Advancing Bear Care • 2016

Bear CARE GROUP

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Welcome Bear Care Delegates

The Bear Care Group and Omaha's Henry Doorly Zoo & Aquarium are delighted to welcome you to Advancing Bear Care 2016 in Omaha, Nebraska. We have organized this exciting event to focus on exploring progressive and novel approaches to behavior-based husbandry, exhibit modification, veterinary care, enrichment and training of captive bears to meet their behavioral needs and improve their care. You have travelled from all over the world to share your knowledge and passion for bear care. We thank you for participating and for making this a phenomenal international bear husbandry conference. Over the next few days you will enjoy the company of friends, thought provoking lectures, interactive workshops, a silent auction, and a chance to explore the popular and historic downtown district of Omaha. Please enjoy the zoo and aquarium, the safari park, and throw yourselves into the spirit of taking a Step in the Right Direction!

Jason Pratte
President, Bear Care Group
Animal Training Coordinator, Omaha's Henry Doorly Zoo & Aquarium

Bear Care Group Mission Statement

Bear Care GROUP

The Bear Care Group creates and enhances communication, cooperation and education among international bear care professionals by organizing bear care programs, publications and resources focused on advancing and sharing information on bear behavior, husbandry, enrichment, training, veterinary care and other topics to further global bear welfare and conservation efforts.

Check out www.bearcaregroup.org for post conference wrap up and photos. Continue networking with colleagues at bearcare@yahoogroups.ca. Find us on Facebook at www.facebook.com/groups/166308799979 and on Twitter at twitter.com/bearcaregroup. Support the Bear Care Group by using GoodSearch at goodsearch.com for all of your internet searches and Amazon Smile at smile.amazon.com for your shopping needs!

Board of Directors (info@bearcaregroup.org)

• Jason Pratte – President	jason.pratte@bearcaregroup.org
• Mindy Babitz – Vice President, Treasurer	mindy.babitz@bearcaregroup.org
• Lydia Lefebvre – Secretary	lydia.lefebvre@bearcaregroup.org
• Heather Bacon – Director	
• Angelika Langen – Director	
• Angela Gibson – Director	
• Annemarie Weegenaar - Director	
• Gail Hedberg – Advisor	

Omaha's Henry Doorly Zoo & Aquarium

Originally founded as Riverview Park in 1894, the city of Omaha first started exhibiting animals in 1898. Since then the zoo has grown in size and in its focus, constantly evolving and changing to meet the needs of the animals and to provide a well-rounded education, conservation and entertainment experience for our guests. OHDZA supports numerous local and international conservation efforts, and strives to provide an engaging and diverse work environment for its dedicated staff. Our focus on providing the best guest experience possible has led to the zoo being recognized as #1 in the world by several social media sources over the past few years, and as such our team works to maintain that ideal.

You will see the historic parts of the zoo, and observe the transition to more progressive exhibits and areas throughout. We are pleased that you will experience our newly opened African Grasslands expansion and the Alaskan Adventure splash grounds. We are currently planning our next expansion, the Asian Highlands, which will also include a new bear exhibit!

Mission of the Omaha Zoological Society
The following elements of the Society's mission were established on May 13, 1986:

1. Promote and encourage recreational activities for the public in the context of wild animals and their habitats.

2. Promote, establish and maintain educational activities and programs to enhance the knowledge of the general public and the Zoological staff in all areas relating to the natural world.

3. Promote conservation of rare and endangered species of plants, animals and their natural ecological systems.

4. Promote and undertake research programs related to the goals of zoos.

Many, Many Thanks

The Bear Care Group wishes to thank all of the wonderful volunteers and sponsors whose energetic support has culminated in ABC 2016. We are grateful to our guest speakers, poster presenters, and moderators for sharing their expertise and experience. Thank you to all of the participants, those who have travelled from far and wide to join us, and those who live in the neighborhood. And many thanks to the delegates for yet again enthusiastically donating to our silent auction to ensure its success. We appreciate all of those individuals and organizations who made donations for the delegate goody bags. And finally, we especially wish to thank our partners at the Omaha's Henry Doorly Zoo & Aquarium, the staff and volunteers, for their hard work and tremendous mid-west hospitality and generosity of spirit!

Special thanks goes to Omaha's Henry Doorly Zoo and Aquarium for donating spaces at the zoo for use for our conference, as well as extending the generous employee discount to delegates. The Green Team leader and the zoo's Catering/Events team were also integral in assisting us in being as environmentally conscious as possible, in everything from selection of products to waste disposal during our conference. We would specifically like to recognize the following volunteers for helping with conference planning: Wendy Hirniak (Planning), Dominic Dongilli (Proceedings), Danielle Wanies (Transportation), Beth Richmond and Samantha Gerken (Goody Bags), Kristi McGrath (T shirts), Alysia Hess (Silent Auction), Amber Marshall (Conference Logo), Carly Weber (Digital Rendering of Conference Logo), and Stephanie Huettner (Tribute Slide Show).

We would also like to recognize our wonderful sponsors for their tremendous support of our work at the Bear Care Group. Please take a moment to look at the back cover of this ABC 2016 Program and Proceedings for a colorful mosaic of their logos.

Sponsors

Animals Asia Foundation
Colors for Conservation
Hauser Bears
International Foundation for Animal Welfare
Lee G. Simmons Conservation Park & Wildlife Safari
Omaha's Henry Doorly Zoo and Aquarium
Omaha Chapter of AAZK
Omaha Zoo Foundation
Polar Bears International
Rainier AAZK
Starbucks
Surf Sweets
Trader Joes
Winton Foundation
Wildlife Toy Box

Name Badges

All delegates will be provided with a name badge upon registration. You will need to wear it at all times, as it is your pass onto the buses, into the zoo, conference sessions and social events. When you present your badge on zoo grounds, you will receive a 30% discount at all food and gift locations, free admission to the IMAX Theater, and free admission to any rides on ground that are operating (seasonal limitations). It will also help to introduce you to other delegates. *Please note that badges MUST be returned at the end of the conference.*

Speakers

All speakers should have sent their PowerPoint presentations to Jason Pratte prior to the start of the conference. All presentations need to be in PC format. To keep us on schedule and avoid technical mishaps, we will be unable to swap out laptops. Ensure that your presentation and all media will play on a PC device, and check during the evening icebreaker or in the morning prior to the conference starting to be sure everything functions correctly on the conference laptop.

Poster Sessions

Omaha's Henry Doorly Zoo & Aquarium's Graphics department is sponsoring our poster sessions by printing all posters onto standard-sized recycled boards. Posters will be available for viewing in the main presentation room throughout the conference. Poster presenters can answer questions during breaks, lunches, and at the various social events.

Silent Auction

Please bring your Silent Auction donations to the Registration Area at the DoubleTree Hotel on Wednesday, October 5 between 3 – 6 pm, or to the Aquarium between 7 – 9 pm. The Silent Auction items will be available for viewing throughout the conference sessions on Thursday. The auction itself will be held in the Safari Lodge in the African Grasslands Thursday evening, and all auction items will be available for payment and pick up throughout the day Friday, Saturday and Sunday. All proceeds from the silent auction are used to fund the Advancing Bear Care conferences and our international workshops.

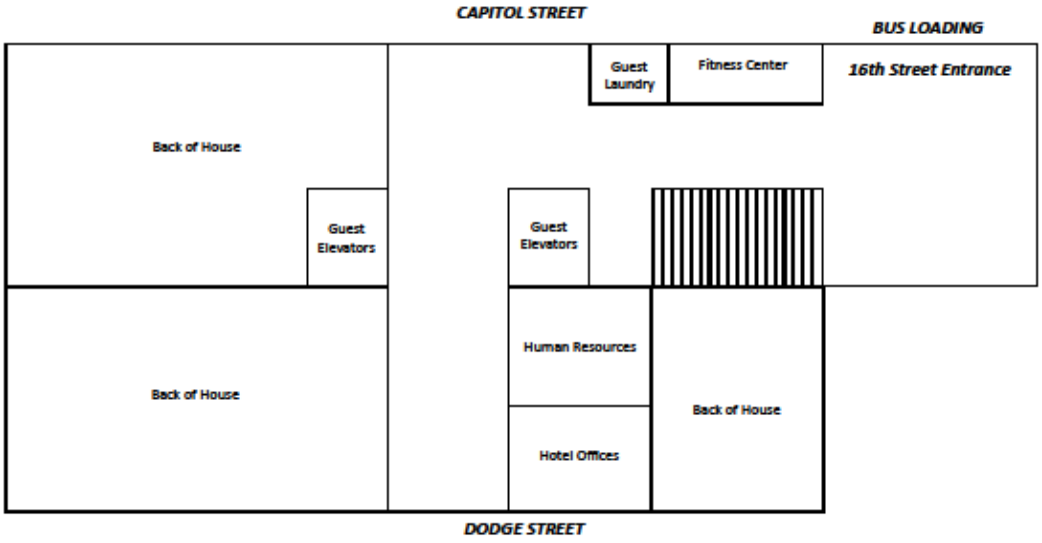
DoubleTree Hotel

Registration will start in the hotel lobby on Wednesday, October 5 and run from 3 – 5 pm. It will then be moved to the Aquarium at Omaha's Henry Doorly Zoo where the Ice Breaker is being held and will run from 7 – 9 pm. A bus will transport delegates from the hotel to the zoo for the Ice Breaker.

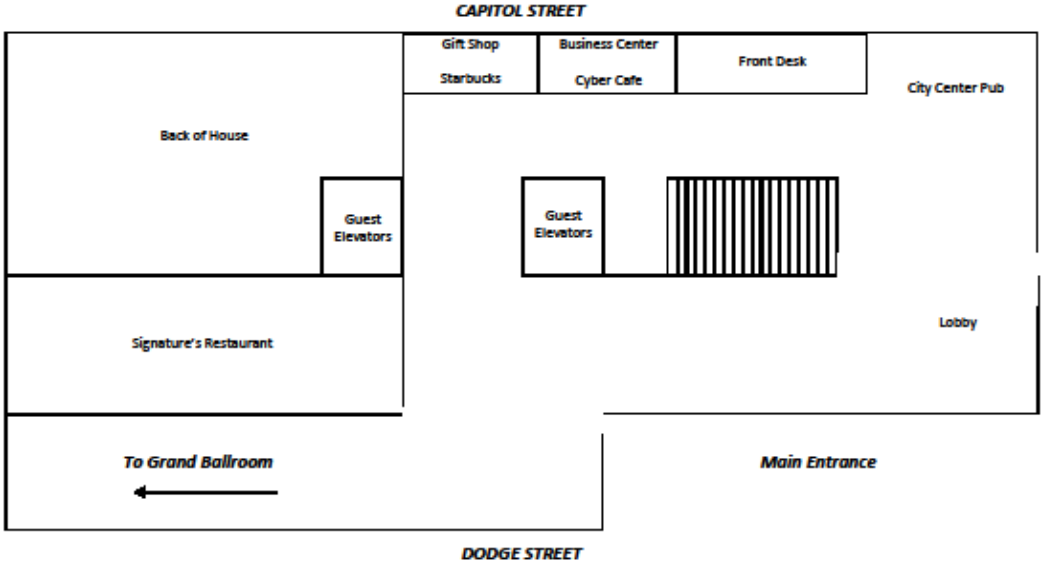
The Bear Care Group will provide buses to transport delegates between the hotel and the zoo each day. The buses will leave from the back entrance of the DoubleTree hotel on Lower Level (1). Check the schedule for times. Buses will not wait for delegates who are running late.

Complimentary breakfast (normally $15/person) has been included in the room rate for ABC 2016 delegates and is served in the Signature's Restaurant on the Lobby Level (2) of the DoubleTree Hotel. Gratuity, however, has not been included.

Lower Level (1) Diagram



Lobby Level (2) Diagram



Suzanne & Walter Scott Aquarium Education & Conference Center

Omaha's Henry Doorly Zoo & Aquarium Director, Dennis Pate, has generously donated use of the meeting and social spaces on zoo grounds for Advancing Bear Care 2016.

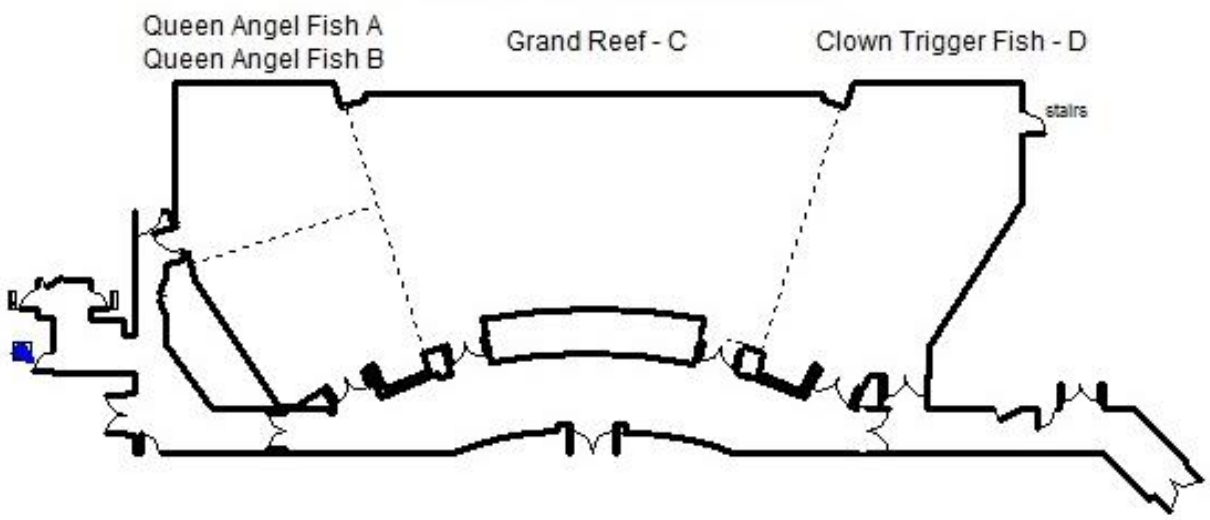
The main conference will be held in the Aquarium Education Conference Center, primarily in the Grand Reef room but expanding as needed into the Queen Angel and Clown Trigger Fish rooms.

The Silent Auction on Thursday evening will be held in the African Lodge.

Friday afternoon the workshop will be held in the Tree Tops Restaurant, part of the Lied Jungle complex.

The Saturday night banquet and social will be held in the main room of the Aquarium Conference Center.

Aquarium Education Conference Center



Omaha's Henry Doorly Zoo and Aquarium Map

Lee G. Simmons Conservation Park & Wildlife Safari
(Optional Sunday Trip)

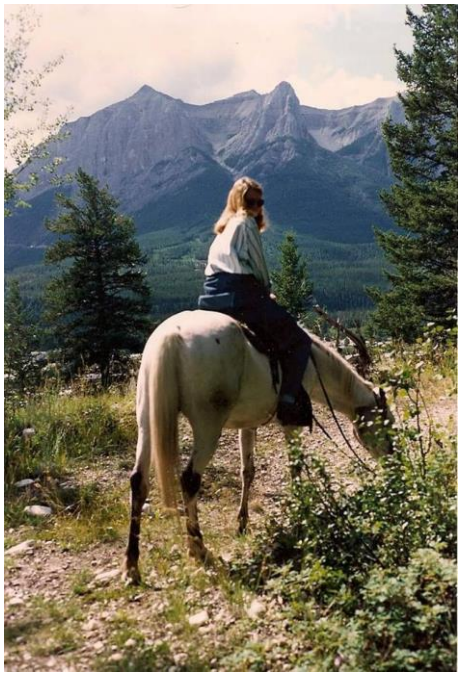
Drive. Hike. Explore. On Sunday afternoon, delegates will have the option to visit the Lee G. Simmons Conservation Park and Wildlife Safari, a four mile drive-through North American wildlife adventure, located about half an hour outside of the city of Omaha. You will feel like you are on an actual North American safari as you enjoy the local fauna and come face-to-face with animals such as elk, white-tailed deer, bison, and waterfowl. The Safari Park is also home to two female black bears, Licorice and Cinnabuns!

The bus to the safari park will leave from the zoo entrance after brunch on Sunday. Once at the safari park, the bus will drive delegates through the park, making various stops. A staff member will join delegates on the bus to talk about the park's history and its animals. Delegates will also have the opportunity to see a training session with the black bears, Licorice and Cinnabuns.


Lee G. Simmons Conservation Park and Wildlife Safari
BISON PLAINS
FROG LAKE
WOLVES
WOLF CANYON
BEARS
CRANE MEADOWS
Pawnee Creek Trailhead
EAGLE AVIARY
PELICAN POINT
PELICAN WETLANDS
PAWNEE CREEK
ELK PRAIRIE
DEER WOODS
MAPKEY
cattle guard
driving trail
walking trail
viewing stops
restrooms
playground
food / gift shop
parking
vending machine
pet exercise area
For Emergency Service, contact any Wildlife Safari Park employee or call (402) 944-9453.
PARKING LOT
VISITOR CENTER
ELK OVERLOOK
GIFT SHOP
To I-80
To Hwy 6A
LEE G. SIMMONS CONSERVATION PARK & WILDLIFE SAFARI
Wildlife Safari Park
16406 North 292nd Street
Ashland, NE 68003

In Memoriam

Else Poulsen: In Memoriam



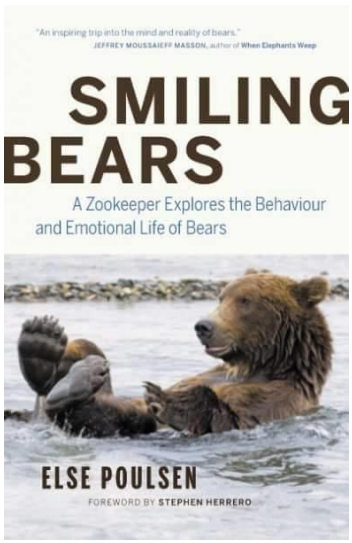
It is with tremendously saddened hearts that we let you know of the passing of our dear friend and colleague, Else Poulsen.

Else had been battling cancer for more than a year. Her sister contacted us with the sad news that Else passed away early in the morning on April 15th, 2016. She is now in a place of peace and freedom.

Else founded the Bear Care Group, following her vision to improve the well-being and welfare of bears around the world. She dedicated her entire life to caring for animals, especially her furry first loves, the bears. Else worked in zoos early in her career, and later as a consultant for caregivers around the globe; she was an enduring font of wisdom and knowledge regarding the nature and care of all bears. Her presentations, insights, and books will forever be resources for everyone to enjoy and help become just a little bit better at what we all love to do most. Else was selfless and tireless in her dedication, and a true inspiration to us all.

We will continue to uphold Else's ideas and goals. The Bear Care Group, and all of us, can honour her best by continuing to do the most we can for the animals in our care, and to improve the welfare of our ursine friends everywhere. It is truly what Else would want.

We will miss you Else. Big bear hugs from us all.



AGENDA

BEAR CARE GROUP

ABC 2016

WEDNESDAY, OCTOBER 5, 2016		
TIME	EVENT	LOCATION
3:00 – 6:00 PM	Registration Delegates are asked to bring Silent Auction donations	Hotel Lobby DoubleTree Hotel
6:30 and 7:00 PM	Buses to Zoo	Lower Level (1) 16th St. Entrance (by fitness center)
7:00 – 9:00 PM	Registration Delegates are asked to bring Silent Auction donations	OHDZ Aquarium & Education Conference Center
7:00 – 9:00 PM	Ice Breaker Appetizers & Drinks	OHDZ Aquarium
9:00 PM	Bus to Hotel	Zoo Entrance

THURSDAY, OCTOBER 6, 2016		
TIME	EVENT	LOCATION
6:00 – 7:15 AM	Breakfast at Hotel	Signature's Restaurant DoubleTree Hotel
7:15 AM	Board Bus to Zoo	Lower Level (1) 16th St. Entrance (by fitness center)
8:00 AM	Welcome	

TIME	EVENT	LOCATION
8:00 – 8:30 AM	ABC 2016 Welcome Jay Pratte & Mindy Babitz	OHDZ Education Conference Center (ECC)
	Omaha's Henry Doorly Zoo and Aquarium Welcome Dan Cassidy, General Curator	
	Housekeeping Jay Pratte	
	Conference Theme: A Step in the Right Direction Jay Pratte	
	Tribute to Else Poulsen Jay Pratte	
8:30 AM	Key Note Address	OHDZ ECC
8:30 – 9:30 AM	Jill Robinson Who Are You, and What Can I Do For You?	
9:30 AM – 12:00 PM	Session I – Behavior-Based Bear Husbandry	OHDZ ECC
9:30 – 10:00 AM	Jay Pratte The Principles of Behavior-Based Bear Husbandry	
10:00 – 10:20 AM	Coffee Break *Sponsored by the Omaha Zoo Foundation*	OHDZ ECC
10:00 – 10:20 AM	Delegates can peruse: 1) Silent Auction, 2) Poster Presentations	
10:20 AM – 12:00 PM	Session I (Continued)	OHDZ ECC
10:20 – 10:40 AM	Katie Buckley-Jones Addressing Pacing Behavior in a Young Black Bear Female Using Novel Approaches	
10:40 – 11:00 AM	Sara Colandrea Turning What We "Think" Into What We "Know" (Deductions of Best Practices From Non-Invasive Data)	
11:00 – 11:20 AM	JoAnne Simerson Building Relationships With Our Bears	
11:20 – 11:40 AM	JoAnne Simerson, on behalf of Dylan McCart Male Polar Bear Interactions	

TIME	EVENT	LOCATION
11:40 AM – 12:00 PM	Heather Roberts & Mindy Babitz Integrated Care for Neonatal Giant Panda Twins	OHDZ ECC
12:00 – 1:00 PM	Lunch	OHDZ ECC
12:00 – 1:00 PM	Delegates can peruse: 1) Silent Auction, 2) Poster Presentations	
1:00 – 1:35 PM	Session I (Continued)	OHDZ ECC
1:00 – 1:20 PM	Emily McCormack Developing a Successful Animal Care Internship	
1:20 – 1:35 PM	Questions and Answers with Session I Speakers	
1:35 – 5:00 PM	Session II – Behavior-Based Enrichment Part 1	OHDZ ECC
1:35 – 2:20 PM	Mindy Babitz The Principles of Behavior-Based Enrichment Part I: Habitat and Furniture	
2:20 – 2:40 PM	Amanda Cronberg The "Bear" Necessities: Making the Most of What You Have	
2:40 – 3:00 PM	Janice Martin Use of Seal Oil as an Enrichment Scent for Polar Bears as Quantified with a FitBark Dog Activity Monitor	
3:00 – 3:15 PM	Questions and Answers with Session II Speakers	
3:15 – 3:35 PM	Coffee Break	OHDZ ECC
3:35 – 5:00 PM	Enrichment Workshop I: Enclosure Design & Redesign	OHDZ ECC

Table: Moderator:	Polar Bear JoAnne Simerson	Brown Bear Angelika Langen	Am. Black Bear Tracy Leaver	Asiatic Black Bear Heather Bacon	Andean Bear Lydia Lefebvre	Sloth Bear Mindy Babitz	Sun Bear Angela Gibson	Giant Panda Heather Roberts

5:00 – 6:00 PM	Hour for Delegates to Explore Zoo	OHDZ
6:00 – 8:00 PM	Silent Auction and Social Event Hors D'oeuvres and Drinks	OHDZ African Lodge
8:15 PM	Board Bus to Hotel	Zoo Entrance

FRIDAY, OCTOBER 7, 2016		
TIME	EVENT	LOCATION
6:00 – 7:15 AM	Breakfast at Hotel	Signature's Restaurant DoubleTree Hotel
7:15 AM	Board Bus to Zoo	Lower Level (1) 16th St. Entrance (by fitness center)
8:00 – 8:10 AM	Housekeeping Jay Pratte	OHDZ Education Conference Center (ECC)
8:10 AM – 12:00 PM	Session III - Minimum Standards of Care and Why They Matter	OHDZ ECC
8:10 - 8:20 AM	Introduction Lydia Lefebvre	
8:20 – 8:45 AM	Emily McCormack Animal Welfare Issues Due to Improper Regulations in the Private Exotic Pet Industry	
8:45 – 9:10 AM	Jeff Funke Apex Predators and Employee Safety and Health	
9:10 – 9:35 AM	Delcianna Winders Regulatory Enforcement, Bear Welfare, and Human Safety	
9:35 – 10:00 AM	Brittany Peet Recommendations for Improving U.S. Department of Agriculture's (USDA) Regulations to Ensure Human Care and Treatment for Bears	
10:00 – 10:20 AM	Coffee Break	OHDZ ECC
10:00 – 10:20 AM	Delegates can: 1) Peruse Poster Presentations, 2) Purchase Silent Auction items won	
10:20 AM – 12:00 PM	Session III (Continued)	OHDZ ECC

TIME	EVENT	LOCATION
10:20 AM – 12:00 PM	Panel Discussion on Minimum Standards of Care Moderators: Lydia Lefebvre and Heather Bacon	OHDZ ECC
12:00 – 1:00 PM	Lunch	OHDZ ECC
12:00 – 1:00 PM	Delegates can: 1) Peruse Poster Presentations, 2) Purchase Silent Auction items won	
1:00 – 5:30 PM	Session IV - Training for Veterinary Management	OHDZ ECC
1:00 – 1:30 PM	Jay Pratte Behavioral Management and Training	
1:30 – 2:00 PM	Heather Bacon Veterinary Perspectives on Medical Training	
2:00 – 2:20 PM	Julie Yarrington Polar Bear Front Paw Blood Draw	
2:20 – 2:40 PM	Cindy Roberts Blood Sleeve Design, Planning and Voluntary Blood Draw Training for Three Male Polar Bears	
2:40 – 2:55 PM	Questions and Answers with Session IV Speakers	
2:55 – 3:00 PM	Delegates Travel to TreeTops Restaurant	in Lied Jungle complex
3:00 – 3:20 PM	Coffee Break	Treetops Restaurant
3:20 – 5:30 PM	Medical Training Workshop	Treetops Restaurant

Table:	Blood Draws & Blood Pressure	Ultrasounds & X-Rays	Physical Assessments & Body Presentations	Eye & Ear Exams & Medications	Injections & Administering Medications
Moderator:	Mindy Babitz	Heather Roberts	Heather Bacon	Angela Gibson	Lydia Lefebvre

5:30 PM	Bus Back to Hotel	Zoo Entrance

SATURDAY, OCTOBER 8, 2016		
TIME	EVENT	LOCATION
6:00 – 7:15 AM	Breakfast at Hotel	Signature's Restaurant DoubleTree Hotel
7:15 AM	Board Bus to Zoo	Lower Level (1) 16th St. Entrance (by fitness center)
8:00 – 8:10 AM	Housekeeping Jay Pratte	OHDZ Education Conference Center (ECC)
8:10 AM – 12:00 PM	Session V – Progressive Bear Veterinary Care	OHDZ ECC
8:10 – 9:10 AM	Heather Bacon Veterinary Perspectives on Bear Behavioural Husbandry	
9:10 – 9:40 AM	Angelika Langen Trauma in Orphaned Cubs	
9:40 – 10:00 AM	Angela Gibson Assessing Quality of Life in Bears	
10:00 – 10:20 AM	Coffee Break *Sponsored by the Winton Foundation for the Welfare of Bears*	OHDZ ECC
10:00 – 10:20 AM	Delegates can: 1) Peruse Poster Presentations, 2) Purchase Silent Auction items won	
10:20 AM – 12:00 PM	Session V (Continued)	OHDZ ECC
10:20 – 10:40 AM	Susie Gurley Assessment Plan for Monitoring Quality of Life in a 35 Year Old Female Polar Bear	
10:40 – 11:00 AM	Mindy Babitz Behavior-Based Quality of Life Assessment for a Geriatric Sloth Bear	
11:00 – 11:40 AM	Jay Pratte Bear Blood Draw Training	

TIME	EVENT	LOCATION
11:40 AM – 12:00 PM	Questions and Answers with Session V Speakers	OHDZ ECC
12:00 – 1:00 PM	Lunch & Film Viewing	OHDZ ECC
12:00 – 1:00 PM	Film: Life Is One (52 min) Patrick Rouxel	
1:00 – 2:15 PM	Session VI - Choice and Control	OHDZ ECC
1:00 – 1:45 PM	Heather Bacon & Mindy Babitz Choice and Control – Important Elements in Behaviour-Based Husbandry	
1:45 – 2:05 PM	JoAnne Simerson Introducing Two Male Polar Bears	
2:05 – 2:15 PM	Questions and Answers w/ Session VI Speakers	
2:15 – 5:30 PM	Session VII - Behavior-Based Enrichment Part 2	OHDZ ECC
2:15 – 3:00 PM	Mindy Babitz The Principles of Behavior-Based Enrichment Part II: Enrichment Devices	
3:00 – 3:20 PM	Coffee Break	OHDZ ECC
3:00 – 3:20 PM	Delegates can: 1) Peruse Poster Presentations, 2) Purchase Silent Auction items won	
3:20 – 5:30 PM	Enrichment Workshop II: Using Enrichment Devices to Provide Behavioral Opportunities	OHDZ ECC

Table:	Feeding: Hunting/Fishing	Feeding: Berry Picking/Browsing	Feeding: Tree Climbing	Feeding: Insect Eating	Social	Nesting	Bathing/Grooming
Moderator:	JoAnne Simerson	Angela Gibson	Heather Bacon	Mindy Babitz	Lydia Lefebvre	Tracy Leaver	Angelika Langen

5:30 – 6:00 PM	**Free Time for Delegates to Purchase Silent Auction items won** Note: There's no transport back to hotel *before* Banquet so delegates wishing to change clothing will have to do so at the zoo (if so desired; no specific attire required)	
6:00 – 9:00 PM	Banquet Dinner and Social Event	OHDZ ECC
8:00, 9:00, 10:00 PM	Buses back to Hotel	Zoo Entrance

SUNDAY, OCTOBER 9, 2016		
TIME	EVENT	LOCATION
6:00 – 7:15 AM	Breakfast at Hotel	Signature's Restaurant DoubleTree Hotel
7:15 AM	Board Bus to Zoo	Lower Level (1) 16th St. Entrance (by fitness center)
8:00 – 8:10 AM	Housekeeping Jay Pratte	OHDZ Education Conference Center (ECC)
8:10 – 10:00 AM	Speaker & Film Presentations	OHDZ ECC
	Coffee and Snacks available	
8:10 – 8:50 AM	Cheryl Morris Diet and Nutrition for Bears	
8:50 – 9:45 AM	Film: Jill Robinson: To the Moon and Back (55 min) Orange Planet Pictures	
9:45 – 10:00 AM	Else's Legacy Jay Pratte	
10:00 – 11:00 AM	Capstone Presentation	OHDZ ECC
10:00 – 11:00 AM	Bärle's Story: A Model of Behavior-Based Husbandry Presented by Jay Pratte, on behalf of Else Poulsen	
11:00 AM – 12:00 PM	Brunch	OHDZ ECC
12:00 – 4:30 PM	Optional Tours	
12:00 – 4:30 PM	Behind the Scenes Tours at Zoo	OHDZ
OR	OR	
12:15 PM	Bus to Lee G. Simmons Conservation Park & Wildlife Safari	Zoo Entrance

TIME	EVENT	LOCATION
12:45 – 3:30 PM	Lee G. Simmons Conservation Park & Wildlife Safari Tour	Lee G. Simmons Conservation Park & Wildlife Safari
3:30 PM	Bus back to Zoo	
4:30 PM	Bus back to Hotel	Zoo Entrance

LECTURE ABSTRACTS

BEAR CARE GROUP

ABC 2016

WHO ARE YOU, AND WHAT CAN I DO FOR YOU?"

Jill Robinson

Although she would probably have flushed with embarrassment to hear it, Else Poulsen was aptly described as the "bear whisperer", in a beautiful description of her life, after she passed. One thing is clear, Else knew her bears, and spent every waking hour championing their cause. When Else told me in February that she wasn't able to attend the ABC conference later this year, I told her right back that we would keep our promise and the presentation in October would be from us both. The core theme is, not surprisingly, updating on the status of bear bile farming in China and Vietnam – but celebrating too the life of a woman who despised the barbarity of an industry that "broke" these bears, and joined us with unwavering compassion and intelligence to mend them.

THE PRINCIPLES OF BEHAVIOR-BASED BEAR HUSBANDRY

Jason (Jay) Pratte, on behalf of Else Poulsen

Wild and captive large bears are born with a genetic complement of characteristics and drives that they need to live successfully in the wild habitat that they have evolved to occupy. They expect that their body and understanding of how to find food, mates, and lodging will work effectively with the environmental opportunities around them. Like their wild counterparts, captive bears want to build nests, advertise for and find mates through complex personal and environmental messaging, raise and teach young, test and identify food sources, navigate through complex terrain, set up daily and seasonal routines that their internal and external environmental circumstances dictate, and solve problems and make daily decisions. The further their captive environment veers away from their genetic expectations the more difficult it is for them to adapt, and the greater their stress level. Captive care professionals have learned that mimicking animals' natural habitat and giving them the natural ingredients to express their normal daily and seasonal activity patterns reduce the stressors inherent in captivity and promotes mental and physical wellbeing. Behavior-based husbandry is the deliberate provision of species-specific, internal and external care to animals befitting their genetic and circumstantial expectations. It is focused on the animals' agenda and includes enclosure design and furniture, ambient parameters (ex. photoperiod, temperature, sound), diet presentation and nutrition, daily and seasonal environmental complexity (ex. environmental enrichment programming), care and maintenance routines, communication (ex. operant conditioning), caregiver and animal relationship building, and veterinary care.

ADDRESSING PACING BEHAVIOR IN A YOUNG BLACK BEAR FEMALE USING NOVEL APPROACHES

Katie Buckley-Jones

The Houston Zoo acquired two young, female, non-releasable American Black Bears in 2013 from the United States Fish and Wildlife Service (USFW). Both girls, Belle and Willow, are housed together in an older bear grotto type exhibit. They exhibited normal bear behaviors until August 2015, when Willow began to pace. The Carnivore staff began a series of observations to assess the cause of this pacing behavior and to identify what influence husbandry, enrichment, diet, and con-specific pressures had on the pacing behavior. While we noticed Willow's pacing behavior decrease in the original pacing path, her pacing began to transfer to other areas including the inside holding enclosure. Her pacing behavior also changed from occurring predominately in the morning, to occurring overnight as well. We began recording overnight behaviors to develop a 24-hour pacing timeline, in addition to noting pacing duration and paths used during the day. Bears have a variety of motivating factors when it comes to pacing, and although we believed we had narrowed down some of the motivating factors on exhibit (food reinforcement from the public and seasonality), we could not identify the motivating cause for pacing inside when keepers and reinforcements were not present. One novel approach to reducing this behavior suggested by Dr. Valarie V. Tynes, included using ursid pheromones as a management tool. Our carnivore department utilizes Feliway for many of our sensitive cat species. We have had substantial results using pheromones with felids, so we wanted to repeat the trial with Willow. There were no foreseen negative impacts of pheromone use; rather the potential for positive outcomes was high due to our experience with feline pheromones. With the feline pheromones, we saw an over-all relaxation and soothing effect in our cats. We hoped for this same reaction, or similar, with Willow, eliminating her need or want to pace. In addition to pheromone use, a variety of different husbandry, enrichment and feeding routines have impacted Willow's pacing behavior, but not completely extinguished it. Results obtained from observations of husbandry changes and pheromone use thus far will be presented. We continue to record and adjust our bear management, create new enrichment, and change methods of husbandry and exhibiting bears in an effort to identify the motivation behind Willow's pacing, with the goal of decreasing her need to pace.

TURNING WHAT WE "THINK" INTO WHAT WE "KNOW" (DEDUCTIONS OF BEST PRACTICES FROM NON-INVASIVE DATA)

Sara Colandrea, Craig Saffoe and Leigh Pitsko

At the Smithsonian's National Zoo, one of our goals in the animal husbandry department is to collect non-invasive data on our animals that can be turned into useful information that we may share with other institutions. We have found that by routinely writing down and storing information that animal keepers collect daily as part of our routines, we can tease out objective information about our animals that then becomes useful in making management decisions. The National Zoo also has its own endocrine laboratory which is useful when animal husbandry staff want to compare behavioral data with hormonal data (particularly stress or reproductive hormones) to answer questions about their animals. We have been extraordinarily lucky at the National Zoo to have had the most successfully

reproducing female Andean bear *(Tremarctos ornatus)* in the American Zoo and Aquarium Association's SSP (Species Survival Plan) population over the last decade. Having access to an endocrine lab has given us the opportunity to address three major questions that we have regarding our Andean bear collection and how to best manage them:

1. How much stress is imposed on individual animals when dam and cubs are separated?
2. Can we determine when a female bear begins her estrus cycle and more accurately predict when to conduct breeding introductions?
3. We know that Andean bears experience embryonic diapause, but using hormone data can we accurately predict when the blastocyst attaches to the uterine wall and the female becomes pregnant?

Using a combination of husbandry data and endocrine data that we have collected, we are currently in the process of trying to address these questions and learn more about the only species of bear found in South America which is currently vulnerable to extinction.

BUILDING RELATIONSHIPS WITH OUR BEARS

JoAnne Simerson

Positive reinforcement training and environmental enrichment have long been accepted tools we use to improve our animals' well-being. At one time, however, they were considered frivolous and certainly not necessary for animal care. The concept of building relationships with animals is not new and many successful animal professionals have used relationship building within their animal management for decades. Unfortunately, some animal managers still look at forming bonds with animals as a time waster, not conducive to basic animal care, and potentially even detrimental to getting the job done. It is important to change that perception into what we know, that building strong relationships with our bears is critical to providing an environment of well-being. This presentation will discuss what building relationships with bears looks like, how it fits into our positive reinforcement training and environmental enrichment programs, and how it can be a part of our bears' daily environment. This presentation will also discuss creating a culture of care for all bears that starts with a safe and respectful environment as the foundation to a human-bear bond. Giving bears the choice to spend time with us, respecting them as bears and not imposing a human agenda on them, and taking the time to develop a trusting relationship, caregivers can have a multi-level bond that is unique in animal-human relationships. Discussion will focus on how bears perceive our interactions within their environment, how blending both structured and unstructured interactions enhance our relationships, and how to build bonds that benefit our bears and not just us. The goal of this presentation is to improve the well-being of both bears and the humans that care for them.

MALE POLAR BEAR INTERACTIONS

Janice Martin, Dylan McCart and JoAnne Simerson

Interactions of male polar bears *(Ursus maritimus)* in the wild are not well known, but captive facilities are able to study these behaviours in a controlled environment with great detail. The main goal of placing male polar bears together in a captive setting is to mentally stimulate and enrich the lives of the bears, while gaining valuable information. This important information can be used to help understand the future of polar bears as there is a reduction in sea ice duration, causing bears to remain in close proximity for increased periods of time. Male polar bear groups have been analyzed and documented at Assiniboine Park Zoo in Winnipeg, Manitoba, and Cochrane Polar Bear Habitat, in Cochrane, Ontario. Behavioural logs have shown increase in overall demeanor, and a reduction in stereotypic behavior when male bears are placed together rather than housed separately. At both Assiniboine Park Zoo and Cochrane Polar Bear Habitat, resources are plentiful so the bears do not need to compete for them. As a result, the behaviours of these bears can be observed without any disruptions.

INTEGRATED CARE FOR NEONATAL GIANT PANDA TWINS

Heather Baker Roberts and Mindy Babitz

Zoo Atlanta's giant panda, Lun Lun, gave birth to two cubs on 15 July 2013. They were the first twin giant pandas to be born in the United States since 1987, and the first giant panda twins to survive cub-hood in the United States. These cubs were Lun Lun's fourth and fifth cubs, having previously given birth to single cubs in 2006, 2008 and 2010. Every birth year, Zoo Atlanta staff are prepared for a possible twin birth, and after seeing that Lun Lun could not care for both cubs simultaneously, as is typical with Giant Pandas, the second cub was pulled and placed in an incubator only minutes after birth. A protocol was in place to implement "twin swapping" in an effort to assist Lun Lun in raising both cubs. This system was based on one developed by our partner institution, the Chengdu Research Base of Giant Panda Breeding, to increase the likelihood of both cubs surviving. By swapping cubs and giving each one a chance to be with their mother, they would also both have a chance to develop normally and learn Giant Panda behaviors that would be especially important as they matured. In previous years, Lun Lun has cared for her cubs without human assistance; therefore, the biggest challenge was to swap the cubs for the first time given that Lun Lun was not accustomed to handing over her cub so soon after birth. This presentation will cover the preparation and husbandry involved in caring for Lun Lun and the twins during their first several months. We will also discuss how the knowledge gained from this experience was helpful in assisting Smithsonian National Zoo's panda staff when their female gave birth to twins two years later.

DEVELOPING A SUCCESSFUL ANIMAL CARE INTERNSHIP

Emily McCormack

The animal care profession has continuously been a competitive field. The rise in college graduates with a degree in an animal related discipline means zoos and sanctuaries should recruit these talented and innovative individuals. Developing an internship program is a responsive strategy for investing in your facility's future success. Internship programs can provide options to some of facilities' most challenging issues regarding labor costs and gaining fresh perspectives. Having interns to help with the daily husbandry and enrichment is a huge benefit for the animals as well. Without an internship program, the animals may not be able to receive the same level of attention and enrichment from the permanent staff due to time constraints. Many of the animals residing at Turpentine Creek Wildlife Refuge (TCWR) were rescued from the private "pet" industry where abuse and neglect occurred. One of the most important issues to resolve after an animal's rescue is trust. Through our internship program we are able to have multiple individuals positively interacting with the animals through proper animal husbandry and enrichment; this has increased numerous animals' confidence in their surroundings and helped them to regain trust in their caregivers. Our internship program has proven to be a healthy progression for all animals and persons involved. First-hand experience or on-the-job training has proven effective for the success of TCWR's intern graduates. Upon graduation from our program, interns have persevered in their chosen field, having enjoyed and participated in work-experience and mentor relationships. Turpentine Creek profited on multiple levels gaining exceptional dedicated individuals who not only succeeded in their profession, but continue to be ambassadors for our sanctuary's mission and cause. Most importantly, TCWR's animal residents benefited from the interns daily commitment to making their lives extremely fulfilled in a captive wild animal institution.

THE PRINCIPLES OF BEHAVIOR-BASED ENRICHMENT PART I: HABITAT AND FURNITURE

Mindy Babitz

Enrichment is an integral part of any behavior-based husbandry program. Good husbandry promotes animal welfare in a captive environment and involves opportunities for animals to express species-specific behaviors. Behavior-based enrichment programming is a tool for providing species-specific behavioral opportunities in captivity. This presentation will discuss the basics of behavior-based enrichment programming, as well as the planning process, with an emphasis on planning a program specifically to meet the needs of the species' natural history while also meeting the needs of the individual animal. This presentation will focus on how to design a habitat that meets a bear's needs, including retrofitting old exhibits to increase behavioral opportunities.

THE "BEAR" NECESSITIES: MAKING THE MOST OF WHAT YOU HAVE

Amanda Cronberg

The Great Plains Zoo's Brown Bear exhibit was originally constructed in 1963; little has been changed since a renovation in the mid-1980's, which added some rockwork and dimension to the initially flat concrete "bear grotto" style-exhibit. The design of the animal exhibit and limited animal holding space does not lend itself easily to training, enrichment, or veterinary procedures. Our brown bear suffered from obesity, which was caused in part by not being able to obtain frequent weights and under-stimulation. It was evident that finding unique ways to utilize the space available was necessary in order to provide our brown bear with the highest standards of care. A zip line, enrichment holders, dirt box, and a more structured enrichment plan was developed to give her more opportunities to perform natural behaviors. In addition, a modified scale box was designed to allow for more regular weight collections and a training program was initiated to encourage participation in veterinary procedures. The additional enrichment has had an overall positive effect on her demeanor and we have seen her exhibiting more species-appropriate behaviors. In addition, obtaining frequent weights has allowed us to modify her diet to better suit her needs and she is now within a healthy body condition range. Design is underway for the Great Plains Zoo to build a new, much improved exhibit for her soon, but in the meantime, utilizing the tools and space available in creative ways lead to positive results and can contribute to an overall better welfare.

USE OF SEAL OIL AS AN ENRICHMENT SCENT FOR POLAR BEARS AS QUANTIFIED WITH A FITBARK DOG ACTIVITY MONITOR

Janice Martin, Jackie Enberg, Jenna Harrison, Jesse Kindzierski, Heather Penner, Lianne Thompson and Stephen D. Petersen

Numerous enrichment strategies involving objects or scents have been employed to encourage mental and physical health in captive polar bears *(Ursus maritimus)*. In addition there has been a trend to favour more naturalistic enrichment items in zoological settings. However, quantification of the effectiveness of an item has been difficult. We have tested the effectiveness of a scent natural to the evolutionary and contemporary experience of polar bears – ringed seal oil. We presented two male polar bears with a tough thermoplastic "egg" that was purchased from Otto Environmental with 5ml of treatment scent smeared on the outside. The bears had access to the item for 48 hours before it was retrieved, washed, re-scented, and deployed again. We tracked duration and intensity of use using a FitBark™ dog activity monitor attached to the "egg". Results were variable but hold promise for a new enrichment scent for polar bears. Further tests will explore differences in reactions between hand reared polar bears (no experience with seals) and wild born polar bears. To our knowledge, this is a novel use of an activity monitor and holds promise for inexpensively quantifying the use of enrichment items when direct observation is not possible.

ANIMAL WELFARE ISSUES DUE TO IMPROPER REGULATIONS IN THE PRIVATE EXOTIC PET INDUSTRY

Emily McCormack

There is a major default in animal rights and regulation in the United States. This is the leading cause for the exploitation and continued cruelty occurring by owning an exotic animal as a pet. The United States Department of Agriculture (UDSA) provides permits to individuals obtaining big cats and bears with limited standards. The standards are extremely vague and depend explicitly on the inspector assigned to the facility/individual in their territory to interpret them. Some states' USDA inspectors are expected to examine over 120 facilities/individuals; concentrating not only on exotic animals, but puppy mills, horses, cattle, etc. There may be more than 300 dogs housed in a puppy mill with animals defecating and urinating on each other due to being stacked in crates four rows high in deplorable conditions. When inspectors are dealing with situations such as this, they are not concentrating on the family down the road housing two bears in their backyard. Situations such as this have allowed the private exotic pet industry to grow out of control and Turpentine Creek Wildlife Refuge (TCWR) has observed many abusive situations during rescues of these animals since they were not properly examined by an appropriately assigned inspector. Regulations fail not only at the federal level, but individual state laws pose another concern. In Arkansas, for example, native species including bears, cougars and bobcats are allowed to be privately owned without a permit if the resident has fewer than six of them. This means an individual can house five bears in their backyard without a permit, inspection or any form of regulation. If the owner's property is not open to the public, a USDA permit is also not required. Therefore, anyone can have a "pet" bear that they enlarge for a rug, declaw, provide an improper diet to, fail to enrich, insufficiently house, etc. After the tragic incident in Zainesville, Ohio in 2011, states began to pass laws protecting exotic cats and bears in the private industry. However, these laws are not being successfully enforced or regulated. There are too many animals still suffering from abuse and neglect in the private exotic pet industry. It's time to make a change.

APEX PREDATORS AND EMPLOYEE SAFETY AND HEALTH

Jeff Funke

A discussion on the Occupational Safety and Health Administration's (OSHA) utilization of the general duty clause and the employers' responsibility to provide a workplace free from recognized safety and health hazards while working with apex predators.

REGULATORY ENFORCEMENT, BEAR WELFARE, AND HUMAN SAFETY

Delcianna J. Winders

Reputable zoos generally practice protected contact with bears and other dangerous wild animals. Thousands of exhibitors across the United States, however, continue to practice free contact and many of them also allow public interactions with these animals. This presentation will discuss the dangers of free contact for humans, bears, and conservation, and efforts to mitigate those dangers, including regulatory efforts under the federal Animal Welfare Act (AWA) and Occupational Health and Safety Act (OSHA). It will also discuss public awareness campaigns, recent OSHA enforcement actions, and recent petitions for rulemaking under OSHA and the AWA. Particular emphasis will be placed on how responsible bear caregivers can be part of the solution for bears held at substandard facilities by acting as expert witnesses, educating regulatory agencies, and training other caregivers in this field.

RECOMMENDATIONS FOR IMPROVING U.S. DEPARTMENT OF AGRICULTURE'S (USDA) REGULATIONS TO ENSURE HUMANE CARE AND TREATMENT FOR BEARS

Brittany Peet

More than 1,000 bears are confined in substandard conditions in nearly 300 USDA-licensed roadside zoos, bear pits, traveling shows, entertainment outfits, and other licensed facilities across the country. While bears in the wild have home ranges of up to hundreds of miles, captive bears in these facilities are routinely confined in cramped and barren concrete pits, corn cribs, or dog-kennel-sized cages. Such intensive confinement and lack of physical and mental stimulation can cause significant mental distress, as indicated by the pacing, swaying, head-bobbing, and other abnormal (stereotypic) behaviors that captive bears in these conditions frequently exhibit. Living on concrete slabs can also cause arthritis, pressure sores, and other painful and debilitating diseases.

The purpose of the Animal Welfare Act (AWA) is to ensure that animals used in research facilities or exhibition purposes are provided humane care and treatment. Bears are currently regulated under the general cadre of USDA regulations that generically cover the handling, care, and treatment for species as diverse as giraffes, prairie dogs, and zebras. Significant advances over the last two decades in the scientific knowledge about bears and their unique needs in captivity have demonstrated that these generic regulations are insufficient to ensure that bears' basic needs are met. Since the regulations fail to meet the AWA's purpose, they should be changed or reinterpreted.

The USDA has promulgated specific regulations relating to primates, dogs, cats, rabbits, guinea pigs, marine mammals, and other species in recognition of their complex needs. In 2012 PETA submitted a petition for rulemaking to the USDA to do the same for bears. The USDA responded to PETA's petition claiming that it had sufficient authority under current regulations to address the concerns raised in the petition, though it has yet to take action. This presentation will focus (1) on the ways in which current USDA regulations hinder bear welfare, (2) non-regulatory approaches to addressing the primary welfare issues for captive bears (e.g. confinement on concrete, inadequate enrichment, premature separation of infants without medical necessity, and public handling of infants), and (3) ways that reputable facilities can advocate for a fresh interpretation of the regulations (and why they should).

PANEL DISCUSSION ON MINIMUM STANDARDS OF CARE

Lydia Lefebvre and Heather Bacon

Many enforcement agencies and officers overseeing bears in captivity cover a myriad of species with little time or opportunity to become an expert in bears. Additionally bears have traditionally coped with housing and husbandry provisions that do not meet their evolutionary physical or psychological needs. Enforcement officers need to justify that their demands for improvements to bear housing and husbandry are reasonable for the bear owner, and to convince their respective governing bodies that these changes are lawful and necessary for the animal based on current evidence rather than traditional practice. Many agencies don`t have the resources to enforce the law with the use of expert consultants; therefore enforcement officers have to do research themselves to present in court as well as track down experts to support recommended changes, and then justify the use of these experts to their respective agencies.

This panel discussion will consider situations from around the world where bear welfare may be compromised and the legislative and regulatory processes which may be utilized to improve bear welfare. Specifically we aim to:

- Discuss specific challenges faced when trying to make changes for bears in captivity using the laws at hand.
- Network and create relationships with the bear care community which can provide resources to aid individual enforcement officers and agencies in enforcing standards of care and best practices for bears in captivity.
- Discuss how the bear care community can offer direction or access to solid and current research to support enforcement of care standards as well as provide expert advice or testimony.

BEHAVIORAL MANAGEMENT & TRAINING

Jason Pratte

Operant conditioning is one tool in our behavior-based husbandry repertoire that enables us to better communicate with and manage the animals in our care. Training is how we as caregivers are able to better teach the animals what is expected of them in an environment where they historically do not have as much control over their lives as they would in their natural environment. Training an animal the basic concept that they will be rewarded for specific actions allows us to encourage them to train and exhibit a wide range of behaviors that make captive management much easier. The basics of operant conditioning are outlined, along with the general framework of establishing a training program. The importance of understanding natural history of the species is vital, along with an individual animal's history and personality traits. Several examples of useful behaviors are illustrated to demonstrate just a few trained responses that can improve our daily care routines. The importance of training will be discussed, including relationship building, stress reduction, as well as improved communication and understanding.

VETERINARY PERSPECTIVES ON MEDICAL TRAINING

Heather J. Bacon

The training of bears using operant conditioning techniques is increasingly common. As stoic, smart, and long-lived species, bears are ideal candidates for operant conditioning training. This presentation will outline some of the ways in which positive reinforcement training may be used in medical assessment, and to collect biological samples for clinical evaluations. We will also consider some of the challenges of training for what may often be unpleasant experiences. We will explore the vet's role in training and discuss the necessary collaboration between veterinary and animal-keeping staff to ensure the delivery of effective training programmes that meet the objectives of the veterinarian, trainer, and most importantly, consider the needs of the bear.

POLAR BEAR FRONT PAW BLOOD DRAW

Julie A. Yarrington

Como Zoo is a small, free zoo encompassing only thirteen acres in Saint Paul, Minnesota with less than twenty-five zookeepers. Como Zoo's twenty-year-old male polar bears (*Ursus maritimus),* Buzz and Neil, have been part of our training program since 2002. In 2010, Como Zoo opened its new Polar Bear Odyssey exhibit with expanded training spaces to allow for more advanced husbandry behaviors. In polar bears, drawing blood was previously only attainable through the stressful procedure of being anesthetized. In 2011, the Oregon Zoo was the first facility to obtain voluntary polar bear blood samples through training without the use of anesthesia. These samples were obtained by using a crate that allowed access to the bears' rear paws. This design was not a feasible option with Como Zoo's polar bears, Buzz and Neil, due to safety, budget, and the advanced exhibit modifications necessary. Through training and the simple and inexpensive addition of two blood sleeves in April 2014, we were able to obtain voluntary front paw blood samples from Neil in March of 2015 and Buzz in September 2015. We hope by sharing our approach that other institutions may also succeed with this behavior, even with limited resources. In addition to advancing the medical care of polar bears in human care, obtaining blood samples voluntarily will open the door to more research projects and a better understanding of wild polar bears.

BLOOD SLEEVE DESIGN, PLANNING AND VOLUNTARY BLOOD DRAW TRAINING FOR THREE MALE POLAR BEARS

Cindy L. J. Roberts, Sheriden M. Stangohr, Lisa H. Triggs and Karen N. Wolf

Point Defiance Zoo & Aquarium (PDZA) currently houses two neutered male polar bears (*Ursus maritimus*), Boris (30 years of age) and Blizzard (20 years of age). In 2014, one male polar bear, Glacier (20 years of age), also resided at PDZA and in April of that year was diagnosed with a hepatic tumor. After the diagnosis there was an urgency to move forward with designing a blood sleeve and implementing a training plan for voluntary blood collection so that staff could effectively monitor

Glacier's health in a consistent manner. Additionally, staff could better oversee the health of our two other polar bears that were reaching senescence. After observing voluntary blood draw training sessions at Oregon Zoo, and using information from Como Zoo and Aragon Zoo, PDZA executed the plan. Como Zoo's design was chosen and slightly altered for the dens at PDZA. A prototype was constructed and used to create a sleeve that would fit the front paws of all three polar bears. Once the sleeve was installed and the bears were introduced to it, a training plan was implemented. The greatest challenge the trainers faced was introducing the veterinary staff as a positive element of the training. Up until the start of this project the polar bears reacted negatively each time a veterinarian was present. To overcome this hurdle the veterinarians would intermittently come to visit the bears solely for the purpose of feeding them novelty food items and building a positive relationship with them. Once the bears were desensitized to all of the elements of the blood sleeve training, a 22 gauge needle was introduced. Today, staff are able to obtain voluntary blood samples regularly from both Blizzard and Boris. Glacier unfortunately passed away in November, 2015 before we were able to collect a voluntary blood sample from him. There have been two separate occurrences where observed behavior in Boris has raised health concerns; in both instances, voluntary blood collection was used to assist with diagnosis and treatment of health issues. Setbacks have occasionally occurred with the voluntary blood draw training, but overall it has been a crucial component in monitoring the health of these polar bears.

VETERINARY PERSPECTIVES ON BEAR BEHAVIOURAL HUSBANDRY

Heather J. Bacon

Bears of all species are long-lived in the captive environment, seemingly 'coping' in environments which often do not meet their physical and psychological requirements. Acquisition and management of bears within the zoo environment involves both positive and negative experiences, influenced by the wider role of zoos in public engagement, captive breeding and wildlife rehabilitation. Additionally, traditional approaches to practices such as feeding and denning may further impact the physical and psychological health of bears. The psychological and behavioural consequences of such experiences can be significant, and may create long term problems for animal health and wellbeing. This presentation will explore the physiological mechanisms behind psychological trauma, facilitating greater understanding of the relationship between husbandry practices, physical health and psychological health in bear husbandry.

TRAUMA IN ORPHANED BEAR CUBS

Angelika Langen

Orphaned bear cubs are an unfortunate, but not uncommon, occurrence in today's human dominated world. Many cubs are orphaned due to human negligence and lack of regard for wildlife (i.e. auto and train accidents, legal and illegal shootings, and protection of property). Northern Lights Wildlife Society has accepted 374 orphaned bear cubs in the past 26 years including 3 Kermode bears and 18 grizzly bear cubs. All of those cubs have endured at the very least the loss of their mother and often times sibling(s), sometimes under horrific circumstances. This presentation will discuss what we can do as caretakers or rehabbers, while hand raising these cubs, to set them up for long term success in a zoo or in the wild. It will explore the use of homeopathic remedies, essences, and handling procedures that will help to heal the mental wounds endured by these intelligent and sentient cubs.

ASSESSING QUALITY OF LIFE IN BEARS

Angela Gibson

There are a variety of analyses available for animal care professionals to use to monitor quality of life in animals. Unfortunately, behavioural responses to pain and quality of life indicators are not well established in bears. When there is a slow decline in health, assessing quality of life can be challenging for keepers. By taking an on-going, comprehensive assessment approach (i.e. looking at general body functions, physiological responses, behavioural changes, and gait assessments) keepers can distinguish subtle health changes and pain in individuals through quantitative data. This can help provide early diagnoses and treatments as well as dictate husbandry and management modifications necessary to accommodate individual needs.

ASSESSMENT PLAN FOR MONITORING QUALITY OF LIFE IN A 35 YEAR OLD FEMALE POLAR BEAR

Susie Gurley

Uulu, a 35 year old female polar bear (*Ursus maritimus*) living at the San Francisco Zoo and Gardens is one of the oldest polar bears in the managed North American Species Survival Plan (SSP®). Due to her advanced age, Uulu is a focal animal for the animal care team and Wellness department's Assessment Plan for Monitoring Quality of Life in Geriatric Zoo Animals. Based on the closely monitored assessments of behavior and clinical signs, we suspected Uulu had developed congestive heart failure in recent years, so anesthetizing her for a definitive diagnosis was deemed too risky. Thus, quality of life assessment would be the key to treating her symptoms and determining if and when further action was needed. Previous attempts at quantifying the quality of her daily life were either too subjective or too cumbersome to realistically be useful inter-departmentally. Our current procedure involves keepers recording objective behavior each day, with particular emphasis on pool use, bed soiling, response to stimuli and breathing patterns. These observations are quantified weekly by a vet and are distributed to animal care staff. Her actual time budget is not the focus, but rather, the ability to see trends easily,

and objectively convey this information to the various departments. This method proved integral in May 2015 when making end-of-life decisions for our other female polar, Pike, and continues to be valuable for Uulu at this time.

BEHAVIOR-BASED QUALITY OF LIFE ASSESSMENT FOR A GERIATRIC SLOTH BEAR

Mindy Babitz and Stacey Tabellario

The Smithsonian's National Zoological Park developed a list of questions to be considered when assessing an animal's quality of life and deciding whether it is time for elective euthanasia. This criteria is similar to those that other AZA zoos have developed, and it covers all aspects of an animal's behavior, medical prognosis and treatment, and impact of husbandry changes or special treatment on that animal's companions or social group. While this list is comprehensive, it is not individually geared toward each animal. When Francois, a 25 year old sloth bear *(Melursus ursinus)* with age-related health issues, was diagnosed with degenerative disc disease in December of 2015, a behavior-based quality of life assessment was developed by keepers to assess the success of his medical treatment, make sure he was remaining as comfortable as possible with both his treatment and husbandry changes, and assess his quality of life on a daily basis. This behavior-based daily quality of life assessment was used in conjunction with the general zoo-wide assessment which was reviewed on a weekly basis. This presentation will present both assessments and discuss the benefits of having a behavior-based quality of life assessment tailored to an individual animal.

BEAR BLOOD DRAW TRAINING

Jason Pratte

Many trainers wish to incorporate blood draws into their bear training programs. This presentation focuses on the biology and natural history of the bear species, and how to adjust your training program accordingly. Safety issues, medical considerations, and "lessons learned" will be shared in this presentation, along with photos and videos of training sessions, sleeve and squeeze designs, and methods of desensitizing and rewarding the bears.

This presentation is designed to complement the information in the Bear Care Group's poster on voluntary blood collection techniques and designs, as well as the paper "Training Bears for Voluntary Blood Collection" (included in the resources on the flash drives).

CHOICE AND CONTROL – IMPORTANT ELEMENTS IN BEHAVIOUR-BASED HUSBANDRY

Heather J. Bacon and Mindy Babitz

The importance of choice and control in promoting good welfare for captive animals is well documented in the scientific literature. Wild animals make numerous choices every day, and many of these choices are involved in essential life processes such as food, mate and nesting site selections. In captivity, however, most choices are made for animals by their human caretakers and this lack of control over their environment and essential life processes can lead to frustration. By increasing the amount of choice and control captive animals have, we can improve their welfare, reduce behavioural and psychological issues, and enhance mental stimulation. This presentation will outline examples of the application of choice in behavioural husbandry and explore common misconceptions about offering choices to our bears. We will consider several areas where offering choices may be difficult (such as healthcare, training, and breeding management), challenging traditional practice and showcasing examples of progressive husbandry centered on providing bears with the opportunities to make their own choices within the captive environment.

INTRODUCING TWO MALE POLAR BEARS

JoAnne Simerson and Dylan McCart

Cochrane Polar Bear Habitat (CPBH) opened in 2004 and has been the home to several different polar bears *(Ursus maritimus)*. In 2015 "Ganuk", a six year old male polar bear, was the only resident at CPBH. That summer Sea World Australia offered to bring their two year old male "Henry" to Canada and chose CPBH as Henry's new home. This started a conversation about the two male polar bears living together as opposed to being housed in adjoining enclosures. Primary in the discussion was how to give Ganuk and Henry the choice of being together or separate, and how to maintain their choice and control as an important end result. The goal was to create an environment to benefit both bears by giving them the ability to interact, play, socialize, or separate as they would choose, demonstrating typical behaviors seen by wild male polar bears. The presentation will discuss the steps taken to prepare the bears for introduction through conditioning and the set-up of an appropriate environment, the preparation of staff for the introduction day, and how staff can successfully intervene if necessary. The presentation will also cover why it is important to give polar bears choice and control, what potential obstacles might interfere with attempting to give choice constantly, and what happens if the bears choose differently. Answering these questions helped us decide if putting the bears together would meet our goal of creating a social environment that would benefit the polar bears.

THE PRINCIPLES OF BEHAVIOR-BASED ENRICHMENT PART II: ENRICHMENT DEVICES

Mindy Babitz

As an integral part of the behavior-based husbandry program, behavior-based enrichment can help provide bears with the opportunity to carry out their daily and seasonal living strategies. This presentation will discuss how to develop an enrichment plan that meets species-specific behavioral needs relating to a bear's natural history. Enrichment devices and activities that provide opportunities for various feeding, social, nesting and grooming strategies will be shared.

DIET AND NUTRITION FOR BEARS

Cheryl L. Morris

Bears are exceptionally adaptive to diet and nutrient requirements are easily met through a variety of diet types and options. This provides managers latitude in diet selections but also challenges because a "one size fits all" recommendation across institutions is not possible. Bear nutrition plays a significant role in behavior and well-being. Proper nutrition is essential to support immunity, growth, reproduction and maintenance. In addition, proper selection and usage of dietary ingredients can support environmental enrichment efforts for bears. This presentation will discuss bear nutrient requirements, both commercial and raw diets and ingredients that can be fed to managed bears, and issues that can lead to nutrient imbalances or deficiencies (see Appendix A).

BÄRLE'S STORY: A MODEL OF BEHAVIOR-BASED HUSBANDRY

Jason Pratte, on behalf and in memory of Else Poulsen

In 2014, Else Poulsen published the book, "Bärle's Story: one polar bear's amazing recovery from life as a circus act." As the founding president of the Bear Care Group, Else's methods of understanding and communicating with bears on an individual level, and how this relationship-building is the foundation of behavior-based husbandry, are inspirational and captivating. This presentation will focus on Bärle's tale, and how it epitomizes the concepts from Advancing Bear Care 2016, that Else worked endlessly to share with bear caregivers around the world.

Else passed away earlier this year after an ongoing struggle with health issues. The Bear Care Group will continue her vision, and this final presentation, in Else's honor and memory, will hopefully serve as an inspiration to all delegates.

WORKSHOP ABSTRACTS

BEAR CARE GROUP

ABC 2016

ENRICHMENT WORKSHOP I: ENCLOSURE DESIGN AND REDESIGN

Mindy Babitz and Jay Pratte

Bears living in wild environments express daily and seasonal routines as dictated by their genetic programming. Captive bears experience the same drives and will set up similar living routines when given the internal and external environment to do so. The ability to express species-specific behaviors reduces stressors inherent in captive living and promotes physical and mental health. This workshop will focus on designing habitats and furniture to meet bears' needs, including retrofitting old exhibits without breaking the bank. Delegates will divide up by species to share ideas for exhibit design and redesign.

MEDICAL TRAINING WORKSHOP

Jason Pratte and Heather Bacon

Operant conditioning, specifically the use of positive reinforcement, allows us to teach the animals in our care to participate in regular daily husbandry routines, but also allows us to manage their health at a voluntary level. Bears can be trained to voluntarily participate in complex medical procedures, such as injections, blood collection, and ultrasounds, to name a few, and will readily choose to train for favored rewards. Management of a long-term training program allows animal care and veterinary staff to assess and treat various medical concerns, and allows for more comprehensive care of geriatric individuals. This workshop will build on the presentations about training basics and training for veterinary care. Delegates will be able to join round table discussion groups that will focus on specific medical training goals, such as blood collection, physical assessment, x-ray/ultrasounds, and other training goals of interest to bear caregivers.

ENRICHMENT WORKSHOP II: USING ENRICHMENT DEVICES TO PROVIDE BEHAVIORAL OPPORTUNITIES

Mindy Babitz

Bears living in wild environments express daily and seasonal routines as dictated by their genetic programming. Captive bears experience the same drives and will set up similar living routines when given the internal and external environment to do so. The ability to express species-specific behaviors reduces stressors inherent in captive living and promotes physical and mental health. This workshop will focus on developing enrichment devices and activities that provide opportunities for bears to carry out various living strategies that are based on their natural history. Delegates will divide up by living strategies to share ideas and designs for their favorite devices and activities.

POSTER ABSTRACTS

BEAR CARE GROUP

ABC 2016

VOLUNTARY BLOOD COLLECTION TECHNIQUES FOR MULTIPLE BEAR SPECIES

The Bear Care Group

This poster presents a variety of designs and techniques used for voluntary blood collection from multiple bear species. The designs come from a variety of zoos and sanctuaries and feature styles that fit different species' preferences and abilities, as well as different facility budgets. This poster is designed to complement the information in Jay Pratte's presentation on Bear Blood Draw Training, as well as the paper "Training Bears for Voluntary Blood Collection" (included in the resources on the flash drives).

POLAR BEAR MANIPULATION OF AQUATIC ENVIROMENT

Jesse Kindzierski, Jenna Harrison, Jackie Enberg, Heather Penner and Lianne Thompson

At Assiniboine Park Zoo it was observed after the opening of the new Journey to Churchill exhibit that the polar bears were manipulating their environment in order to increase time under water. The polar bears were observed creating air pockets on ledges underwater against a viewing window. These air pockets were then utilized by the bears in order to stay submerged longer. This behaviour seemed to be innate as it was observed in two separate bear groups, in individuals as young as approximately two years old. In speaking with other facilities this observation seemed to be a novel observation leading us to question whether bears in the wild may utilize the same mode of environmental manipulation. In order to record this behaviour we found the best method was to engage the seal/s in the neighboring pool at the viewing window shared with the bear pool. This activity seemed to increase the bears' likelihood of exhibiting this behaviour. The time spent under water seems to vary bear between bears depending on their level of conditioning and motivation. After sharing our findings at Assiniboine Park Zoo we hope that other facilities as well as researchers in the wild are encouraged to look at this behaviour to see how wide spread it may be.

STEREOTYPIC BEHAVIOR MANAGEMENT OF A POLAR BEAR

Ashley Martin

In October 2014, Anana, a 14-year-old female polar bear (*Ursus maritimus*) was relocated from the Lincoln Park Zoo to the North Carolina Zoo. Soon afterwards she started exhibiting stereotypic behaviors (pacing and pattern swimming). It became our primary objective to reduce these behaviors, minimizing any physical or psychological factors affecting the bear, as well as maintaining a positive public perception. The stereotypic behavior we chose to focus on was a repetitive pace in the back of our old holding area. We believed that by modifying how we introduced and varied our training practices, along with the increased application of targeted environmental enrichment, we could reduce her pacing. To evaluate progress, staff utilized behavior modification, 24/7 video surveillance, and

observational medical evaluations. When first exhibiting stereotypic behaviors, Anana paced 16 hours per day. After implementing our plan, we recorded a decrease in the number of hours per day and the intensity in which pacing occurred. Based on our results, we concluded that the modifications to our management strategy were crucial in reducing this behavior allowing us to discover other factors that played an equally important role in triggering her stereotypic behaviors. While we know this is an initial "step in the right direction", we continue to search for new and better ways to improve the husbandry and welfare of the ursids in our care. There may be many factors affecting Anana's behavior, but there are also just as many solutions.

PBH LAKE ENCLOSURE

Dylan McCart

The Cochrane Polar Bear Habitat (CPBH) has been planning the construction of a 10-acre lake enclosure since 2013. This enclosure will offer an enriching habitat that includes a 70 foot deep natural lake, acres to explore with ice coverage, natural substrate, and opportunities for the bears to choose to be with other bears, keepers and guests, or to be isolated. The goal of the design was to create an enclosure that would give bears an enormous amount of space to demonstrate natural behaviors such as ice breaking, foraging, and denning. We are hoping to increase their overall demeanors by giving the bears more control over their environment. We will be able to study group interactions of bears in a large area, which may replicate their future habitat of increased interactions due to climate change. In preparation for the large enclosure, specific husbandry training was increased to ensure communication with the bears remained consistent, including recalls and building a positive association with the bear holding. CPBH is hoping to give polar bears access to the new enclosure in the summer of 2016.

USING FIELD RESEARCH IN DEVELOPING ENRICHMENT METHODS FOR BROWN BEARS AT FOUR PAWS BEAR RESCUE CENTER

Maryna Shkvyria

The illegal captivity of brown bears (*Ursus arctos)* is extremely widespread in the Ukraine. Captive conditions do not meet their biological needs. The Four Paws Bear Rescue Center (BRC) became the first successful example of using behavior-based husbandry to improve these conditions. BRC hopes to use this approach for the implementation of modern guidelines for zoos and rescue centers to improve the situation of captive bears throughout Ukraine. The main idea of our approach was to implement data from wildlife research on brown bears. Methods used included: imitation of regional natural diet and character of feeding, introducing new food categories to the standard diet stimulating foraging activity, and the imitation of the natural character of their habitat to increase the amount of space used by the bears. Preliminary results show increased activity (searching, foraging, and social interactions) and increased exploration of sectors in the enclosures previously less used by the bears.

THE CHOICE AND CONTROL DOOR

Stacey Tabellario

When animals are in human care we inevitably take away many of their day-to-day choices. As their keepers we make most decisions for them including when their day starts and ends, when and where to be moved, and when to be put together with or separated from conspecifics. In the Asia Trail sloth bear *(Melursus ursinus)* exhibit at the Smithsonian's National Zoo, we make an effort to give choices back to the bears in as many ways as possible. The doors between each of our indoor enclosures are mesh, allowing bears housed next to each other visual access and limited tactile access. These mesh doors can be covered with a sheet of opaque plexiglass at certain times of the year or when we house bears next to each other that are less social or need some privacy. In the past keepers have made the decision about when to put the solid door on or take it off, but we devised a way for the bears to make the decision about whether or not they want a solid door or a mesh door. This poster will describe how we designed the "choice and control door" to give the decision back to the bears.

FILM SYNOPSES

BEAR CARE GROUP

ABC 2016

FILM: LIFE IS ONE

Patrick Rouxel

"Life is One" is the story of three orphan sun bear cubs from Indonesia and their return to the wild. The story is told by the foster parent of these cubs who accompanied them to their independence. The viewer is placed in total immersion with the bears in the rainforest and discovers how beautiful, joyful and energetic they are. The film is a tribute to life on earth, a reminder that we are all connected and that we owe respect and compassion to those we share the planet with.

FILM: JILL ROBINSON: TO THE MOON AND BACK

Orange Planet Pictures

Jill Robinson is a remarkable woman who has confronted the Asian Bear Bile farming industry, creating massive social and political change in China and Vietnam. Quite simply, the world needs people like Jill. They need to see her, become inspired by her and act in the gracious, peaceful and intelligent way she has. The news is full of incidents of animal cruelty at the moment and now, more than ever before, people are looking at the issue more intently and seriously. Jill Robinson is a true and genuine inspiration. Without films like this, how do we inspire the next generation? How do we create a community who will become a panacea against the horrors we see on social media – dentists killing lions, business men killing rhinos and the horrendous Yulin dog meat festival? It's breath-taking to learn how she's tackled a politically and socially charged nation to effect such a significant change on such a magnificent scale. Barraged by images of cruelty it's easy to feel inert, defeated and non-empowered. BUT Jill's story is proof that one, ordinary person CAN change the world. And if this film inspires just one person to do what she has, it will have been a real triumph for nature.

PRESENTER BIOGRAPHIES

Alphabetized by last name

BEAR CARE GROUP

ABC 2016

BABITZ, MINDY

Mindy Babitz, PhD, is a senior animal keeper at the Smithsonian National Zoological Park where she has worked since 1998. Having worked with a variety of bears, cats, primates, hoofstock, and small carnivores, she is now primarily responsible for the zoo's sloth bears but also works with giant pandas and a variety of other Asian carnivores. Mindy is part of the National Zoo's carnivore hand-rearing team and has experience raising bear and red panda cubs. She is the National Zoo's institutional representative to the AZA Sloth Bear SSP and is also on the Steering Committee for AZA's Bear Taxon Advisory Group. Mindy has a background in animal behavior and cognition, completing a BA from the University of Virginia and a PhD from the University of St. Andrews in Psychology. She currently conducts research on stereotypical behavior in sloth bears and is primarily interested in improving husbandry and management of sloth bears in zoos. Mindy is on the board of directors of the Bear Care Group and is currently serving as the Vice President and Treasurer.

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BACON, HEATHER J.

Heather J. Bacon, BSc (Hons), BVSc, CertZooMed MRCVS is the Veterinary Welfare Education and Outreach manager at the University of Edinburgh's Jeanne Marchig International Centre for Animal Welfare Education (JMICAWE). She lectures on captive wildlife welfare issues, and works with zoo associations and NGOs around the world. She has also worked with the European Commission to develop continuing education on captive wildlife welfare in Europe, contributed to the Good practice guide for implementation of the EU Zoos Directive, and the ABTA guidelines for the use of wildlife in responsible tourism. She is a member of the British Veterinary Association's Ethics and Welfare committee, the Zoological Society of London's Animal Welfare committee, the British and Irish Association of Zoos and Aquaria Ethics committee, and the European Association of Zoos and Aquaria Animal Welfare Working group. Heather provides consultancy services to zoos and NGO's on bear husbandry and animal welfare issues. She is on the board of directors of the Bear Care Group, an international bear management organisation. She has co-authored several papers on animal welfare and bear veterinary care. Previously, she worked as the Veterinary Director at the Animals Asia Foundation, an NGO working to end the trade in bear bile across Asia. In addition to her veterinary degree, she holds a BSc (Hons) in Conservation Medicine and a Royal College of Veterinary Surgeon's Advanced Practitioner in Zoological Medicine.

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BUCKLEY-JONES, KATIE

Katie Buckley-Jones is a Carnivore Keeper at the Houston Zoo and cares for a variety of felines, canids, and ursids; currently including Andean bears and black bears. She has worked at various facilities and has experience with Polar bears, Black bears, Andean bears, and Brown bears. Katie loves the challenges that bears bring and enjoys problem solving behavioral problems, training, and creating new enrichment.

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COLANDREA, SARA

Sara Colandrea received her Bachelor's degree from Virginia Commonwealth University in Environmental studies. She has been an animal keeper at the Smithsonian National Zoological Park for six years working in the nutrition department, on American Trail with a variety of North American species, and now in the Great Cats and Bears unit. Sara has been the primary keeper for the Andean Bears for the past year.

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CRONBERG, AMANDA

Amanda Cronberg has worked at the Great Plains Zoo since 2004. As a keeper, she was involved in many areas of the zoo, including contributing to the design process and opening of a brand new black rhino exhibit. In 2013 she was promoted to Area Supervisor and now oversees the Zoo's collection of carnivores, birds, reptiles, and amphibians.

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ENBERG, JACKIE

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FUNKE, JEFF

Jeff Funke is currently the Area Director for the Omaha, Nebraska Office of the Occupational Safety and Health Administration (OSHA). Mr. Funke began his career with OSHA in 2001 as an Industrial Hygienist in the Billings, Montana Area Office of OSHA. During his 15 year tenure with the agency, Funke has served as Assistant Area Director for the Mobile, Alabama Area Office of OSHA and as the Area Director in San Antonio, Texas. Mr. Funke has a Master's Degree in Industrial Hygiene from Montana Tech of the University of Montana and a Bachelor's Degree in Environmental Health for Boise State University. Mr. Funke has been a Certified Safety Professional (CSP) since 2005.

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GIBSON, ANGELA

Angela Gibson is a large carnivore keeper and the behavioral husbandry coordinator at Northwest Trek Wildlife Park where she has worked since 2008. Angela has worked with bears, canids, felids, mustelids, primates, and hoofstock. She is Northwest Trek's institutional representative on the AZA Bear TAG. Angela has a background in animal behavior, completing a B.S. and an M.S. in Biology from Missouri State University. Angela is on the Board of Directors of the Bear Care Group.

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GURLEY, SUSIE

Susie Gurley has been an animal keeper for 26 years. The past 16 years have been at the San Francisco Zoo, where she has worked primarily with carnivores. Before that, she was the Amur tiger keeper at the Philadelphia Zoo. Bears are way better!

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KINDZIERSKI, JESSE

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LANGEN, ANGELIKA

Angelika Langen is the co-founder of the Northern Lights Wildlife Society in Smithers, BC, Canada. She worked in German zoos prior to immigrating to Canada, and now has 26 years of experience rehabbing bears in British Columbia. The mental development of bears is a huge focal point of her work. Angelika is a strong believer of sharing ideas and experiences with others and has presented at meetings such as the International Bear Rehab Conference in Russia (2007), the International Moose Conference in Canada (2007), the National Wildlife Rehabilitator Symposium in Albany, NY (2011), the Advancing Bear Care conference in Alberta (2011), the 12th Western Black Bear Workshop in Alberta (2015), and the Advancing Bear Care conference in Vietnam (2015).

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LEFEBVRE, LYDIA

Lydia Lefebvre has worked as a zookeeper caring for polar bears, as well as with animal welfare societies as a volunteer and a board member. As a captive wildlife management consultant Lydia has evaluated and commented on facilities holding native and exotic species including a variety of bears, providing recommendations on husbandry routines, diets, enclosure design, maintenance, safety concerns, training and welfare relative to industry best practise, regulatory standards and provincial laws. Currently she is an Agent with the Ontario Society for the Prevention of Cruelty to Animals and is responsible for the education and enforcement of the Ontario SPCA Act for zoos, aquariums and facilities that keep animals for exhibit, entertainment or hire. In 2009 Lydia joined the Board of Directors of the Bear Care Group.

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MARTIN, ASHLEY

Ashley Martin has a Bachelor's degree in Biology and an Associate's degree in Zoo and Aquarium Sciences. She started working at the North Carolina Zoo in 2013, and is known at work as the crazy bear lady, loving anything and everything bear.

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MARTIN, JANICE

Janice Martin, BSc, is the Curator of Animal Care and Natural Encounters at Assiniboine Park Zoo. She has been in involved in the polar bear program at Assiniboine Park Zoo since 2013.

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MCCART, DYLAN

Dylan McCart is the Cochrane Polar Bear Habitat's Conservation Coordinator and Senior Bear Keeper. Growing up in north western Ontario exposed Dylan to an early interest in animals and their surrounding environment. While completing his Bachelor of Science in Biology at the University of Manitoba, Dylan was able to have various opportunities to pursue several unique areas of studies. Some of these included behavioral studies with captive tigers, as well as various research projects up at Churchill's' Northern Studies Center where he was exposed to information on polar bears and climate change.

For details of projects and publications:

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MCCORMACK, EMILY

Emily McCormack is originally from Oswego, New York. Her childhood dream of working with tigers eventually led her to the State University of New York at Oswego where she obtained her Bachelor of Science degree in Zoology. Her initial internship at Turpentine Creek Wildlife Refuge in Eureka Springs, commenced in January of 1999. Upon completing her six-month internship, Emily was so highly regarded by the founding members of the rescue facility that she was hired on to become a permanent staff member. Her passion and commitment to the 100+ exotic cats at Turpentine Creek is extraordinary, and she quickly became a major force in improving the lives of these magnificent animals. Having excellent people skills in addition to her dedication to the animals, Emily was promoted to the position of Volunteer Coordinator/Intern Supervisor in 2002. Through her expertise and guidance, more than 400 college graduates have also graduated from the acclaimed Internship Program at Turpentine Creek. While still retaining the responsibilities of Intern Supervisor, Emily was also promoted to the position of Animal Curator in April of 2011.

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MORRIS, CHERYL L.

Cheryl L. Morris, PhD, is the Felid TAG Co-Chair and also serves as one of the nutrition advisors for Felid and Canid TAGs and several SSP's. She is currently an Assistant Professor of Comparative Animal Nutrition in the Department of Animal Science at Iowa State University in Ames, Iowa. In addition she serves as Director of Comparative Nutrition at Omaha's Henry Doorly Zoo & Aquarium and will be returning to the zoo full-time in January 2017 as Chief Conservation Officer. She also owns and operates a nutrition consulting business, Evolve Animal Services, LLC. Dr. Morris currently teaches undergraduate animal nutrition and companion animal management courses, in addition to advising undergraduate and graduate students. Her appointment as Director of Comparative Nutrition with Omaha's Henry Doorly Zoo & Aquarium began in 2005 upon her completion of a Ph.D. in canine

nutrition from the University of Illinois at Urbana-Champaign. Her research activities have included everything from insects to elephants; however, her primary research focus and passion are carnivore diets, specifically raw meat and clinical formulations for carnivores. In her spare time she enjoys training and competing nationally in the sport of canine agility with her four dogs.

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PEET, BRITTANY

Brittany Peet is the Director of the Captive Animal Law Enforcement Division for the People for the Ethical Treatment of Animals Foundation. Peet, an attorney, advocates on behalf of animals, including bears, who are held captive in roadside zoos. She also coordinates exotic-animal rescues for PETA and has overseen the rescues of more than 400 chinchillas, more than 50 bears, and seven chimpanzees formerly kept in solitary confinement.

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PENNER, HEATHER

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PETERSEN, STEPHEN D.

Stephen D. Petersen, BSc, MSc, PhD, is the Head of Conservation and Research at Assiniboine Park Zoo. His specialty is the use of molecular genetics tools to investigate behaviour and ecology of Arctic marine mammals, although since joining the Zoo in 2011 those interests have spread to include a much broader range of taxa and topics.

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POULSEN, ELSE M. B.

Else M. B. Poulsen had over 25 years' experience working in captive wildlife management at numerous accredited zoos, including the Calgary Zoo and the Detroit Zoo. She is known internationally for her captive bear husbandry and rehabilitation work. In 2000, she won the Zookeeper Research Excellence Award from the American Zoo and Aquarium Association's Bear Taxon Advisory Group. Else was an animal management consultant for zoos, sanctuaries, wildlife rehabilitators, and other animal welfare groups. Else held her bachelor's degree in biological sciences, as well as a four year diploma in captive wildlife husbandry. An accomplished writer for scientific and trade journals, in 2016 she wrote the book "Bärle's Story: one polar bear's amazing recovery from life as a circus act." Her first book, titled "Smiling Bears: A Zookeeper Explores the Behavior and Emotional Life of Bears," was short-listed for the Canadian Edna Staebler Award for Creative Non-Fiction in 2010. Else frequently taught at wildlife facilities, workshops, conferences, and universities. Else was the founding President of The Bear Care Group, our international non-profit organization focused on developing capacity for furthering captive bear care excellence.

Else left us far too soon after ongoing struggles with medical issues. Even as her health declined, Else continued to work tirelessly to improve the world for the bears, and for their dedicated caregivers. Else Poulsen was a hero for the bears, for those of us devoted to caring for them, and she embodied the very spirit of behavior-based care. Her approach and mantra for helping bears will resonate forever with the world: "What can I do for you?"

PRATTE, JASON (JAY)

Jason (Jay) Pratte, MA is the Animal Training Coordinator for Omaha's Henry Doorly Zoo & Aquarium and the Lee G. Simmons Conservation Park & Wildlife Safari. Jason is internationally known for his animal behavior and welfare work. He has been an animal caregiver for over two decades, and feels privileged during his tenure to have worked with a tremendous variety of animal species, including all eight extant bear species. His primary focus is training, both of the animals in his care, as well as teaching their caregivers how to train and improve husbandry. Behavioral husbandry training of carnivores is his specialty, focusing on complex medical goals. Jason has trained animals for the film industry, and has worked with animals in settings from game farms to AZA accredited zoos, with species ranging from ant colonies to giant pandas. The past several years have seen Jason involved with training animal keepers and caregivers around the world in operant conditioning techniques, with one of these adventures showcased on Animal Planet's "Growing Up Panda". Jason is a founding board member and currently president of the Bear Care Group. His Master's degree is in Zoo and Aquarium Management, he has authored numerous publications related to the field, and is a co-editor for the AAZK "Training Tales" column in the Animal Keeper's Forum. Jason is also an adjunct professor at the University of Nebraska at Omaha, teaching Animal Behavior classes and labs, and his own special topics class on Human – Animal Interactions. He regularly acts as a behavior and welfare consultant for several groups dedicated to improving the husbandry and care of animals.

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ROBERTS, CINDY

Cindy Roberts has been a staff biologist at Point Defiance Zoo & Aquarium (PDZA) for 15 years. She started her career in the Aquarium Department working with a variety of fish, sharks and invertebrates. Seven years ago she transitioned to the Rocky Shores/Tundra team to work with and train marine mammals. She is an advocate of the Seafood Watch Program and responsible for purchasing sustainably harvested seafood for PDZA animals. In addition to caring for a variety of seabirds, arctic foxes and marine mammals, Cindy provides husbandry and training for the polar bears at Point Defiance. She also provides messaging to guests on climate change and has played a key role in expanding PDZA's "No Idle" campaign throughout all of Metro Parks Tacoma. In October 2015, Cindy traveled to Churchill, Manitoba to attend the 2015 Climate Alliance with Polar Bears International.

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ROBERTS, HEATHER

Heather Baker Roberts began working with Zoo Atlanta's pandas in 2003 as a research and keeper intern. She has been a primary giant panda keeper at Zoo Atlanta since 2006 after completing a B.S. in Psychology from Georgia State University and the University of Bristol (U.K.). During her career, Heather has traveled to Chengdu, China, accompanying Zoo Atlanta's first-born cub, Mei Lan when he was relocated to the Chengdu Research Base of Giant Panda Breeding. In 2008 and 2010, Heather served as a nursery keeper for Lun Lun and her second and third cubs. She was also a nursery keeper for Lun Lun and her twin cubs. After Zoo Atlanta's success with twin swapping, Heather has been consulted by other giant panda institutions world-wide.

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ROBINSON, JILL

Jill Robinson MBE, Dr. Med Vet HC, has been a pioneer of animal welfare in Asia since 1985, and has spent over 23 years campaigning against the cruel bear bile industry in China and Vietnam. In 1998, she founded Animals Asia, an organisation that is devoted to improving the welfare of animals in China and Vietnam by promoting compassion and respect, and working to bring about long-term change. Jill has built the organisation into a respected international NGO with over 300 staff, three core programmes (ending bear bile farming, companion animal welfare, and captive animal welfare), the rescue of nearly 600 bile farm bears, and award-winning bear sanctuaries in China and Vietnam.

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ROUXEL, PATRICK

Patrick Rouxel was born in 1966, half Swedish, half French and grew up in Malaysia and Singapore. After working for more than 10 years in digital special effects for feature films, he decided to go freelance as a filmmaker for environmental conservation. His documentaries focus on tropical rainforest preservation in Indonesia, Brazil and the Congo Basin; they all promote respect for the forest and the life it holds. After a chance meeting with a sun bear cub in Borneo in 2011, followed by 3 years in the forest rehabilitating bear cubs to the wild, Patrick produced his latest film "Life is One," and now works full-time on improving the captive conditions of sun bears in Indonesia.

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SHKVYRIA, MARYNA

Maryna Shkvyria is researcher of large carnivore ecology, population management, and behavior. She defended her dissertation work in the field of wolf ecology in Ukraine in 2008. Currently, she is a researcher at the Schmalhausen Institute of Zoology NAS of Ukraine. She has been working with Four Paws, Bear Project Ukraine in the position of Project Support since 2015.

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SIMERSON, JOANNE

Joanne Simerson is an independent animal behavior consultant with over 37 years working in zoos and aquariums, and degrees in Animal Health Technology and Behavioral Science. JoAnne is privileged to have worked with seven of the bear species both in care and training. She was integral in many research projects, training the bears for sampling including: sun bear reproduction, giant panda blood draws and ultra sound, Andean bear allergy injections, and polar bear reproduction, ultra sound, and auditory studies. JoAnne is a long standing member of Polar Bears International Animal Advisory Group. JoAnne has spent many years observing polar bears during fall on land, summer on the pack ice, and winter at their dens paying close attention to their behavior and using that information to influence how bears should be managed in zoos.

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TABELLARIO, STACEY

Stacey Tabellario began her career as a wildlife filmmaker, working with the Discovery Channel, the Jane Goodall Institute, and the Smithsonian Institution, to observe, track, and film endangered species in their natural habitats, and witness conservation efforts in action. However, she soon realized that she felt most fulfilled when she was working with the animals, not behind the camera. Today Stacey is an animal keeper at the Smithsonian's National Zoological Park where she works with a variety of Asian carnivores including sloth bears and giant pandas. She currently serves as the outgoing chair of the zoo's Enrichment & Training Committee and has been awarded both the Lee Houts Excellence in Enrichment Award and the AAZK Certificate of Merit in Zookeeper Education for teaching classes on enrichment and training. In addition to enrichment and training, Stacey is particularly interested in adding choice and control back into the lives of animals in human care.

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Delcianna J. Winders is the first-ever Academic Fellow of the Animal Law & Policy Program at Harvard Law School. Her primary interests are in animal law and administrative law. Winders' work has appeared in the *NYU Law Review* and the *Animal Law Review*. She received her B.A. in Legal Studies with highest honors from the University California at Santa Cruz, where she was named a Regents' Scholar and received the Dean's Award for outstanding achievement in Social Sciences. She received her J.D. from N.Y.U. School of Law, where she was awarded the Vanderbilt Medal for outstanding contributions to the law school, named as a Robert McKay Scholar, and served as the Senior Notes Editor of the *NYU Law Review*. Following law school, Winders clerked for the Honorable Martha Craig Daughtrey on the United States Court of Appeals for the Sixth Circuit. Before coming to Harvard, Winders practiced animal law in a variety of settings and taught animal law at Tulane University School of Law and Loyola University New Orleans College of Law.

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YARRINGTON, JULIE

Julie Yarrington has been a zoo keeper at Como Zoo in Saint Paul, Minnesota since 2006. Her day consists of taking care of California sea lions, harbor seals, tufted puffins, African penguins, and polar bears. Each day the animals receive daily training sessions that include many different behaviors, including brushing polar bears' teeth and taking polar bear blood samples. Julie enjoys training and recognizes the value in zoo animals helping with their own health care and research by obtaining samples through training.

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APPENDIX A

BEAR CARE GROUP

ABC 2016

DIET AND NUTRITION FOR BEARS

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Of all the species I have worked with nutritionally, bears rank among my favorites. Bears are exceptionally adaptive to diet and nutrient requirements are easily met through a variety of diet types and options. This provides managers latitude in diet selections but also challenges because a "one size fits all" recommendation across institutions is not possible. Bear nutrition plays a significant role in behavior and well-being. Proper nutrition is essential to support immunity, growth, reproduction and maintenance. In addition, proper selection and usage of dietary ingredients can support environmental enrichment efforts for bears.

Nutrient requirements for bear species have not been specifically established and basic information regarding bear nutrition is poorly understood, primarily resulting from limited research in managed environments and huge variation in nutrition ecology data. For example, grizzly bears are documented to consume large ranges of both plants (15.0 – 97.0%) and meats (3.0 – 85%) in their wild diets. Much of the research related to nutrition of bears is limited to field research and the natural diets of bear species, particularly black and brown bears, are extremely omnivorous and variable. As a result of their omnivorous natural history, yet carnivorous digestive anatomy and physiology, the domestic dog serves as the most appropriate model species to extrapolate nutrient requirements. Unlike their felid counterparts, bears do not appear to have metabolic idiosyncrasies that drive unique and high requirements for taurine, vitamin A, niacin and arachidonic acid. Bears appear to have similar nutrient requirements as domestic dogs (Table 1). The huge range of ingredients found in natural bear diets, provides a great deal of flexibility when feeding bears in managed environments. Commercial dog foods provide valuable balanced nutrition for bears that also can be scattered throughout enclosures to stimulate foraging behaviors. Dog kibble also can be rotated among products to provide ingredient and nutrient variety, while maintaining a balanced diet. It should be considered that commercial kibble dog foods contain as much as 60.0% starch; therefore, these products should be carefully considered. Complete commercial raw meat-based diets, formulated to meet or exceed cat and dog requirements, are commercially available through several companies (Central Nebraska Packing, Sustainable Swine Resources (through December 2016), Triple A Brand Meat Company, and Milliken Meat Products, LTD). These products offer meat options including horse, pork and beef and typically range in cost from $1.00 to $4.00/Lb. The advantage of using these commercial products (dog foods and complete raw diets) is in the assurance that bears receive adequate concentrations of required nutrients. Additionally, supplement products are available from companies such as Mazuri and Central Nebraska Packing designed to help balance diets that consist of muscle meats only. Specialized diet formulations and inclusion of whole prey items (such as fish), are valuable options for bear managers; however, these diets should be properly evaluated to ensure safety and nutrient adequacy. Whole prey items can provide valuable nutrients and encourage natural foraging behaviors; however, continued feeding of a single prey item such as "deer-only" or "fish-only" diets, can quickly lead to nutrient imbalances. If fish have been frozen prior to feeding, supplementation of vitamin E (100.0 IU per Kg of fish, as fed) and thiamin (15.0-35.0 mg per Kg of fish, as fed) is necessary to prevent deficiencies. Whole prey items should be varied in order to provide a more appropriate balance of nutrients. In addition, if bears are selecting or not consuming certain components of the prey item, imbalances or deficiencies of nutrients are likely. Bears also thrive on a variety of fruits, nuts, seeds and vegetables; therefore, these foods should be provided for managed bears. It is recommended that a minimum of 50.0% of the diet be comprised of a

formulated product such as rotated dog foods, while the remaining 50.0% of the diet be comprised of fruits, nuts, vegetables, greens, insects, fish and/or meats. It is important to consider the foraging and dietary variety of bears to promote optimal health and behavior. The suggested combination of foods should consider the natural seasonal changes observed in bears, hibernation management goals and body condition. Bears preparing to hibernate consume 4.0 to 5.0 times more calories than normal; therefore, this should be considered in management decisions.

Selection of diet ingredients will have direct consequences for body weight and body condition. Bears are efficient at converting dietary energy to stored body fat and prolonged use of high fat meats, fish and dog foods quickly leads to obesity in managed bears that are not cycling through seasonal hibernations. Altering ingredients and incorporating higher concentrations of vegetation, can aid animal managers in controlling bear obesity. It is critical that bear managers monitor and document body weight and body condition on a regular basis.

Microbial contamination can be high in both raw meat and whole prey. Proper handling precautions should be adhered to for optimal manager and animal safety. Some guidelines for safe handling of raw meat diets and whole prey can be found at: http://awic.nal.usda.gov/awic/pubs/meatprey.pdf

Select Nutrient requirements of domestic dogs according to 2014 AAFCO guidelines (dry matter basis)

Protein (%)	18.0	22.5
Fat (%)	5.5	8.5
Vitamin A (IU/Kg)	5000.0	5000.0
Vitamin D (IU/Kg)	500.0	500.0
Vitamin E (IU/Kg)	50.0	50.0
Calcium (%)	0.5	1.2
Phosphorus (%)	0.4	1.0
Copper (mg/Kg)	7.3	12.4
Zinc (mg/Kg)	80.0	100.00
Thiamin (mg/Kg)	2.25	2.25

1. Assumes a caloric density of 4000 kcal ME/kg
2. Maximum tolerable levels for vitamin A and D are 250,000 and 3000 IU/kg, respectively
3. Processing (extrusion/canning/cooking) can destroy up to 90% of the thiamin in diets.

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BEAR CARE GROUP

ABC 2016

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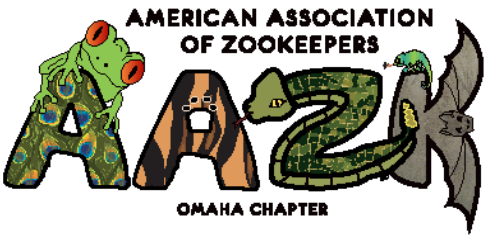

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