is really benefited that community specifically. And that could be something beneficial.

We have one more question back here and then we have to cut it off.

Question - I actually have two. I just want to say thank you very much for this session. This is super valuable. I was just wondering if you've had any experience using targeted advertising on the Social media platforms and if that's worked? And also in the ambassador program, I find that program really interesting. I'm just wondering if you have experience with people who may have a vested interest in not doing the right thing, like wildlife photographers, commercial tour operators and influencers? Do you have any experience using some kind of a reward system?

Response (Nick) - I can't really speak to the advertising. I mean, we use social media for advertising different events and talks and things like that. But in terms of myself or other people that I work with, most of the wildlife ambassadors are very passionate. Some are ex-teachers, retired, lots of time on their hands, loud voices, and they do a good job of sometimes talking to those people. Whether it's a tour operator or whatever, they've been at trail heads talking to people when a giant tour bus shows up with a bunch of tourists, doesn't have to be tourists, and they will without any hesitation, walk right up to the tour guide and be like, oh, here, "I'll talk to your group." And then try and get them on board with kind of what we're hoping for, looking for, so they're not shy. But certainly I know in the Banff, the whole Bow Valley area, with the different commercial operators and different groups operating that might not do the right thing. Or doing the wrong thing so they can get more business or see bears or whatever it might be. We do address it in chat with them, but it's not necessarily an active thing. But it is a thing to be able to write that down and see there is a way that we could utilize the ambassadors to speak with more of those entities or groups to try making a video for the hotel here. I think using youth is very powerful for that sort of thing. So, yeah, hope that sort of answers your question a little bit.

Question - One really quick thing I know in Kananaskis I worked for the interpretation department for a while there and we also had a list of all of the private operators in the park there. So kids' camps, the hotel, the golf course, and we would do specific training sessions at the beginning of each season with their seasonal staff on wildlife safety and bear safety, just because there's a lot of international workers there. So I think that it was really effective to having these ambassadors, because there's so many seasonal workers who are these information centers. And if they're not from that area, they're put in this really challenging place. So that was really effective, too, training the people in your region who don't necessarily work for parks, who may not have that knowledge. Well, I hate to cut it off, but we need to be cognizant of everybody's time. So I do want to thank our panel members again.

POSTER SESSION

1. Detection of Polar Bear Dens in Alaska’s North Slope Oilfields

Justin Blank, Environmental Research and Consulting, LLC

Activity by the oil and gas industry in Alaska’s North Slope overlaps temporally and spatially with polar bear den establishment. The surveys utilize airplanes equipped with military-grade infrared cameras and are commissioned by the local oil and gas companies so that their activities do not disturb the family groups.

These surveys have evolved from a concept first explored by USGS, to an optional best-practice, and now to a regulatory requirement. The nature of these surveys unifies various companies, who are otherwise competitors, to promote conservation and keep humans away from denning polar bears. The cutting edge technology, and the constantly improving methodology, tell a great story of conservation by innovation.

Big Ideas Come from a Small Group in the Southeastern United States

Kristin J. Botzet, Department of Forestry, Wildlife and Fisheries, University of Tennessee

Joseph D. Clark, U.S. Geological Survey, University of Tennessee

Colleen Olfenbittel, North Carolina Wildlife Resources Commission

William H. Stiver, Great Smoky Mountains National Park

American black bears (*Ursus americanus*) were once abundant across most of North America, but with the arrival of European settlers, black bears experienced drastic habitat loss and population declines from over-harvesting, ultimately resulting in severe range contraction. By the 1970s the once abundant black bear in the southeastern United States had dwindled to concerningly low population levels. The southern Appalachian bear population extended across several states and, in order to share data and monitoring techniques, the Tri-State Black Bear Study Group (Tennessee, Georgia, and North Carolina) was formed.

Monitoring methods were standardized across states (e.g., mast surveys, bait-station surveys, harvest reporting) which indicated that the region's bear population was increasing in size. There was no charter, and the group meets biannually to discuss information pertinent to the species' survival and success, such as abundance estimates, numbers of human-bear conflicts, harvest numbers, yearly hard mast estimates, and current research.

Over the years, the group, now called the Southern Appalachian Black Bear Study Group (SABBSG) is made up of members of state, federal, and university bear researchers and managers of the following seven states: Tennessee, Georgia, North Carolina, Virginia, West Virginia, South Carolina, and Kentucky. It was from this group that memorandums of understanding (MOU) between agencies concerning forest management practices and euthanasia methods for conflict bears originated, as well as large scale multi-state research projects to gain a better understanding of the expansion and population health of the species.

Additionally, SSABSG facilitates collaboration between agencies on the best methods in managing modern issues facing the species, such as increased conflicts with humans and the growing prevalence of sarcoptic mange. Although the group may only be a small representative of the Nation's bear biologists, SABBSG has proven to be instrumental in the understanding and recovery of American black bears making the group responsible for several research and conflict management methods used by bear biologists around the world today.

Coexisting with Wildlife: Black Bear Trends at the YMCA of the Rockies and Attractants in Estes Park

Paul Cocomo, Worcester Polytechnic Institute (WPI)

Hayley Gray, Alena Lukovnikova, Maheer Quasem, WPI

Rachel Ames, Andy Ames, Estes Valley Watershed Coalition

Brenda Lee, Colorado Bear Coalition

Estes Park, Colorado is a hotspot for wildlife due to its remote location and proximity to Rocky National Park. Black bears often travel from their natural habitat in order to forage food left unsecured by tourists visiting the mountain town. The bears then get habituated to foraging human food which leads to human-bear interactions. These interactions are usually non-violent, but due to safety concerns, can lead to black bears being put down which we aim to avoid. In our research, students from Worcester Polytechnic Institute (WPI) worked with the Colorado Bear Coalition in order to expand bear interaction mitigation.

In addition to working with Estes Park, we also worked at the YMCA of the Rockies, located just outside Estes Park in a fairly remote location. The YMCA hosts many groups, mainly through the summer months, resulting in a population composed of tourists visiting the area. Our investigation aimed to understand what attracts bears into the YMCA and the town of Estes Park, and what social factors contribute to compliance of bear resistant measures.

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A Review of Approaches Currently Used to Reduce Human-Bear Conflict and Their Applicability to Polar Bears

Melissa Galicia, Environment and Climate Change Canada, Canadian Wildlife Service

Samuel A. Iverson, Environment and Climate Change Canada, Canadian Wildlife Service

Geoff York, Polar Bears International

Martyn E. Obbard, Ontario Ministry of Natural Resources and Forestry

Cody Dey, Fisheries and Oceans Canada

The Arctic is warming faster than any other region in the world and associated sea ice loss has led to increased land use by polar bears in parts of their range. Expanding human activities including tourism and resource development coupled with sea ice declines and reduced foraging opportunities for polar bears has led to human-polar bear encounters becoming more frequent and widespread. As the ice-free season becomes progressively longer, there will be an increased likelihood of an overlap in the distribution of human activities and on land distribution of polar bears. Community members have already expressed safety concerns throughout the Arctic. Therefore, there is a need to mitigate the potential for human-polar bear conflict and to determine effective measures to deter bears should an encounter occur.

Black bear and brown bear conflict management in North America has been well studied; however, information on the effectiveness of similar management strategies to reduce human-polar bear conflict is lacking. Thus, we examined existing management strategies used to reduce human-polar bear conflict and assessed whether approaches used for black bears and brown bears could be effectively implemented for polar bears. We reviewed the effectiveness of approaches used to manage human-bear conflict including lethal control, preventative measures, deterrents, and education.

Though lethal control has been suggested by some authors to be effective in certain scenarios at reducing human-black bear conflicts, the requisite conditions are unlikely to occur for polar bears where the strongest predictor for conflict has been the date of sea ice breakup. Instead, conflict may be more effectively reduced through non-lethal management approaches aligned with conservation efforts including preventive measures (e.g., managing attractants), non-lethal deterrents, and education. Limiting access to attractants through proper food storage has proven to be an effective management strategy to reduce the number of polar bears seeking alternate foods in or around towns. The approach to reduce attractants (i.e., bear-resistant containers or proper food storage) will differ across Arctic communities. Nevertheless, proactively managing attractants is a long-term management that could reduce the number of human-polar bear conflicts. However, in the case of human-polar bear conflicts, a greater number of interactions have occurred while people are traveling across the land and short-term measures such as non-lethal deterrents (e.g., rubber bullets, bear spray) may be more effective for these scenarios. There has been little research into the effectiveness of educational material for encounters with polar bears and humans. However, proper training and information on non-lethal deterrents has proven to be effective at reducing defense of life and property mortalities because bears were successfully deterred.

The potential to reduce human-polar bear conflict will likely require a combination of management approaches including a proactive reduction of attractants, proper use of deterrents, and educational programs. A better understanding of management approaches and their effectiveness will provide site- and situation-specific measures that can be used to promote human-polar bear coexistence.

Modifying Collars Using Surgical Tubing to Allow for Post-Release Weight Fluctuation of Rehabilitated Black Bears

Bailey M. Greco, California Department of Fish and Wildlife

Shelly D. Blair, California Department of Fish and Wildlife

Joshua Bush, California Department of Fish and Wildlife

Maintaining collars on rehabilitated black bears (*Ursus Americanus*) post-release is important to determine the success of rehabilitation and difficult due to weight and associated neck girth fluctuations. Bears in rehabilitation facilities are generally fed a non-natural diet consisting of high caloric produce (fruits and vegetables) causing a dramatic weight gain. Post release, immediate weight loss is assumed as bears acclimate to natural forage. Longer-term, bears undergo gain and loss of weight and associated neck girth due to natural seasonal fluctuations and juvenile growth rate (Jessup and Koch 1984, Garshelis and McLaughlin 1998).

The California Department of Fish and Wildlife's (CDFW) North Central Region Wildlife Program has developed a novel method of collaring black bears using surgical tubing inserted into collars designed to ethically and effectively track rehabilitated yearling bears post release, without creating welfare concerns. Preliminary results, from 16 bears, show this method is effective without risk of strangulation or need for a remote drop off device.

Although unproven, we expect the surgical tubing to degrade and "rot off" before harming the bear. Collar modifications comprise of mechanically affixing four sections of latex surgical tubing spanning 1.5" (3/16" ID; 5/16" OD) into collar belting (various manufactures and materials) using Lotek Inc collar hardware (040-0904 Stud Plate GPS Iridium, 040-0160 Mini GPS Clamping Plates 3/7/8, 040-0546 LOCKNUT Hex 6-32 5/16" WD). Starting spring 2022, CDFW will deploy surgical tubing modified collars on rehabilitated bear cub releases statewide and will continue tracking and reporting results. Methods continue to evolve and improve as more data is collected. Utilizing these modified collars helps to improve collaring efforts, post release bear tracking and management of black bears in California.

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Partnerships: Victory Depends on Many Counselors

Gerald D. Hodge, Jr., Appalachia Georgia Friends of the Bears, Inc.

The Appalachia Georgia Friends of the Bears has adapted a regional approach that is necessary to develop a successful strategy, leverage resources, and partnerships make it possible to achieve what might not be attainable on our own.

We see partnerships with subject matter experts, local, state, and Federal government agencies, chambers of commerce, the tourism and travel industry, corporate entities, nonprofits, and volunteers as capability multipliers.

We strive to form new partnerships and nurture existing ones. We cannot do this alone. We can lead and coordinate, but it will take a wide span of partnerships to achieve our mission. Although we are not waging a kinetic war, the principle of strategy remains the same, “For by strategy war is waged, and victory depends on many counselors.”

We take a brief look at who we see as partners or potential partners, activism vice advocacy, and how establishment institutions need to listen to both types of organizations and messages.

Finally, we will look at our case study on our engagement with the tourism industry.

The Chattahoochee-Oconee National Forest has 867,000 acres, ten wildernesses, 1,367 miles of trout streams, and 850 miles of recreational trails. The world-wide known Appalachian Trail and the Benton MacKaye Trail both begin on Springer Mountain in the national forest. We have twelve State Parks with 18,703 acres and 29 Wildlife Management Areas (WMA) with 370,736 acres. This immense acreage has over 200 waterfalls and over 65 day-hike opportunities. Three national scenic byways attract motorists and motorcycle enthusiasts.

We see our #1 “threat” to be unsustainable tourism. Tourism has a \$2.32 billion impact in Appalachia Georgia alone. Tourism employees, at a minimum, 21,889 humans in 26 counties. This number is much higher. However, it comes at a cost. The Global Sustainable Tourism Council (GSTC) Criteria are considered the global standard for sustainability in travel and tourism. One of the four pillars of criteria is environmental impacts and subtasks that are an integral part of this is environmental risk, protection of sensitive environments, and wildlife protection. We are not there in our opinion.

I bring with me five years of tourism experience as the Executive Director of the Tennessee Overhill Heritage Association (TOHA), headquartered in Etowah, Tennessee and covering McMinn, Polk, and Monroe counties. I have used that experience to engage in dialogue with the Georgia Department of Tourism.

Finally, overdevelopment. The region has been having a population spike since 1989. It has accelerated in the past two years because of the pandemic. Zoning policies, construction, the supply chain issues, and inflation cannot keep up with the lack of housing. Houses / cabins are staying on the market less than one week and often result in bidding wars. Buyers are paying cash. The encroachment into the Black Bear’s habitat is the greatest that it has been since the commercial logging of the late 19th and early 20th century and the near simultaneous extinction of the American Chestnut.

It will take every advantage and every partner we have in our strategy to protect the American Black Bear in the Appalachian Mountains in its shrinking world.

Detect and Protect: Efficacy of Compact Surveillance Radar to Detect Polar Bears (*Ursus maritimus*) in Northern Communities

BJ Kirschhoffer, Polar Bears International

Geoff York, Polar Bears International

Tom Smith, Brigham Young University

Shiuh-hua Wood Chiang, Brigham Young University

Across the Arctic, sea ice is declining in extent and thickness due to human-driven climate warming. Many Arctic animals rely on sea ice as a key habitat, including polar bears who use it as a platform for travel, for aspects of reproduction, and to hunt their main prey, seals. Due to loss of their sea ice habitat, in some regions polar bears are already being forced onto land for longer periods of time without access to their seal prey.

When polar bears are on land longer, they are more likely to seek alternative food sources and explore their terrestrial surroundings, including human settlements or remote camps. Consequently, an increase in polar bear-human interactions has been observed in some northern communities and human-polar bear conflict is expected to rise in the coming years as sea ice continues to decline. Though some communities may not be prepared now, they must be empowered to handle this threat and keep people safe.

Communities do have multiple options for managing polar bear detection and subsequent interactions. They can use non-lethal bear spray and cracker shells for deterrence, purchase bear-proof garbage bins, create and deliver educational materials, and take part in conflict management training. These are immediate and important responses to seeing more bears, but new technology could also give communities enhanced warning, options, and relief when it comes to protecting the lives of people and keeping polar bears alive and in the wild.

Most communities currently rely on visual observations of polar bears to know when one is near town. However, polar bears often enter communities at night or in conditions that make it hard to see the animals (e.g., snow and fog). Fortunately, radar technology has been developed that can enable the remote detection of polar bears from a greater distance (>1.2 km). Such ground-based compact surveillance radar (CSR) can be trained to detect and potentially identify polar bears continuously and before they enter human settlement areas and electronically alert a responsible party (eg- conservation officer or community patrol member), thus allowing people an opportunity to proactively respond.

Polar Bears International (PBI) has been testing CSR technology in Churchill, Manitoba, Canada since 2017. Initially, PBI tested the SpotterRF unit which can withstand extreme weather and was previously used for military and security applications. In 2020, PBI helped program an artificial intelligence (AI) component of the SpotterRF to test whether the system could consistently identify a polar bear and other targets on the landscape. In 2021, PBI built on those results by evaluating how well the system classifies targets to assess whether it can tell a polar bear from a human walking or a caribou grazing.

Thus far, this research indicates that these devices are highly effective in detecting polar bears, even in blizzard conditions or at night. We continue to fine-tune the AI to correctly identify polar bears, triggering an alert before they hit the first road or the edge of town. These systems are also capable of remotely triggering deterrence responses such as recorded sounds or strobe lighting.

Due to the success of the SpotterRF, there was interest in comparing different types of radar. There are a variety of radar units on the market which vary from simple to complex, inexpensive to expensive, and short-range to long-range. Some may be better suited for use by communities while others would work best in workstations or camps.

With various partners, PBI is currently testing:

- SpotterRF, which shows promise as an early detection option but is expensive and may be best suited for community use;
- Raylenz RL1000, which is a simple and less expensive short-range ground-based radar that shows promise for use at campsites or at small cabins (with Brigham Young University);
- Hensoldt UK's Single Mast Solution (SMS) with a Spexer 360 radar, which is an expensive long-range system that may be best suited to community use.

PBI and partners plan to continue to test and refine these radar options, along with the AI component where applicable, assessing their ability to detect polar bears in different conditions. In the future, we will look at adding deterrence options, programming the radar system to automatically trigger an audible or light response upon detecting and identifying a potential polar bear.

If people can detect a polar bear before it enters their community or camp, they will have more opportunities to use non-lethal deterrents. This will help keep people safe and polar bears in the wild as we work to protect their habitat.

One of These Ears Is Not Like the Other

Amber Kornak, U.S. Fish and Wildlife Services

If you want to talk to an individual who embodies the meaning of victory and overcoming obstacles, then look no further, but make sure you talk into my right ear, because a bear took my left one. In the Spring of 2018, I had an encounter with a large male Grizzly bear in a remote location outside of Libby, MT.

Long story short, bear spray saved my life, and though I have scars from teeth and claws, a useless left ear, and a pieced together skull, I still chose to pursue a career working with the omnivorous animals. Since my encounter, I have continued to do bear work across the United States, and have had an awesome mentor that had faith in me and believed in my career.

It's not very often a person survives a bear encounter, let alone continues to work with bears, and some days it tries to get to me. I've found, however, that it takes knowing your own happiness, having a solid support system, and constant reminders that you are worth it to overcome the misfortunes life sometimes deals us. Today, I can successfully say I am a Bear Management Specialist with the USFWS, and am loving every minute of it. They said it couldn't be done, but they were talking in my bad ear.

Can a Large-Scale Electric Fence Prevent Conflict at Liard River Hot Springs?

Jared Marley, Margo Supplies

Jeff Marley, Margo Supplies

Cassie Telford, Margo Supplies

Despite the continued use of electric fencing as a successful bear attractant management solution many people continue to be skeptical over its implementation, especially at large publicly managed sites like campgrounds. Even for those that believe in the underlying technology and bear behaviour, questions remain about the practicality of electric fencing as a solution to some of North America's most persistent conflict sites.

In 2021, Margo Supplies constructed a multi-species electric exclusion fence around the entirety of the Liard River Hot Springs campground and day-use area in northeastern British Columbia. Located at a remote section of the famous Alaska Highway these hot springs are one of the few attractions in hundreds of miles on a major summer tourist route. Alongside being Canada's second largest natural hot springs results in huge visitation numbers each year.

In addition to human visitors, this hot spring sees an abundance of wildlife including grizzly bears and bison. The geothermal supported microclimate hosts an increased density of grizzly bears. Bears have even been observed to soak in the hot pools themselves. The food attractants from the campground exasperate the problem. Unfortunately, this deadly combination resulted in two human fatalities in 1997 and many more conflict deaths in the local grizzly bear population.

A project of this size has a variety of complications from engineering, wildlife behaviour, and human social behaviour. Construction included multiple challenges such as conflicting requirements of maximizing revenue generating camping pads while avoiding protected species at risk habitat, the physical ability of bison to tear down fencing, heavy vehicle access requirements, remote construction logistics, culturally modified trees, as well as visitor safety, access, and experience. High-volume visitor traffic made a traditional gate entry impossible.

This poster will break down the individual challenges and outline the solutions that led to the construction of this fence. The purpose of this poster is not only to demonstrate that electric fencing can prevent conflict but that electric fencing is a suitable tool to the most challenging and large-scale developments.

Fines & Enforcement Success Stories and Challenges

Lauren Martensen, Snowmass Village Police Department, Animal Services

Tina White, Snowmass Village Police Department, Animal Services

The focus of our poster presentation would be to highlight our successes and failures with jobsites and events. Snowmass Village is overwhelmed by construction sites with workers who are sometimes unfamiliar with mountainous areas and wildlife. Special events draw people from all over the world that may not be bear aware or savvy. These are our biggest challenges due to the waste produced and the people that don't live here and might not have an investment in the community and its values. We would touch on our outreach tools, management and enforcement.

Black Bear Management in Nuevo Leon, México

Muzquiz Ortiz, Manuel, Departamento de Parques y Vida Silvestre de Nuevo Leon

Acosta Canales, Edgardo, Departamento de Parques y Vida Silvestre de Nuevo Leon

Herrera Perez, Guillermo, Departamento de Parques y Vida Silvestre de Nuevo Leon

In Nuevo Leon, México, the black bear (*Ursus americanus*) is listed as Threatened by the federal government. Monterrey, Nuevo Leon, is the state's capital, and the 3rd largest city in México with an estimated population surpassing 5 million inhabitants. Monterrey is surrounded by the Sierra Madre Oriental, which contains a wide diversity of bear foods including acorns, fruits (both wild and cultivated), cacti, and numerous others.

Since the early 2000s, Nuevo Leon has experienced a dramatic increase in bear reports within and outside of the urban area, which is likely due to an increasing bear population, an increasing human population, habitat encroachment, wide variations in food production in the surrounding mountains, abundant non-natural food sources such as deer feeders, unmanaged attractants, and low water availability during severe drought.

We present our experiences and observations in managing black bears in a densely populated city amidst the varying social influences and human behavior, inter-agency management approaches, and staffing and budgetary challenges.

Development and Testing of Burr-on-Fur Tags for Tracking Male Polar Bears with Applications to Monitoring Conflict Bears

Joseph Northrup, Ontario Ministry of Natural Resources and Forestry; IUCN Bear Specialist Group - Member, North American Bears Expert Team

BJ Kirschhoffer, Polar Bears International

Jon Kirschhoffer, Polar Bears International

Nicholas J. Lunn, Environment and Climate Change Canada

David McGeachy, Environment and Climate Change Canada, University of Alberta

Tyler Ross, Department of Biology, York University

Gregory Thiemann, Faculty of Environment and Urban Change, York University

Across the circumpolar Arctic, climate change is drastically altering the sea ice habitat of polar bears. Hudson Bay is a seasonal sea ice system, and is located at the southern portion of polar bear range. This area is experiencing longer ice-free periods resulting in polar bears having to spend more time on land, increasing the potential for human-polar bear conflicts.

Tracking the movements of bears that have or might come into conflict with people is critical for understanding drivers of conflict and developing mitigation strategies that can promote coexistence. Although juveniles are typically the age class of polar bears that come into conflict situations, to date, only adult female polar bears can be tracked using telemetry collars. Although satellite ear tags have been deployed on polar bears, these have been shown to cause injury to some bears. Thus, there is need for the development of alternative attachment methods that will allow for the deployment of tracking devices that can provide important movement information across sex and age classes.

Here, we present the development, testing and deployment of “burr-on-fur” tags, which use novel attachment techniques to adhere tracking devices to the fur of temporarily immobilized polar bears, thus allowing for the subsequent tracking of any sex and age class. We will discuss development of different attachment options, testing within a zoo environment and performance on wild polar bears. Initial deployments suggest great potential for at least short-term tracking of bears involved in conflict with people.

Effects of Environmental Conditions on the Use of Forward Looking Infrared on Bear Den Detection in the Alaska Arctic

Nils J. Pedersen, Institute of Arctic Biology, University of Alaska Fairbanks; Wind River Bear Institute

Todd J. Brinkman, Institute of Arctic Biology, University of Alaska Fairbanks

Richard T. Shideler, Alaska Department of Fish and Game

Craig J. Perham, Bureau of Land Management, Alaska

Industrial off-road activity in winter overlaps denning habitat of polar bear (*Ursus maritimus*) and grizzly bear (*Ursus arctos*) in the North Slope oilfields of Alaska (United States). To prevent disturbance of dens, managers have used forward-looking infrared (FLIR) cameras to detect dens, but the effectiveness of FLIR under different environmental conditions is unresolved. Our objective was to evaluate the effects of environmental variables on FLIR-based techniques for arctic bear den detection

Using a FLIR-equipped unmanned aircraft system (UAS), we conducted observations of artificial polar bear (APD) and grizzly bear (AGD) dens from horizontal and vertical perspectives between December 2016 and April 2017. We recorded physical characteristics of artificial dens and weather conditions present during each observation. We captured 291 images and classified each as detection or nondetection based on the number of pixels representative of a den “hot spot.” We used logistic regression to model the effects of four weather variables on the odds of detection (detection).

We found that UAS-FLIR detects APDs two times better than AGDs, and that for both species detections are four times more likely from the vertical than horizontal perspective. Lower air temperature and wind speed, and the absence of precipitation and sunlight increased detection for APDs. A 1°C increase in air temperature lowered detection by 12% for APDs and by 8% for AGDs.

We recommend that UAS-FLIR surveys be conducted early in the denning season, on cold, clear days, with calm winds, in the absence of sunlight (e.g., civil twilight). Our study further refines the application of FLIR techniques for arctic bear den detection and offers practical recommendations for optimizing detection. Putative den locations should be confirmed by a secondary method to minimize disturbance as anthropogenic activity continues in the Arctic.

Spatio-Temporal Overlap of Human-Bear Interaction in Central Gujarat and Its Mitigation Strategies

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Shalu Mesaria, Wildlife and Conservation Biology Research Foundation, Patan (Gujarat) India

Dr. Nishith Dharaiya, Wildlife and Conservation Biology Research Lab, Department of Life Sciences, Hemchandracharya North Gujarat University, Patan (Gujarat) India

Sloth bear is considered among the most unpredictable wild animals and on an encounter, in an attempt of self defense, attacks humans. Local people share the resources with sloth bears which results in conflicts and causes human casualties. A rise in anthropogenic activities in the non-protected forests leads to degradation of habitat, reduced natural cover and food broadly supporting our finding that most of the sloth bear attacks are due to penetration of sloth bears in human dominated areas for food and water.

However, connecting discontinuous forested patches may aid in reducing attacks, providing enough spatial separation between locals and bears to encounter each other. We have collected secondary data of twelve years (2008-2020) of sloth bear attacks from the forest department of central Gujarat, India. The information includes details of the victim such as name, age, village and details of sloth bear attack such as time, location, activity of victim and the number of bears involved.

A total of 361 human casualties were recorded in the last twelve years; of these 6% were fatal followed by 7% medium and 87% low injuries suggesting the attacks were in response to an attempt of self-defense by the bear. Most sloth bear victims are men (72%) as they are mostly working in farms, visiting forests and engaged in outdoor activities. 28% of attacks occurred on women, who wander in groups along with kids in the forest to collect firewood. More than a half of victims belong to the age group of 31-50 years.

Sloth bear attacks are prevalent throughout the year; however, they are highest during summer (March to June, 43%) and lowest in winters (November to February, 26%). Locals visit forest for the non-timber forest products (NTFP) collection and for cattle grazing in the early morning overlapping with the time when bears are active, that result frequent encounter in the morning time (55%) than the mid day (16%), evening (20%) and night (9%). 62% attacks occurred on locals while passing through the forest, collecting NTFP and guarding their cattle, 25% incidents occurred in the agriculture land, 6% close to a village and 7% on forest fringes. The victims are entitled to receive the compensation of 2500 INR to 5000 INR based on the type of injuries and up to 200,000 INR upon death of the victim.

It is important to identify and separate the temporal overlap between locals and bears and regulate human activities especially in the foraging areas and obtaining additional data on sloth bear ecology to fill the gaps in available information. It is also recommended that locals should move in groups during the collection of NTFP and while passing through forest roads. The forest department should formulate effective mitigation strategies through local stewardship. This in future will result in harmonious living with the neighboring sloth bears.

Prey or Competitor? Exploring the Influence of Cattle Ranching on Andean Bear Occurrence

Carmen Julia Quiroga Pacheco, University of Southeastern Norway – Natural History Museum
“Alcide d’Orbigny”

Ximena Velez-Liendo & Andreas Zedrosser, University of Southeastern Norway – Natural
History Museum “Alcide d’Orbigny”

Cattle-based livelihoods are globally recognized to be ecologically destructive and related to deforestation, habitat loss, and linked to human-wildlife conflicts. According to the literature, the turn to cattle-based livelihoods from crop-based agriculture has increased cattle-bear encounters, which commonly results in retaliatory killing of bears.

In order to determine the effects of cattle ranching on the potential distribution of Andean bears, we used occupancy modeling to describe bear-cattle co-occurrence patterns in one of the least studied ecosystems, the Inter-Andean dry forests of central and southern Bolivia. We used a dataset containing photographs from 106 remote camera stations (7,490 camera nights). The study area contains sites with different conservation protection levels, i.e. two national parks, a municipal protected area, and private lands. Cattle grazing is restricted in national parks and uncontrolled in private lands. We considered the protection level as an additional variable to determine cattle influence on bear potential distribution.

Overall, we determined a naïve occupancy of 15.46% for Andean bears in the study area. Detection probability of Andean bears was negatively affected by cattle presence, suggesting that bears avoid areas used for cattle ranching. Probability of bear occupancy was negatively related to the protection level, challenging the role of protected areas in Bolivia and their control of cattle ranching activities.

Finally, this study suggests that cattle ranching and poor enforcement of land protection status have a negative effect on Andean bear probability of occurrence, and as seen in other similar scenarios, could consequently reduce the number of bears in the area through retaliatory killing of bears. Therefore, cattle ranching is a direct threat to bear conservation that requires urgent attention in future conservation efforts, because it reduces the habitat quality and negatively affects populations through retaliatory killing.

Survival and Movements of Orphaned Black Bear Cubs Released Back into the Wild

Andrew Tri, Minnesota Department of Natural Resources

Pamela L. Coy, Minnesota Department of Natural Resources, Retired

David L. Garshelis, Minnesota Department of Natural Resources, Retired

Karen Noyce, Minnesota Department of Natural Resources, Retired

Orphaned wildlife individuals are not important on a population scale, except in cases of threatened or endangered species. From a public relations standpoint, they are important, especially when large charismatic species such as bears. The Minnesota Department of Natural Resources has chosen to place orphan bear cubs at a rehabilitation facility (Wild and Free, Garrison, MN) where they were raised until they are old enough to be returned into the wild. There is not a lot of information available in the literature about the efficacy of bear rehabilitation. The objectives of this study were to monitor released orphans for survival, movements, human-bear conflict activity, and denning capabilities.

From 1998–2006, 22 orphaned black bear (*Ursus americanus*) cubs were released back into the wild after being held at the rehabilitation facility. Bears were typically over-wintered, but there were a small number of fall releases after bear and deer hunting seasons finished. The rehabilitation facility received cubs from dens being destroyed by logging operations, excessive disturbance, mothers killed as a result of human-bear conflict, or in a vehicle collision, and underweight cubs that showed up at residences. Cubs were handled as little as possible. Latex gloves and a camouflage suit were worn when bottle feeding or when humans were in the pens. Cubs were switched from bottle feeding to drinking milk from a bowl as soon as possible, then moved to large pens in which they were fed once per day with as little human contact as possible. The DNR anesthetized the yearlings, ear-tagged them, and fit 12 of them with VHF radio collars. All releases were “hard-releases” in remote areas.

We monitored the survival, movements, human-bear conflict activity, and denning capabilities of these bears via radiotelemetry (12 bears), reports from the public, and ear tag returns. We monitored mortality monthly for collared bears via fixed-wing aircraft. Locations of mortalities and sightings were plotted to understand movements. Dens were located via fixed wing aircraft and the collared bears were anesthetized each winter to monitor growth rates, condition, and refit the radio-collars.

Twelve bears were shot in the hunting season; nine were shot at 1 year old, two at 2 years old, and one at 4 years old. Two bears were killed in vehicle collisions, one was likely shot as a result of a human-bear conflict, and one died of unknown causes. The fates of six bears are unknown, although two of these lived to at least 2 years of age.

Bears moved an average of 29 km ($n = 18$, range 2–95 km) from the release site. Bears that moved in a northerly direction moved further (mean = 60 km) than those that moved in a southerly direction (26 km; Wilcoxon Rank-Sum Test, $P = 0.04$). There was no difference between the average distance moved by males (29 km) and females (29 km), or whether cubs were first handled in the spring (23 km), summer (28 km), or fall/winter (38 km; Kruskal-Wallis nonparametric AOV, $P = 0.79$).

However, bears released just prior to denning moved shorter distances (10 km) than those released in the summer (44 km) or winter (28 km, $P = 0.05$). Despite not having a mother to show them how to construct a den, orphans chose den sites typical of other bears their size and age (e.g., brush piles, root wads, and excavated holes).

In most cases, orphans were successfully returned to the wild. No bears were such chronic conflict bears that they had to be recaptured. Three of the 22 bears were involved in human-bear conflicts (all three were the bears previously determined to be questionable as to their habituation). The complainants stated that the bears showed a lack of fear of humans, as well as destroying bird feeders. Since these results were collected, the rehabilitation facility no longer releases any orphan that shows any sign of habituation. These bears are either placed in captive facilities (zoos, etc.) or are euthanized.

Evaluation of Food Habits and Protein Intake of Asiatic Black Bears Appearing Soybean Field in Kazuno City, Akita Prefecture, Japan

Sota Watanabe, Morioka City/ Iwate Prefecture/ Japan

Kiyosi Yamauchi, Morioka City/ Iwate Prefecture/ Japan

Sigekazu Kurakake, Morioka City/ Iwate Prefecture/ Japan

Asiatic black bear (*Ursus thibetanus*) frequently haunts into human settlements and might be dependent on human food in Japan. Many individuals frequently appear in soybean fields during July and August in Kazuno City, Akita Prefecture. Using the scats of the individuals foraging in soybean fields (field bears) and inhabiting mainly in forests (mountain bears), we analyzed food habits and protein intakes in scats. Scats of field bears (n=46) were collected during a line census survey conducted in July - August 2021. Scats of mountain bears were collected from the site based on the location of GPS collar tracking surveys conducted in July and August 2019 - 2020. Fresh scats were used in both analyses.

The point-frame method was made to determine the quantitative evaluation of the food content and their proportions in scats, the importance value percentage was calculated. For protein intake analyses, the fecal samples were dried and ground, and nitrogen content was detected by TCD gas chromatography. Then crude protein contents were calculated by multiplying the protein conversion factor. The results of these analyses calculated for each month were analyzed with Steel-Dwass multiple comparison test.

From the quantitative evaluation of the food habits, about 90% of the food content of the field bear was soybean sprouts in July and soybean nuts in August, respectively. The remaining food content was mainly insects in July and soft masts in August, respectively. On the other hand, nearly 80% of the food content of the mountain bears consisted mainly of insects and soft masts in both July and August, respectively.

Protein intake analyses showed no significant differences between field and mountain bears in protein content in July. However, the protein content of field bears in August was two to three times higher than that of mountain bears. Because soybeans contain large amounts of protein, field bears in August were not eating many insects. Although mountain bears obtain their protein primarily from insects during the summer period, it was revealed that field bears have greatly changed their food habits by haunting human settlements and eating crops. Therefore, it is possible that bears that haunt human settlements do not eat crops at random, but selectively choose foods for nutritional reasons.

Bears Behaving Badly: A Family Tradition?

Jillian Adkins, California Department of Fish and Wildlife, Wildlife Forensic Laboratory

Erin Meredith, California Department of Fish and Wildlife, Wildlife Forensic Laboratory

At the Wildlife Forensic Lab (WFL), we have seen an alarming trend in wildlife conflict cases. This trend has resulted in a 5-year increase of over 500% in the number of these cases that we are handling. With only four full-time staff members at the WFL, we've had to turn our science into an art to produce results efficiently and accurately to best support our Wildlife Officers and biologists in the field. We are continually working to improve our capabilities to meet the demand from the field. This includes both the species and types of samples that we can work with successfully as well as answer more complex questions such as relatedness and lineage.

While we work with many types of carnivores including coyotes, wolves, and mountain lions, one species has been of particular focus for us in recent years, the black bear. Bear cases are one of the more common types of wildlife conflict cases that we see.

In addition to the work we do for our department, we also support the needs of the Nevada Department of Wildlife when they have a bear involved in a conflict situation. As we “share” bears with Nevada, a few questions were proposed regarding the relatedness of these bears. Are the same bears involved in conflict situations in both Nevada and California? Are these bears related in any way? Is this behavior being passed down from mother to offspring? Our database of over 3,000 individuals from California and Nevada has allowed us to calculate the relatedness of these individuals. The combination of our existing database, the information we gain from wildlife conflict cases, and the samples that are collected by our biologists, we are now able to help provide insight into these types of questions.

Samples from the Tahoe Basin have been collected over the last few years from management efforts, home break-ins, and type red cases. As the number of samples grows, we have begun to identify relationships and trends within this group of bears. Bears educate and teach their offspring necessary skills to survive on their own but in the Tahoe Basin part of that curriculum has become to rely heavily on anthropogenic food sources. We have identified multiple generations of bears that are contributing to this trend. In this presentation I will highlight the methods we use and provide visuals that depict parent-offspring, full sibling, half sibling, and unrelated individuals.

Conflicts Between Asiatic Black Bears and Local Communities: Economic Aspects in Gais Valley, Northern Pakistan

Ashfaq Ali, Department of Forestry, Range and Wildlife Management, Karakoram International University, Gilgit, Baltistan, Pakistan

Muhammad Waseem, Department of Forestry, Range and Wildlife Management

Muhammad Zafar Khan, Department of Forestry, Range and Wildlife Management

Muhammad Asad, Department of Forestry, Range and Wildlife Management

Abdul Mannan, Department of Forestry, Range and Wildlife Management

Human-bear conflicts have been assessed by different researchers besides the distribution, food choices, and general behaviour. We assessed the economic aspects of human-Asiatic black bear conflicts in one of the least known habitats of Asiatic black bear in northern Pakistan.

Residents from 20 small villages were interviewed along with personal observations of the conflicts in Gais Valley, northern Pakistan. Before starting the interviews, a prior group discussion session was conducted with officials of the concerned Wildlife and Forest departments. We also adopted sign survey methods for confirmation of the claims of the residents.

Human-bear conflicts claims (75%) existed in the areas, reasoning that crop damage is the main reason (45%), human attacks (17%), and livestock depredation (38%). A general negative perception (58%) was observed in the response of local communities towards bears, which was more negative among those communities which lived closer to bear habitats. Crop damage was more frequent during summer seasons and when the crops are ready. High human-bear interactions were recorded during March - November, correlated with the current habitat range of Asiatic black bear. Human activities, infrastructure development and expansion of the agricultural lands are the main causes of increasing human-bear conflicts. Restricting human movement in bear habitats, increasing herds size, and development of livestock husbandry are suggested at local scale.

Mass Afforestation Program: A Cause of Increased Human-Bear Conflict in Pakistan

Fakhar-i-Abbas, Centre for Bioresource Research, Pakistan

District Mansehra (Khyber Pukhtunkhwa) is home to the largest population of the Asiatic Black Bear in Pakistan. Human-bear conflict in the district has registered an increase from 1.12% recorded in 2014 to 38% during 2018-2022 when 18 bears were killed, one human died and 12 injured, with hundreds of livestock injured and serious crop damage.

Mansehra district has an area of 4,394 km², of which some 800 km² (18%) is under forests, a part of which was available as potential Asiatic black bear habitat. In 2014, started a mega afforestation program when 10 million hectares were fenced to allow natural growth of the forests and 10 billion trees were planted in the degraded forests. During this effort in the district Mansehra 64 fenced enclosures of 40 ha each (25.6 km²) were created for natural forest restoration and 96 tree sapling plantation sites developed for fresh plantation in the degraded forests.

Both these areas were temporarily not available for exploitation of the bear population, which ultimately lead to constriction of area under potential bear habitat. This also obstructed the natural bear corridors between bear meta-populations and lowered the availability of natural food to the bears. We believe that this drew bears closer to the human settlements which scaled the conflict up. The crest of the problem is that the government believes that climate change is a more serious threat to humanity as compared with maintaining bear population in the wild, whereas both are equally important and need collectively handled.

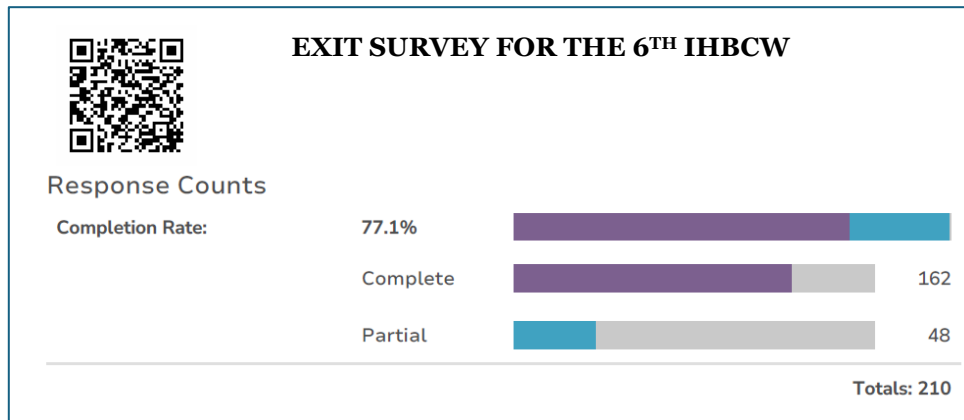
Genotyping by Sequencing in Wildlife Forensics: Using Allele Variants to Improve Population Assignment of American Black Bears (*Ursus Americanus*)

Joy Gaines, California Department of Fish and Wildlife, Wildlife Forensic Laboratory

As human-bear interaction increases, poaching opportunities may increase as well. Genetic-based tools developed for use in wildlife forensics can aid law enforcement in the fight against poaching and illegal wildlife trade. DNA analysis techniques such as genotyping by sequencing can reveal allele sequence variation (also referred to as novel alleles) which can improve the ability to determine the location of origin of evidence seized in poaching and wildlife trafficking cases through genetic distinctions identified among populations. This information can help prevent illegal take of wildlife by aiding law enforcement in identifying poaching hotspots and criminal networks.

To improve the current understanding of black bear population structure in California, the objectives of this research are to 1) identify novel alleles in American black bears (*Ursus Americanus*) in California, and 2) identify all genetically distinct populations of American black bears in California. Approximately 2,500 black bear DNA samples, collected throughout black bear range in California by the California Department of Fish and Wildlife, are being sequenced at nine microsatellite loci and three sex markers using the Illumina MiSeq high-throughput sequencing platform.

A genetic population structure analysis will be performed using the microsatellite sequence data to identify genetically distinct populations. In addition to the intrinsic value this species holds, black bears are important contributors to ecosystem health. Ultimately, this work will improve our ability to protect black bears as well as the ecosystems in which they live.



The International Human-Bear Conflicts Workshop (IHBCW) is intended to provide a forum for shared learning among managers, educators, researchers, community leaders, and others. Please identify your perspective of how effective the various workshop elements were in achieving that objective?

	Not Effective	Somewhat Effective	Very Effective	Responses
invited speaker presentations Count Row %	0 0.0%	21 12.5%	147 87.5%	168
general session presentations Count Row %	1 0.6%	38 22.6%	129 76.8%	168
panel discussions Count Row %	7 4.2%	63 37.5%	98 58.3%	168
poster session Count Row %	11 6.6%	75 45.2%	80 48.2%	166
meeting breaks and social events Count Row %	3 1.8%	37 22.2%	127 76.0%	167
Totals Total Responses				168



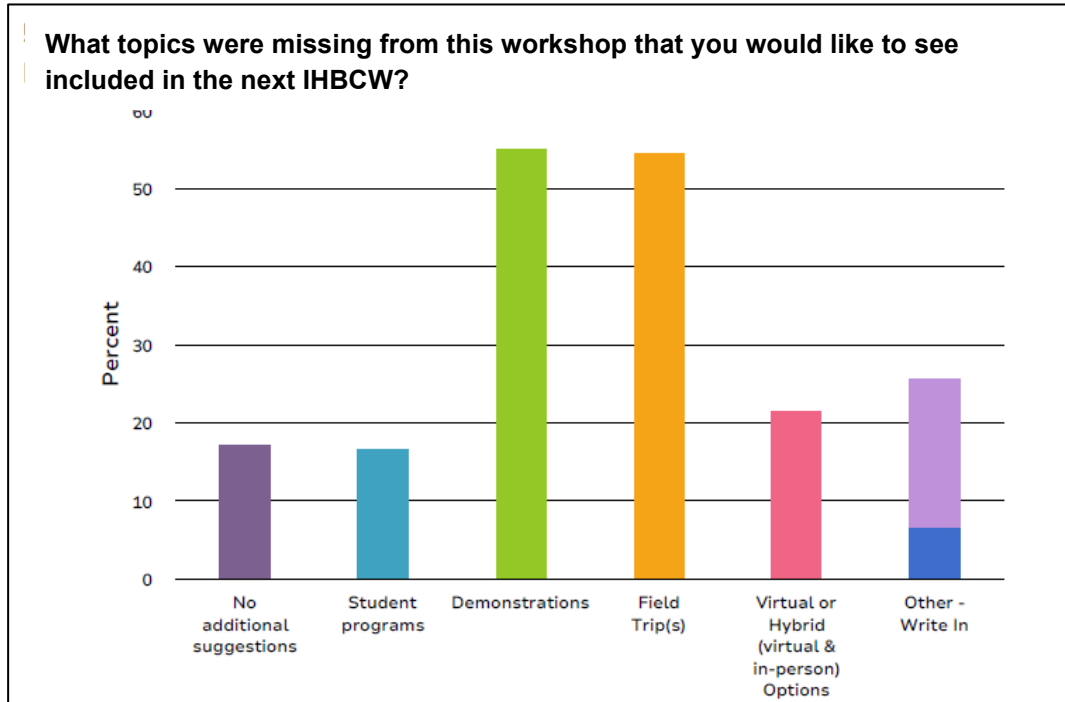
Please rank the workshop elements listed below in terms of their effectiveness achieving shared learning about human-bear conflict management.

Item	Rank	Rank Distribution	Score	Rankings
invited speaker presentations	1		694	168
general session presentations	2		613	168
panel discussions	3		483	168
meeting breaks and social events	4		459	167
poster session	5		268	167

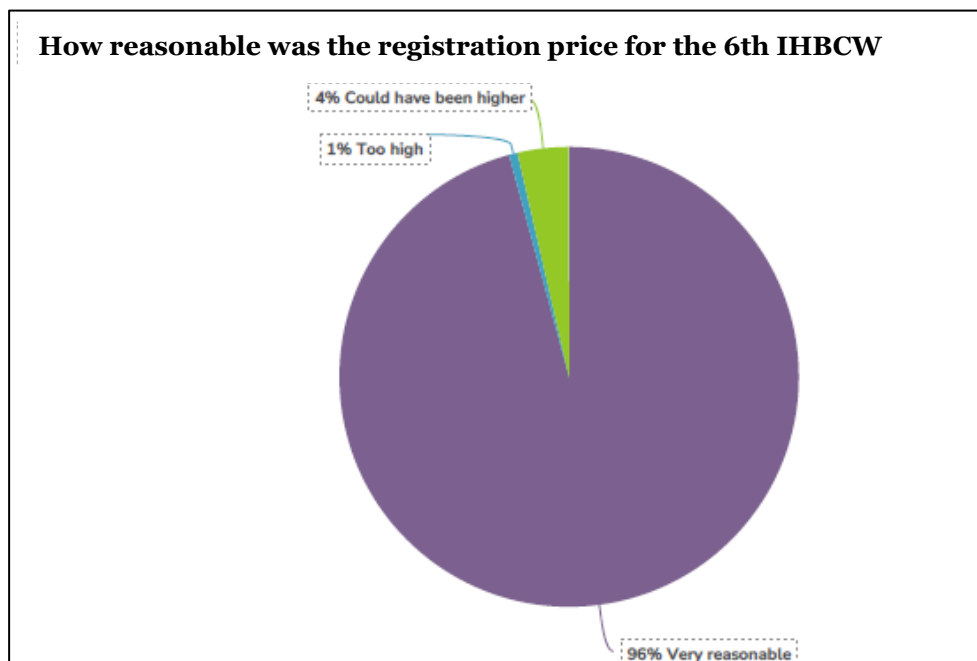
Lowest Rank Highest Rank

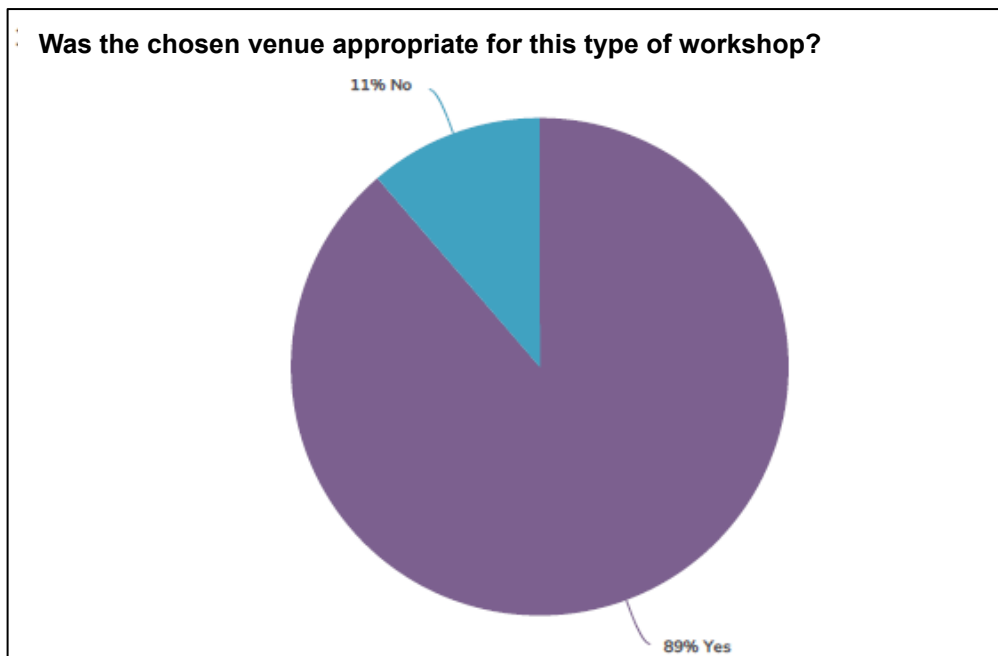
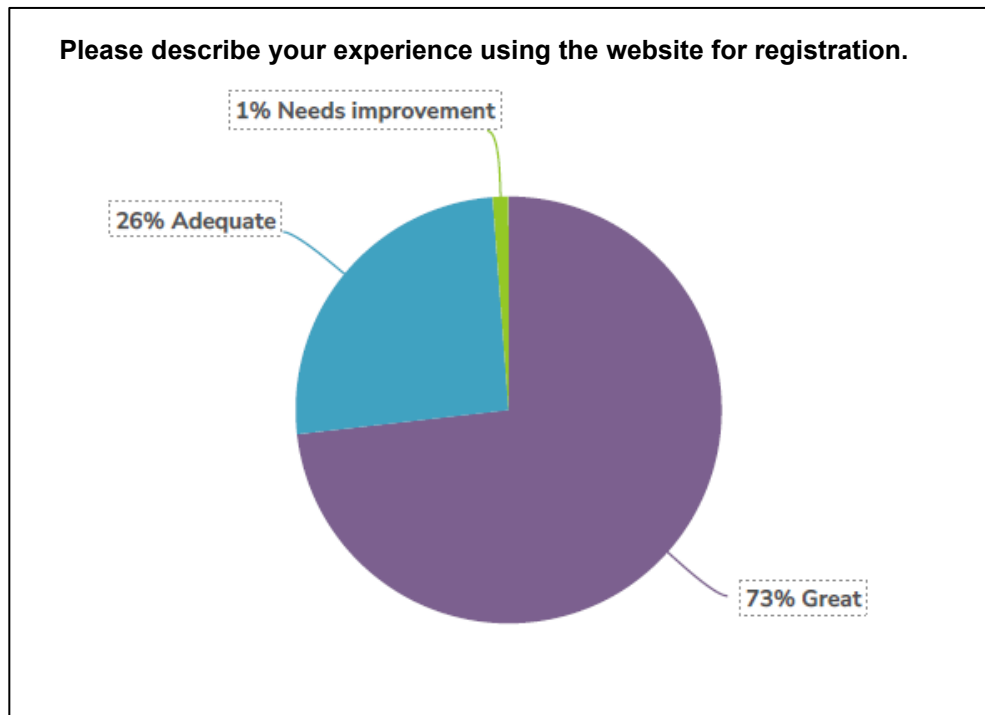
Please rate the usefulness of each IHBCW session.

	Not Useful	Somewhat Useful	Very Useful	Responses
Pathways to Progress				
Count	2	49	115	166
Row %	1.2%	29.5%	69.3%	
Connecting People & Empowering Communities				
Count	4	41	120	165
Row %	2.4%	24.8%	72.7%	
Tools & Tactics				
Count	2	41	123	166
Row %	1.2%	24.7%	74.1%	
Pathways to Coexistence: Understanding People				
Count	3	34	128	165
Row %	1.8%	20.6%	77.6%	
Effective Messaging & Outreach				
Count	2	53	109	164
Row %	1.2%	32.3%	66.5%	
Perspectives on Progress				
Count	3	66	97	166
Row %	1.8%	39.8%	58.4%	
Totals				
Total Responses				166



It was clear from comments we did not capture the right categories. The suggestions were much more informative and centered around more panel discussions, more breakout sessions, more time for questions, more situational discussions and less presentations. Many also commented that demonstrations and field trips can be clunky with crowds of this size. An electric fencing demo rated high.

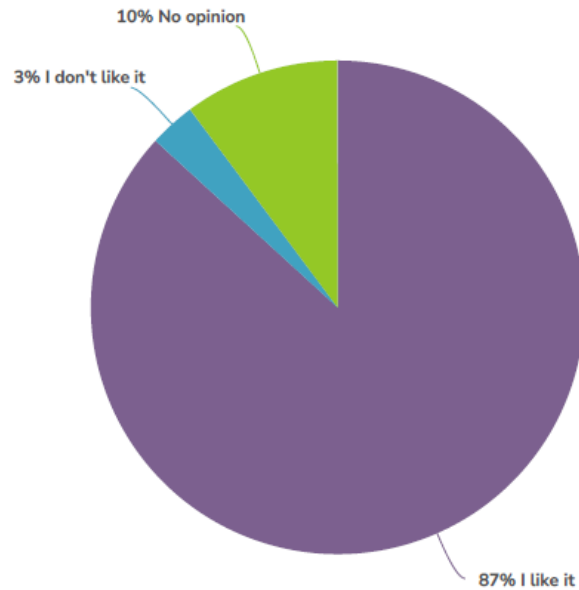




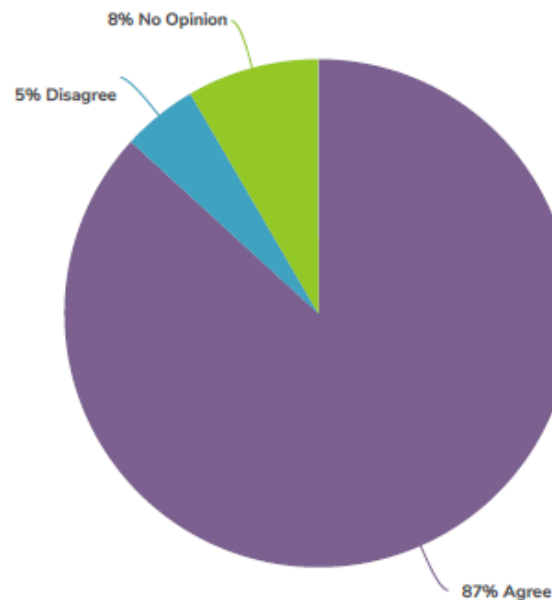
In the comments, many folks mentioned having to pay for parking was not ideal, that a smoke-free facility would have been better, and having numerous food options within walking distance was a positive.



We developed a new logo (see top of this page) for the IHBCW to give the workshop recognition and for consistent use by future by workshop hosts. What do you think of it?



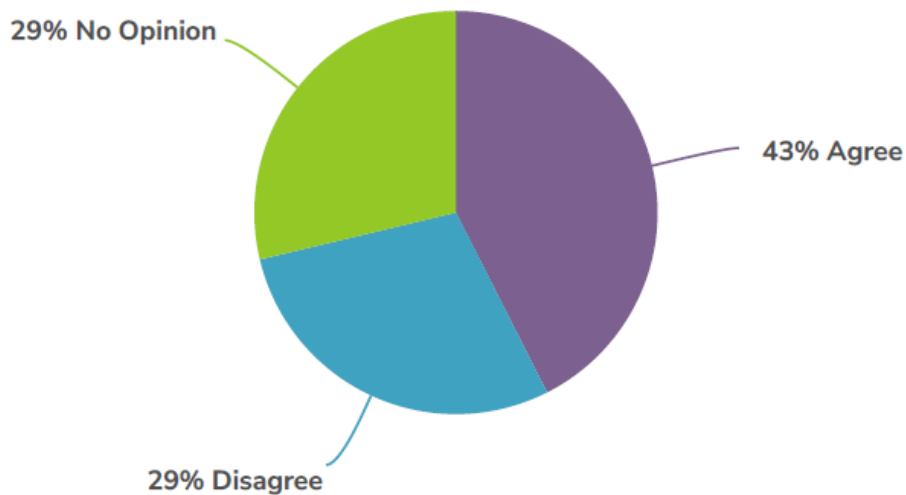
To facilitate more networking among workshop participants we chose to have an informal social event rather than a traditional sit-down banquet. Did you agree with that decision?



Both formal discussion (session Q&A, audience participation) and informal conversation (social interaction, networking) are important for shared learning at these workshops. How do you feel about the amount of time allotted for formal and informal discussion?

	Adequate	Inadequate	Too much	Responses
Formal discussion during sessions and panels Count Row %	133 79.6%	22 13.2%	12 7.2%	167
Informal conversation during breaks and socials Count Row %	140 83.8%	25 15.0%	2 1.2%	167
Totals Total Responses				167

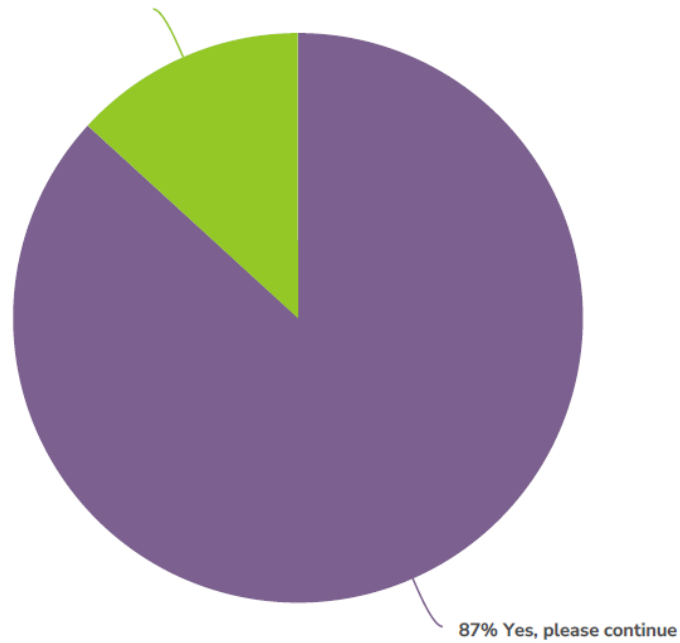
We chose not to do host demonstrations at this workshop because they can be logistically difficult to coordinate and ensure all attendees are able to adequately participate. Did you agree with that decision?



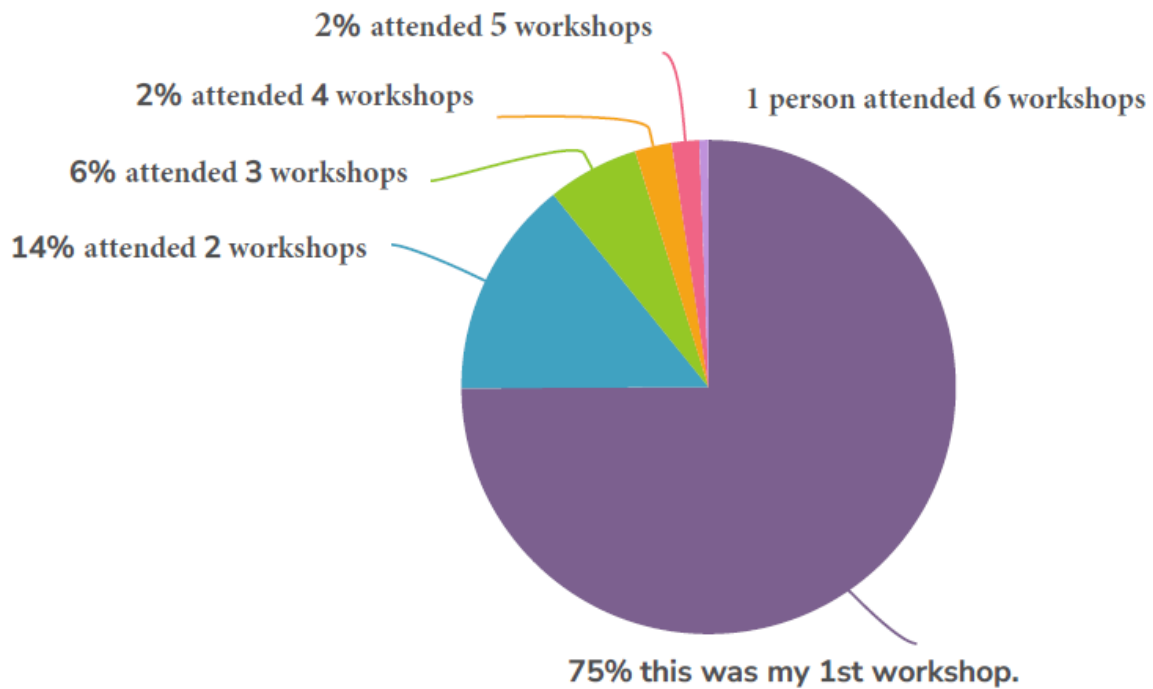


Was the Silent Auction a good addition to the workshop?

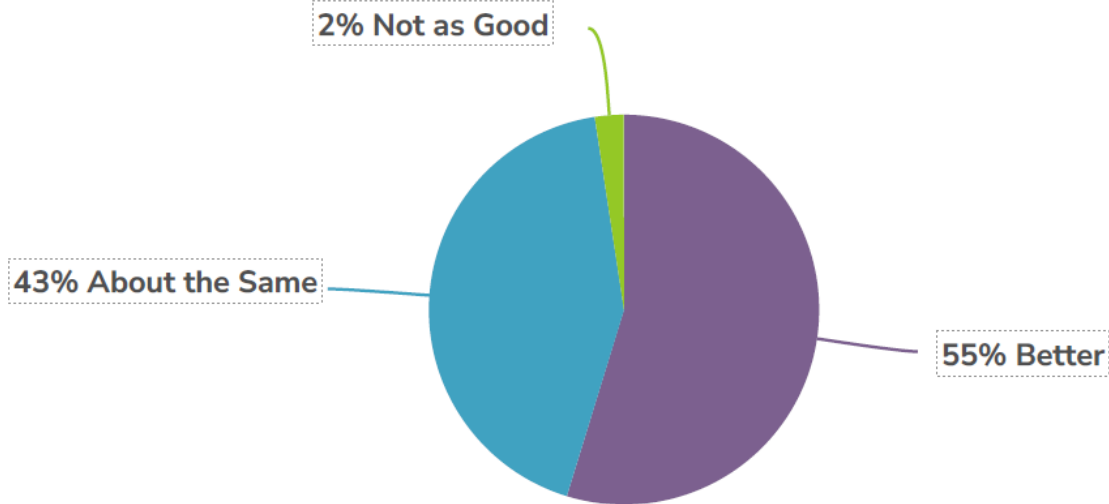
13% No Opinion



How many IHBCWs have you attended, including this one, the 6th workshop?



In terms of quality, usefulness, and productivity, how do rate this workshop compared to prior IHBC workshops that you have attended



OTHER USEFUL NOTES FOR FUTURE IHBCWs

- Consider less presentations and allot more time for discussion after each of the presentations, so more of a workshop atmosphere
- Suggest having more time for informal discussions, evening discussions, & breakout sessions
- Suggest the media session be expanded upon in the future
- Provide an electronic agenda or app was suggested. Also, a list of attendees up front so people can search out others they want to meet
- More focus on social science in the agenda
- More on the use of fines when trying to control attractants
- Strategies for de-escalation when dealing with the public
- More international and tribal discussions
- More about working with city and county governments – ordinances and garbage contracts
- Maintain the lower registration price to keep it accessible to all