International Bear News

Tri-Annual Newsletter of the
International Association for
Bear Research and Management (IBA)
and the IUCN/SSC Bear Specialist Group

Fall 2016 Vol. 25 no. 3

Bear Specialist Group

A yearling cub caught his first sockeye salmon, Lake Kurilskoe and Southern Kamchatka Sanctuary, Kamchatka peninsula, Russia. Read about the bears in this region on pages 17-19.

IBA website: www.bearbiology.org

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Tri-Annual newsletter of the International Association for Bear Research and Management (IBA)

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Editorial Policy

International Bear News welcomes articles about biology, conservation, and management of the world's eight bear species. Submissions of about 750 words are preferred, and photos, drawings, and charts are appreciated. Submissions to regional correspondents by email are preferred; otherwise, mail or fax to the address above. IBA reserves the right to accept, reject, and edit submissions.

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Consult website for submission guidelines. Deadline for the Spring 2017 issue is 5 February 2017.

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The use of the IBA logo at the end of an article indicates articles submitted via the IBA regional correspondents and the IBN editorial staff.

The use of the BSG logo at the end of an article indicates articles submitted via the Bear Specialist Group.

The use of the IBA-BCF logo at the beginning of an article signifies work that was supported, at least in part, by the Bear Conservation Fund through an IBA grant.

IBA President

President's Column

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By the time this newsletter reaches you, elections for the next IBA president and other Council positions will be well underway. As I leave office, I reflect on something that many people understand from a young age, but that I, at least, had to grow into — that is, the understanding that scientific knowledge does not guarantee conservation; only political will makes conservation happen. Two articles in this issue of International Bear News (see pages 6-9)discuss high-profile stories of success in bear conservation: the down-listing of the giant panda from "Endangered" to "Vulnerable" on the IUCN Red List and the proposal by the US government to remove the Yellowstone Grizzly Bear from the US Endangered Species List. Scientific data and ecological understanding were key, in both cases, both to identifying the necessary conservation measures that would foster population growth and to monitoring that growth, but political will is what mandated and enforced the implementation of those measures and forestalled the dire threats to these isolated and formerly dwindling populations.

As a young bear researcher, I naively thought that doing my work to produce and interpret data was enough. I think I believed that the "facts" would lead all reasonable people to the same conclusions about the desirability of conservation and how to best manage wildlife populations. Needless to say, I know better now. For both pandas and Yellowstone grizzlies, proposals to downlist were based on scientific evidence of population turnaround; instead of eliciting unified celebration, however, these proposals catalyzed fierce debate over what protection levels to maintain. Peoples' varied reactions reveal the spectrum of human values at play in conservation decisions. Influencing those decisions at every level requires creating political will, and that requires being able to coalesce opinion around plans that address and incorporate multiple competing human values.

The road to creating political will varies with every situation; in the Appenines of central Italy, installation of electric fences and other "Bear Smart" practices have reduced farm damage complaints by >90%, strengthening the trust of local farmers and geographically increasing public support for bear conservation (see page 15). The task is more difficult where bears injure or kill people, as illustrated in the Mansehra district of Pakistan, where villagers killed 7 bears in retaliation for the serious mauling of 3 people (see page 16). In the wake of these killings, efforts continue towards increasing local tolerance for bears by implementing specific measures to keep bears off of farms and away from people.

As biologists, we possess one uniquely valuable tool for engaging people's support for bears and generating political will. Each of us has "close-up-and-personal" stories to tell about the animals we study, and I have yet to meet a person who doesn't delight in such stories and the antics of bears. Our ever-improving research tools — GPS collars, remote cameras, DNA fingerprinting, Google Earth — all enhance our ability to share these stories and convey a sense of the complex workings of the social landscape of bears (see page 17-25). In so doing, we draw out the natural human affinity for other animals. In engaging this core human value, in combination with offering practical applications of our scientific knowledge, we can create powerful conservation allies in others both at the grass roots and higher political levels.

A prominent conservation biologist once told me that had he better understood the dynamics and politics of implementing conservation when he was young, he would have spent less of his professional life in field research and more in advocating. But I, having watched him engage an audience, would argue that his enormous effectiveness as an advocate now stems precisely from his many years in the field. Our experiences as field biologists equip us with tools that others don't have for detangling the multiple components that influence human opinions about wildlife, for devising strategies to address them, and for drawing out our deep biophilia, all of which can help us transform individual opinion into broader political will.

Council News:

Council received the final report from the Anchorage Conference team. A total of 467 people from 37 countries attended the conference, with 15 sponsoring organizations and/or individuals. The conference broke even with no debt, but also no profit. The student auction, however, raised $4177 for the Student Forum, sale of Fred Dean's books raised $786 for the Bear Conservation Fund (BCF), and T-shirt sales raised >$1600 for Conference Travel Grants. Community outreach events raised $1200 for the BCF (story-telling event) and about $8000 for travel grants (Bears on Parade; see next page).

Council is in the process of drafting an update to IBA's Bylaws which will better reflect current practices, mostly related to online voting, communications, website, and newsletter. Watch for an announcement in the coming weeks summarizing

proposed changes and providing an opportunity to view and comment on the draft. In other news, Council is drafting a position statement on hunting as a management tool, catalyzed by public outcry over the opening of bear hunting in the state of Florida, USA. Council is working with the Andean Bear Conservation Alliance to partner in administering special grants for Andean bear occupancy surveys and has worked to establish agreements with potential future donors regarding endowment bequests. Council is moving forward on the next steps in Strategic Planning.

Special Thanks - Brenda Carlson

Special thanks are due to Brenda Carlson, Visitor Services Director of Visit Anchorage, for spearheading the delightful "Bears on Parade" public art installation in Anchorage. The installation features 15 large fiberglass brown bears, each purchased by an Anchorage business and decorated by a well-known Alaska artist. On August 5, the Anchorage Bear Education Committee and the Anchorage Downtown Partnership hosted a city-wide celebration of the installation to raise awareness about bears, bear safety, and management of Alaska's bears. Proceeds from the purchase of these bears totaled $8000 which has all been donated to IBA to help fund travel for students to next year's IBA Conference in Quito. Thank you, Brenda. Many students "find a home" in IBA when they attend their first conference, establishing professional connections and a supportive network for years to come. The value of these dollars spent cannot be overstated.

Brenda Carlson and one of the bears of the "Bears on Parade".

Nadine Bechstein

IBA Volunteer - Nadine Bechstein, Web-Master

The departure in August of Diana Doan-Crider as IBA Webmaster leaves big shoes to fill. But Nadine Bechstein has eagerly jumped right into them. Nadine is a doctoral student in Germany, working as a member of the European Working Group on the Andean Bear Alopecia Syndrome to investigate hormonal connections to the so-called Andean Bear Alopecia Syndrome, a chronic hair loss condition that occurs in captive Andean bears. Nadine is a trained veterinarian who supports herself through school by working as a locum vet.

Nadine started working on bears somewhat by accident after initial studies on captive wolves did not bear fruit. She says she had no idea how addictive it would become working with Andean bears. Nadine attended her first IBA Conference in Provo, Utah, in 2013 and was "so fascinated by the family-like, yet professional atmosphere at the Conference that I wanted to become a part of it". She immediately joined the Student Forum and, in 2014, started helping Diana with the website. Nadine performed a great service to IBA members during that time by painstakingly uploading all of the past Proceedings of the Eastern and Western Black Bear Workshops. Nadine credits Diana with being a great teacher and making it easy for her to assume the job of Webmaster. She is eagerly moving forward towards the long-awaited revamping of our website. Thank you, Nadine, for serving in this extremely important capacity for IBA.

Giant Pandas a Beacon for Hope at World Conservation Congress

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The IUCN, the largest conservation organization in the world, held its 6th World Conservation Congress (WCC) in Honolulu, Hawaii, during 1–10 September 2016. The WCC has been held every 4 years since 1996. More than 10,000 people attended this year's Congress, including high-ranking political figures, scientists, business representatives and representatives of various government and non-governmental organizations (NGOs). The Congress consisted of 2 parts, the Forum and the Members' Assembly. The Forum comprised a daunting number of concurrent presentations, panel discussions, workshops and interactive knowledge cafés, as well as electronic posters and videos. Topics were extraordinarily diverse, including: species conservation, protected areas, forests, oceans, climate change, economics, and wildlife trade, to name a few.

Thirteen members of the Bear Specialist Group attended the Congress, in various capacities. The BSG did not host any sessions, but members were key participants in a number of sessions.

One session summarized the 2016 Red Listing results for the world's mammals (last done in 2008). A number of Specialist Groups (SG), from small mammals to deer, bears, primates and marine mammals, made short presentations, mainly about the increasing threats to species. Impressively, the Small Mammal SG had to make assessments for nearly 3,000 species. But of all the species, 2 were especially highlighted: the eastern gorilla was uplisted to Critically Endangered (with a 77% population reduction in 1 of the 2 subspecies in just 1 generation); whereas the giant panda was downlisted from Endangered to Vulnerable. The conservation success story of the giant panda was mentioned multiple times at the WCC as a hallmark of what can be achieved in conservation when ample resources and appropriate efforts are applied. With the theme of the

Dave Garshelis

Members of the BSG attending the World Conservation Congress: (front row, left to right): Luigi Boitani (Italy), Piero Genovesi (Italy), Anwar Islam (Bangladesh), Sonam Wangchuk (Bhutan), Dave Garshelis (USA); (back row): Michael Proctor (Canada), Ximena Velez-Liendo (Bolivia), Barney Long (USA), Bill McShea (USA), Ron Swaisgood (USA), Liu Fang (China). Missing from photo: Saw Htun (Myanmar), Korsh Ararat (Iraq).

WCC being "Planet at the Crossroads", it was particularly gratifying that a species of bear could be a beacon for a pathway of hope.

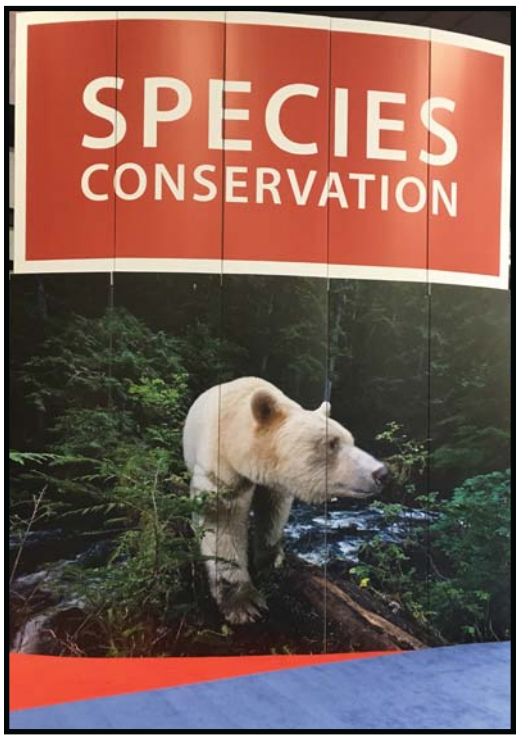
Why was the panda downlisted?

The announcement that pandas had been downlisted resulted in a good deal of media attention, but also some confusion. Questions arose: Was this politically motivated? Does this mean that pandas are no more threatened than any of the other bear species (now 6 of 8 bear species are Vulnerable and the other 2 are Least Concern)? If the "bite-size" method of estimating panda populations is flawed, then isn't the assessment also flawed? Wouldn't it be safer to just leave pandas as Endangered, following the precautionary principle? Here we explain why pandas were downlisted, and answer these questions.

First, it is important to note that the Red Listing process is based on rigorous criteria associated with each category and is not influenced by politics. There are 3 Threatened categories — Vulnerable (VU), Endangered (EN), and Critically Endangered (CE); if a species meets any criteria for a higher category, it is listed in that category. Thus, if pandas met any of the criteria for EN, they would have remained EN.

The IUCN instituted the stricter, more formalized and objective assessment criteria in 2001. Although pandas have been classified as EN since 1990, the first panda assessment under 2001 criteria was in 2008. At that time they were judged to have met the following criteria for EN: *C2a(i): An observed, estimated, projected or inferred continuing decline AND largest subpopulation ≤250 mature individuals.*

Presently there is ample evidence that pandas, as a whole, are increasing (even though some subpopulations are declining). Thus, on the face of it, it would seem that they no longer meet the first part of this criteria (declining). However, a number of climate-change related models project a future, sharp decline in the bamboo species currently within panda range, and so being that pandas are reliant on this for food, we can project a future decline in their population (although we don't know the timeframe, or whether other bamboo species may migrate in).



The Species Survival Commission pavilion at the World Conservation Congress (WCC) featured a larger-than-life image of a white-phased American black bear (Kermode bear of coastal British Columbia), which has attracted much conservation attention. However, the focus of attention at the WCC was on the black and white bear of China — Giant pandas were downlisted on the Red List from Endangered (EN) to Vulnerable because the population has grown and exceeded the size thresholds for EN. This should be cause for celebration that this species-centered conservation strategy is working, and should be continued.

In 2008 it was determined that the largest subpopulation was <250 adults. Since then, there has been another "National Panda Survey" (conducted 2011–2014). This survey differentiates individuals based on the size of bamboo fragments in feces and the distance between feces (Pan et al. 2014). This is the same technique used in the previous survey (2000–2004), so results should be comparable. Whereas the technique is certainly inexact, it likely underestimates panda numbers in high density populations (Zhan et al 2006, Garshelis et al. 2008). The new survey estimated the largest subpopulation (in the Minshan mountains) to contain >400 adults. This fits VU under *C2a(i) (largest subpopulation ≤1,000 mature individuals)* but no longer fits EN. Of note though: our assessment team combined some subpopulations that had been delimited by the national survey because they were not genetically distinct.

Pandas also fit VU under criteria D: *D1: Total number of mature individuals for entire species <1,000.*

The latest national survey yielded a total estimate of 1,864 pandas, excluding cubs of the year (up from the previous estimate of 1,596). Based on best available data, this converts to approx. 1,040 adults. Although the survey produces no confidence intervals, it is clear that a lower CI would be less than 1,000 and thus meets this VU criteria (but would not meet the EN criteria of <250).

How does the degree of threat for pandas compare to other bears?

The downlisting of pandas does not make them on par with the other VU species of bears. The other bear species were listed under different criteria, based on rate of decline — indeed, all of these species (Andean, Asiatic black, sun, sloth, and polar bears) are currently declining, whereas pandas are increasing but projected to decline sometime in the future. However, the total world population of pandas is much less than any of these other species, and they fall under VU based on their low numbers. It is the same category, but the threats are different: small population size versus steep population decline.

Importantly, pandas are still conservation dependent. Their downlisting should only serve to confirm that the Chinese

government's exemplary work — in terms of habitat protection, including the establishment of 67 panda reserves, a logging ban, reforestation projects, and eco-compensation programs (payments for local communities to not log or sell forests, which are community patrolled and enforced); poaching patrols; prohibitions on gun ownership; population monitoring; research; and rangewide surveys every 10 years — should be continued. It comes in contrast to the often gloomy results of conservation work on other species, but also highlights the extraordinary effort necessary to reduce threats on a large mammal species.

The complete 2016 Red Listing account for the giant panda is available online: *http://www.iucnredlist.org/details/712/0*

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Conservation

Yellowstone Grizzly Bear Delisting: Misinterpreting a Survey

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The potential removal of Yellowstone grizzly bears from the protection of the U.S. Endangered Species Act (delisting) is a hot topic, motivating scientific and emotional arguments on both sides of the debate. The U.S. Fish and Wildlife Service received over 100,000 comments on the subject (*https://www.regulations.gov/docket?D=FWS-R6-ES-2016-0042*). Even among professional wildlife biologists and conservationists, views are very mixed. The public is expectedly divided on the issue, but a sharp division among professionals is less expected, and worth exploring.

"To gain insight into what role bias may play in listing decisions," Bruskotter et al. (*https://theconversation.com/of-bears-and-biases-scientific-judgment-and-the-fate-of-yellowstones-grizzlies-59570; http://www.huffingtonpost.com/the-conversation-us/of-bears-and-biases-scien_b_10594408.html*) surveyed scientists who published papers on grizzly bears to solicit their opinions on the proposed delisting. They concluded "that conservation judgments were influenced not so much by an expert's knowledge or assessment of risk but more so by their social environment; in particular, the peers with whom an expert regularly interacts and respects." Specifically: "those working for state or federal wildlife agencies were 2–3 times more likely to recommend delisting grizzlies than those working at academic institutions."

This finding is unsettling, given that decisions under the Endangered Species Act (ESA) are required to be science based and we expect professional scientists to strive for objectivity. So, it is worth questioning, as Bruskotter et al. have done in their article, why survey responses were so disparate between agency and academic biologists. Their conclusion was that "scientists in state and federal agencies can face strong, top-down pressure to reach a particular decision", whereas academic scientists are "somewhat shielded from politics by tenure" — in essence, that the policy and management opinions of state and federal biologists are less based in science (and, by implication, less trustworthy) than those of academics.

Here, we explain why we disagree with this interpretation. Notably, the views expressed here are solely are own — not the agency (Minnesota Department of Natural Resources) that we work(ed) for as bear research biologists for >30 years, nor the BSG or IBA, for which we serve as Co-chair and President, respectively.

We raise 2 key points. First, a simple survey of authors of grizzly bear papers would be inadequate to evaluate how well a respondent actually understood this extraordinarily complex issue. We suspect that a very small proportion of those surveyed have read all of the relevant literature, the proposed conservation strategy, or even the lengthy "rule" put forward by the US Fish and Wildlife Service (*https://www.regulations.gov/docket?D=FWS-R6-ES-2016-0042*). Ironically, of the approx. 200 respondents, 43% self-reported as having no knowledge of the Yellowstone grizzly population or no experience with

grizzly/brown bears at all.

Second, we suggest that differences of opinion related to professional affiliation might be less the product of "social environment" (e.g., group think or peer pressure) than of differences in "on-the-job" experiences (something not measured in the authors' survey). We are not surprised that agency biologists and academics, on average, differ in their perceptions of issues of this nature, for a number of reasons. Particularly, agency scientists are more likely to be directly involved in the practice of managing wildlife populations, including periodic population assessment and readjustment of rules that regulate human impact on those populations. Agency scientists might be more comfortable with practices like hunting, whereas academics might be more inclined toward natural regulation. Agency scientists are probably more apt than academics to trust the opinions and the science of other agency people, and to have confidence in their ability to responsibly conserve wildlife populations post delisting. Finally, agency biologists are more likely to interact regularly with the public, who interact directly with bears, whereas academics may lack this and become insulated in their thinking about issues of wildlife management related to the public. Indeed, the delisting of grizzly bears in Yellowstone has as much to do with present public interactions with bears (e.g., people killing bears) as it does with future scientific uncertainty about food conditions.

Diane Renkin, Wikimedia Commons

The high mortality of whitebark pine (*Pinus albicaulis*), a high-calorie fall food for Yellowstone grizzly bears, has been at the center of the debate as to whether this population should be removed from the protections of the U.S. Endangered Species Act (i.e., delisted). But differences of opinion about delisting between agency and academic bear biologists probably have little to do with the future of whitebark pine.

Bruskotter et al. are academics and they apparently oppose delisting. Some academics might feel that because agency scientists are more management-oriented, they are thereby less scientific. We suggest that differences might rather reflect their degree of reliance on empirical versus theoretical science. These divergent leanings might initially steer people towards agency versus academic careers, which evolve and mature during a person's tenure, based on experience, more than pressure.

It might seem plausible for the biologists directly involved in a hotly contested issue like the Yellowstone grizzly delisting to become biased or feel pressured — although we learned that only 1 member of the Interagency Grizzly Bear Study Team (IGBST: the scientists who have studied this population) participated in the survey. But it is a stretch to argue that the biologists included in this survey who work for agencies removed from the issue (e.g., in a different state or country) would feel pressured by their superiors to view the situation a particular way (and to express that view on an anonymous survey).

Bruskotter et al. suggest that a process is needed to overcome biased thinking. But we already have such a process: it is called the peer-reviewed literature. It is not the scientists' personal opinions that decide delisting; rather, it is a matter of whose science is best supported. In this case, the agency scientists directly involved in grizzly delisting have produced a remarkable body of peer-reviewed scientific literature, and we find it odd to suggest that academics are less inclined to believe this literature than are agency people.

We know the Yellowstone situation quite well, through our connections with the scientists directly involved and through careful reading of the relevant scientific literature. We (and the organizations we lead) have not advocated either for or against delisting. We have pointed out weaknesses in some of the plans outlined in the conservation strategy. And we have criticized some of the specific scientific conclusions of the IGBST. But as a whole, it is absolutely clear that this team's work has represented the most intense and rigorous scientific investigation of bears anywhere in the world, and has been a success story for this species. We can argue about what might occur in terms of climate change effects in the future, but we cannot argue about what has occurred to date: as a result of this work, Yellowstone grizzlies have increased from perhaps 200 bears in the early 1970s to over 700 now, and meet all of the demographic criteria for delisting. Yet we can still have different opinions as to whether delisting will provide adequate safeguards for the future of this population.

Scientists engaged in conservation science must assess and weigh a large variety of factors that are not easily measured. As humans, with varied life experiences and inherent beliefs, we are apt to assign such weights differently, especially when concerning conservation of a charismatic iconic species like the Yellowstone grizzly bear. We think it is interesting that academics and agency people differ so much in their opinions of delisting this population — we just don't think the survey uncovered the true reason for this disparity or provided useful guidance for better ways of approaching these sorts of issues in the future.

Bear Specialist Group

Oso · Bär · Björn · Orso · Bjorn · Samxe · Bhalou · Άρκτος · Urs · Ours · МедВедь · Bca · Medved · Beer · Shash · Béruang · Karhu · Bear

Differentiating Sloth Bears from Asiatic Black Bears in Camera-Trap Photos

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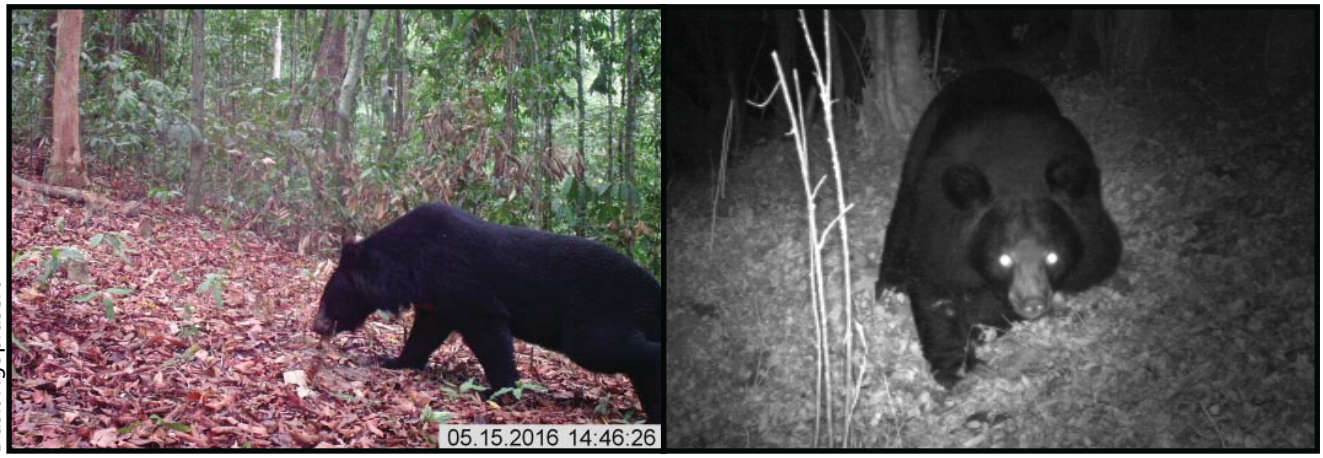
Camera traps are increasingly used to assess the distribution of wildlife, including bears, throughout the Indian subcontinent and Southeast Asia. Accordingly, researchers must be able to determine with near certainty the species—and in our case the specific species of bear—that has been photographed. This can be difficult in areas occupied by sympatric, similar-looking bears, especially when some photographs are unclear, at a bad angle, or of poor quality (McLellan 2012, Ngoprasert and Steinmetz 2012). Asiatic black bears and sun bears may be similar-looking in photographs because the size of the animal is difficult to ascertain; since these 2 species overlap on a fine scale across Southeast Asia (Steinmetz 2011), this can lead to

Harshawardhan Dhanwatey

Harshawardhan Dhanwatey

(left) Camera-trap photo of a sloth bear, recognizable by the general dome shape, debris stuck in the fur, and whitish snout. (right) Camera-trap photo of a sloth bear, identifiable from length of its back claws.



Dusit Ngoprasert

Li Sheng

(left) Camera-trap photo of an Asiatic black bear, recognizable by the smooth, clean-looking coat as well as a short, dark snout. Note that the ruff on the neck is common in both Asiatic black bears and sloth bears. The large ears are not visible in this photo due to the bear's posture. (right) Camera-trap photo of an Asiatic black bear, readily distinguishable by the large ears.

confusion in species identification.

More at issue, though, is the case of Asiatic black bears and sloth bears because these 2 species are even more alike: they are of similar size, nearly-always black with a crescent white chest marking and a ruff of longer hair around the neck. Also, because their zone of overlap is narrow, typically 1 of the 2 species is locally far more common, so a few mistaken identifications could yield an incorrect perception of the status of the rarer one. Perhaps the most notorious example of this occurred in Bangladesh, where the widespread presence of Asiatic black bears masked the complete extirpation of sloth bears (Islam et al. 2013). Likewise, the historical and present distribution of sloth bears in Bhutan has been uncertain due to the presence of the far more common Asiatic black bear (Garshelis et. al. 2015). In recent surveys in northern and eastern India, species-specific population trends could not be discerned because these 2 bears were not identified to species (Jhala et al. 2011).

Here we present several helpful criteria for distinguishing sloth bears and Asiatic black bears in camera-trap photographs, based on our examination of hundreds of such photos. The characteristics used for telling these 2 species apart involve 4 body parts: the coat, ears, snout, and claws. Sloth bear coats appear very shaggy relative to Asiatic black bears, often giving the sloth bear's body a dome-shaped look or the appearance of 2 humps. Also, due to the shaggy coat, sloth bears in the wild—and in captivity for that matter—often have debris such as leaves, seeds, and dirt stuck in the fur. This debris is often very noticeable in camera-trap photographs, and if present, is a definitive characteristic of this species.

Due to the sloth bear's shaggy coat, the ears often appear quite small and can be lost in the upright fur around the head. In stark contrast, the ears of an Asiatic black bear are typically prominent on the head and appear large and round (like that of "Mickey Mouse") in many photographs. The sloth bear's snout tends to be creamy white and longer than that of an Asiatic black bear, whose snout is usually dark brown or black. Finally, the sloth bear's claws are whiter and larger than those of an Asiatic black bear.

Distinguishing characteristics of sloth bears and Asiatic black bears

Trait	Sloth Bear	Asiatic Black Bear
Coat	 Thomas Sharp	 Thomas Sharp
	1. Shaggy, unkempt appearance 2. Dome or humped shape 3. Debris in fur	1. Glossy, groomed appearance 2. Not dome shaped 3. Generally clean fur
Ears	 Thomas Sharp	 Wildlife SOS
	Appear small: lost in the shagginess around the head.	Typically prominent, large and round.

Snout

Thomas Sharp

Thomas Sharp

Long and whitish. Short and usually dark.

Claws

Thomas Sharp

Thomas Sharp

Long and whitish. Relatively short and dark.

Invariably, some camera-trap photographs of these 2 species will remain difficult to distinguish. We recommend working through each of the characteristics, and then consulting with others if identification is not certain. We have done this among ourselves, highlighting our interpretations and the rationale behind them. We have come across a number of mistaken identities in photos sent to us by others, which is what motivated us to provide these guidelines. Notably, these guidelines can be useful not only for camera-trap photos, but also for distinguishing sightings or hand-held photos of these 2 look-alike species.

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Bear Specialist Group

A Formosan Black Bear Found Dead Near a Recreational Lodge Turns out to be an "Old Friend"

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Last fall, on October 18, I had just left my long-term field site in Dafen, in Yushan National Park in the Central Mountain Range of Taiwan, when I received a phone call about a dead Asiatic (Formosan) black bear. It was discovered in the Xiang-yang mountain area, along the southern edge of the park. I drove my newly-bought car to the site and, with the staff of the Forest District Office, examined the dead bear and investigated the site.

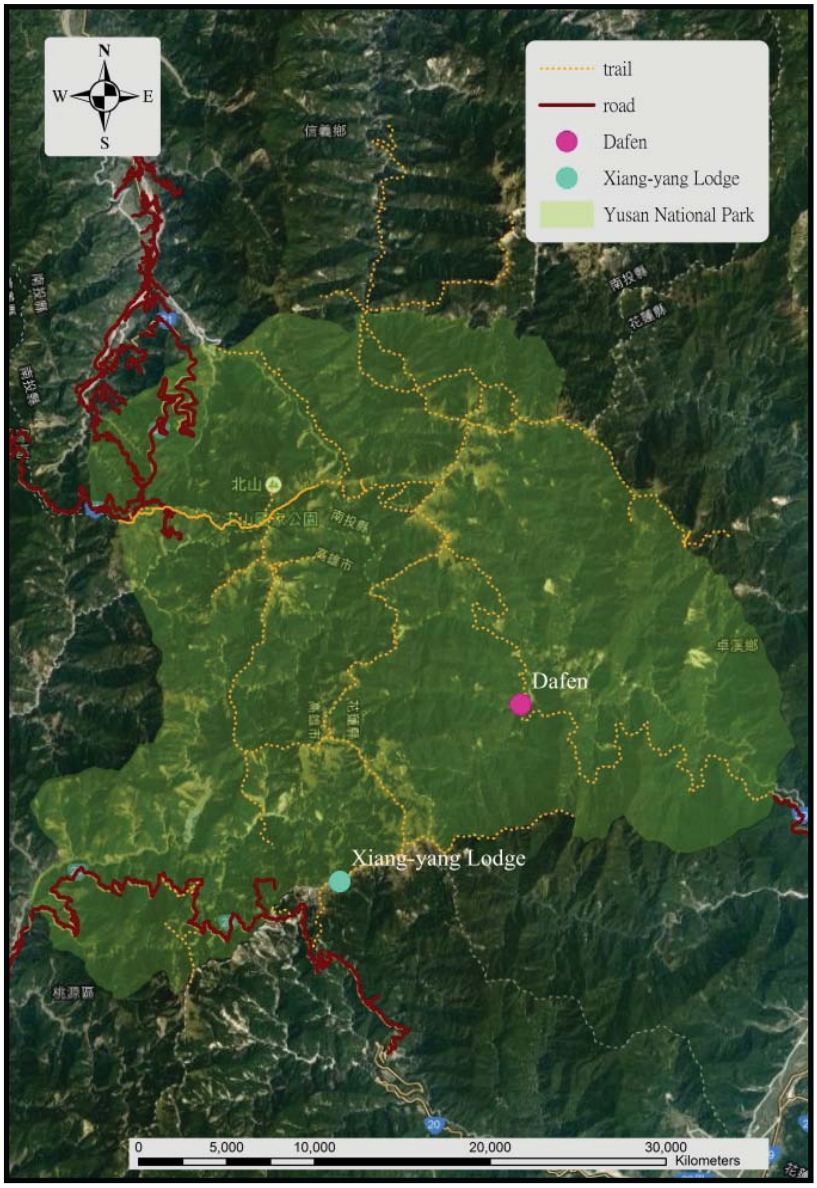
I immediately noticed that only 2 toes remained on its left front paw. I was very familiar with this situation, as I had previously captured 8 black bears in Dafen with missing paws or toes, indicative of having been caught and escaped from a hunter's snare. Aside from a small cut on its ear, there were no other conspicuous wounds on the dead bear.

Its fur was intact, with some eggs just laid by flies, suggesting it died about 2 days before, approximately on the day it was discovered by hikers. The incomplete and badly-worn teeth indicated that it was an old bear; nothing else could be inferred from its appearance, other than that it was quite skinny. The Forest District Office agreed to bring it to the Veterinary Hospital of National Pingtung University of Science and Technology (NPUST) for further inspection.

Although several reporters were on the scene, none of them were interested in following me to the site where the bear had been found; everyone hurried back to file their news reports. The site was near Xiang-yang Lodge, a popular attraction for tourists and hikers. The altitude was approx. 2,600 m, and the forest was mainly composed of hemlocks.

The dead bear was discovered in a gully about 50 m from the Xiang-yang Lodge; the body was visible from the bustling trail. This seemed unusual, as I figured that a bear would not lie down and die in a place with so much human activity. Our on-site observation found no traces of struggling or fighting, and no signs of blood.

Xiang-yang Lodge was located on the way to Jiaming Lake, meaning "Teardrop from an Angel." As we entered the lodge, we were struck by the sign: "*Beware of Bears; Do not feed the animals.*" The presence of the sign showed that



Map of Yushan National Park, in south-central Taiwan, showing Dafen, the study site where the Asiatic black bear named "Lon" was captured in 2000, and the lodge outside the park where he was found dead in 2015. Credit: Wan Ching

(left) A Formosan black bear, named "Lon", was caught in Yushan National Park, Taiwan, in 2000 and fitted with a GPS-satellite radio-collar (which failed). (center) A dead bear was found near a popular cabin for hikers. A microchip in the body identified it as "Lon", caught 15 years earlier in Yushan National Park. (right) Three of Lon's toes were totally missing when he was found dead in 2015, suggesting that he had once escaped from a hunter's snare. Photos: Mei-hsiu Hwang

they likely had an issue with bear feeding. Indeed, we discovered some bear scats filled with rice. Walking along the gully under the lodge, we saw garbage and kitchen wastes strewn about in the stream, plentiful tracks of bears, and a bear scat full of goat hair. The hemlocks near the open veranda behind the lodge were full of recent claw marks of black bears, and the surrounding unpaved ground was dotted with footprints. While hikers were sleeping inside the lodge, bears were milling about just outside.

A hiker described that when sleeping in the lodge, a bear was heard dragging garbage from the open kitchen. Roughly estimated, in addition to the dead bear, there were at least 3 more bears, including a mother with 2 cubs.

I was told that Xiang-yang Lodge would be renovated soon, and visitor numbers would be capped at about 170 per day. However, it is clear that it is not just the high number of visitors causing the bear problem, but their behavior and the behavior of the staff at the lodge.

We brought the bear carcass back to NPUST that night and inspected it the next day. We used high-tech medical equipment, such as X-ray and computed tomography (CT) scan. Half a dozen veterinarians assisted in the necropsy, for it was also a rare opportunity for them to study a real wild bear.

I happened to carry a microchip scanner with me that day, and after scanning it, was surprised to detect a microchip in the body. That meant it was one of the bears that I had caught in Dafen, about 20 km straight-line distance away. The ear-tags and collar had since come off (it was good to have proof that the collars are not permanently attached, as some people have asserted). The microchip identified the bear as "Lon". He had been captured in November, 2000, the third year of my research project. Although we put a GPS collar on him, it failed to collect any data, so unfortunately, we know little about his movements. At the time of capture he was judged to be 6-9 years old based on cementum annuli in its tooth; he was now >20 years old, and it looked like it would have been difficult for him to chew hard food.

When Professor Ming-Tang Chiu of pathology cut open the chest, we observed a body cavity full of blood — we measured at least 3 liters. One side of its rib cage was broken; it did not connect to other bones after it healed, which meant that the bear had been seriously injured sometime in the past. There were also problems with the old male's kidneys (partial nephrosclerosis), gallbladder, and a thyroid cyst. Additionally, it had arthritis, which must have hampered its movements.

We suspected that the trash at the lodge was attractive to this bear because it wouldn't have to move much, and could find soft food to chew. We expected to find an intestine full of human-related foods, but actually found it to be empty. This meant that the bear had not eaten for 2-3 days. Maybe, despite the ready availability of human-related foods, the bear was not able to access any due to competition from other bears. That it died so close to the lodge suggests that it was not wary of people, or possibly desperate. The massive amount of blood, though, indicates that it died from some massive internal trauma, possibly a fall associated with his arthritic debility. The lodge is distant from roads, so Lon was not hit by a car.

Later, Lon's body was put to good use. Its hide was tanned and a full mount made, which is now being used, along with its bones in a nature education center. The missing toes serve to highlight the poaching problem that still persists in Taiwan. An article in National Geographic Taiwan gave readers an appreciation for this scientific detective story and the status of bears in Taiwan (while written in Chinese, the article contains a number of good photos: *http://www.natgeomedia.com/column/explorer/20924*).

Bear Specialist Group

Bear Smart Community Genzana – Year II
How Best Practices Pay Off

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The project Marsican Bear Smart Community by Salviamo l'Orso (Save the Bear - SLO), later renamed Bear Smart Community Genzana (BSCG) referring to Mount Genzana and the local Nature Reserve Monte Genzana Alto Gizio (NRMGAG), which identifies the study area and the relative human communities of Pettorano sul Gizio and Rocca Pia, is promoting the re-colonization of the Marsican brown bear (*Ursus arctos marsicanus*, Altobello, 1921). The project will ensure the bear's persistence in the Central Apennines by preventing conflicts between humans and bears and educating local communities on how to coexist with this critically endangered relict bear population. The main goal of the project is to remove any food attractors, which may condition the bears and encourage them to frequent urban areas.

The project area connects the Abruzzo, Lazio and Molise NP (ALMNP), which is host to almost all the reproductive females, to a large suitable protected area, the Majella NP (MNP). In 2015, park biologists reported the presence of at least 1 female with 2 cubs, an extremely important event, which supports how vital working on connecting areas is for the future of this small population of brown bears.

In the period from April 2015-April 2016, thanks to an $8,000 start-up grant from IBA and in-kind contributions from project partners, the BSCG project has performed almost all the actions in the program. These actions include the publication and dissemination of a best practice manual, the construction of 14 electric fences and their regular checkup and maintenance, the placement of 5 bear-proof organic waste bins, and continued activities to educate locals on how to coexist with the bears through the organization of several public meetings. In 2015, more than 75% of farms in the area were secured by the joint actions of public institutions and associations. The result was a 76% reduction in damage caused by bears, which exceeded our prediction by 26%. We attribute the reduced level of bear damage to farms being better secured against bear intrusions, and to a change in the habits of food-conditioned bears that moved back to the wild or to not-yet-secured areas.

Beekeepers installing electric fencing.

In the first half of this second year, thanks to an additional $5,800 grant from the IBA, 7 more electrical fences were deployed in the study area and regular checkup and maintenance of fences has currently led to a dramatic reduction of bear damage in the community. If this positive estimation stands the ongoing period of hyperphagia, when the bears need to fatten to prepare for the winter, we will be happy to celebrate a 97% reduction of bear damage. In fact, this 2016 result exceeds our 2017 predictions of 90% reduction in bear damage.

As expected, a reduction of damage in the intervention area led to an increase of conflicts in neighbouring unsecured areas. This is where one food conditioned bear, the radio-collared bear called Peppina (Josephine), had moved to last year during August to October in search for easy food provisions before denning for winter. If the ongoing conflicts with farmers at the small scale frustrates our efforts at the larger scale, the success so far obtained at the small scale proves to the local communities in the intervention area and to the larger public that coexistence with large carnivores is possible as long as the right measures are taken. So far this evidence has strengthened the trust of local farmers and bee keepers to the practices we've been promoting. Other people from the Genzana lands have offered to collaborate on the project goals, due to their friendship with our members and to the English volunteers from Plymouth University. Thanks to our volunteers, we have been monitoring the intervention area in search of bear signs, conducting spatial analysis on habitat use, and examining the human dimension of bear conservation issues. Additionally, this autumn we are keeping up the maintenance of abandoned orchards and wild fruit trees to increase the attractiveness of these food sources further away from the villages, and to direct the bears' foraging away from inhabited areas and productive land.

All this was made possible thanks to the IBA's grant, the strong commitment of a small group of highly-motivated volunteers, the local community, and a network of partner organizations and institutions that have finally been able to build a Bear Smart Community in the Genzana Valley.

Human-Black Bear (*Ursus thibetanus*) Conflict Management in Mansehra District, Pakistan

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Mansehra district is an area of historic habitat for the Asiatic black bear (*Ursus thibetanus*) in the Khyber Pakhtunkhwa Province, Pakistan. The country assessment of the IUCN for Pakistan categorizes the black bear as critically endangered (CAMP 2005). In Mansehra district, black bears have been reported in Kagan, Naran and upper Siran valleys.

In November 2015, 7 bears were killed in retaliation to attacks on 3 people in Mansehra district. In response to the situation, WWF-Pakistan developed and submitted a project proposal to the IBA R&CG funding program entitled "Conservation of Asiatic black bear populations by mitigating human-bear conflict through development of joint rapid response mechanism in Mansehra district, KP, Pakistan". Under this project, we designed and initiated occupancy surveys, population assessments of bear food habits, and human-bear conflict assessments, with the goal of reducing the level of human-bear conflict.

Progress update: Occupancy surveys were conducted in Siran valley of Mansehra district in July-August, 2016. Foot prints, claw marks on trees, stone rolling, and den information was collected in the field during the survey. Twenty five fresh scats were collected during the survey and analysis of these data is in progress. Camera traps were also used to collect pictures of bears from the study area. A bear was also captured on July 29, 2016 at 8:16PM at Kaith basala, Union Council Bogharmang (Siran valley). The Kaghan valley survey is in progress (a detailed report of survey will be shared at the end of calendar year).

Five awareness sessions with students were conducted in different schools located in the project area. A presentation was developed with information related to black bear behavior, ecological importance and mitigation measures to protect human life and property from bear attacks. A brochure (in Urdu/local language) with information about black bears was developed and distributed amongst the students and local communities.

Local villagers were interviewed from 4 different union councils/villages of Siran valley. Livestock killing, crop damage, and attacks on human beings were documented. Crop raiding and attacks on human beings by black bears was higher in villages located close to the forests during the months of August and September.

In Oct 2014, a 6 year old named Nadia was attacked and badly injured by a black bear in the evening. Taj-un-nissa, a thirty year old woman was busy constructing her house, when she was attacked and badly injured by a bear [September 2015, Kund Sarbori village (Siran valley)].

Remote camera photograph of Asiatic black bear.
Credit: Kaith Basala, Union Council Bogharmang (Siran valley)

Agriculture and livestock farming are the major source of livelihood for the communities in the upper Siran valley. Local communities shift to the upper parts of the Siran valley in May every year and grow maize crops near the forests habitats. Maize crop/agriculture land provides good shelter and food sources for bears; as a result the bears regularly visit the agriculture area and damage crops, and sometime attack farmers and children.

Behavioral Ecology and Genetics of Kamchatka Brown Bear (*Ursus arctos piscator*)

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The Kamchatka brown bear is the largest terrestrial top predator in the food webs of Kamchatka. It is an important object of ecotourism and trophy hunting. Since the bear monitoring project of the Wildlife Conservation Society in 2002–2005 (Seryodkin and Paczkowski 2006, Valentsev et al. 2006), this unique salmon-eating subspecies has not been well-studied. Current population estimates are based on irregular aerial surveys and expert extrapolations. Therefore, movements and habitat selection patterns, genetic structure of the population, main population characteristics and many behavioural and physiological attributes of Kamchatka brown bear remain totally unstudied. During the last 10 years, the frequency of human-bear conflicts on Kamchatka has increased considerably (Gordienko 2012). Understanding these aspects of bear biology are vital for successful conservation and population management.

Observations of bear behavior in the wild are difficult and scarce because of their secrecy and the potential danger of Ursids. The brown bear density in the south of Kamchatka is the highest throughout Eurasia, competing only with grizzly bear concentrations in Alaska (USA) and in British Columbia (Canada) (Egbert and Stokes 1974). Brown bears on Kurilskoe Lake (Southern-Kamchatka Sanctuary, Kamchatka peninsula, Russian Far East) are highly habituated to the presence of tourists and photographers, thus providing us with an opportunity for a detailed study of population demography and behavior. Due to the permanently abundant protein food resource, Kamchatka brown bears have developed unique fish-eating behavioral stereotypes. In the fall, they live in seasonal concentrations with a high density of conspecifics that greatly affects the social behavior of this typically solitary carnivore.

The goal of our project is to investigate the population characteristics and behavioral ecology of Kamchatka brown bears, and to develop a methodology for long-term monitoring of the population on the sockeye salmon spawning grounds during the fattening period at Kurilskoe Lake.

Our Objectives

1. To study population characteristics of the bear population in the surroundings of Kurilskoe Lake;
2. To investigate fishing and social behavior of bears in their large concentrations on spawning rivers;
3. To evaluate the level of genetic diversity, bear population size, density, long-term stress and the diet of bears; and
4. To test the spatially explicit individual-based approach to predict population dynamics using life histories of individuals.

Materials and Methods

In 2016, we conducted fieldwork from 7 July to 18 August . We used the following methods:

1. Regular estimations of the numbers and sex-age status of bears visiting the spawning sites;
2. Visual observations of social and foraging behavior of individuals in the outflows of 2 spawning rivers (total of 116 hours) using photo identification of naturally marked animals. Remote camera traps (N = 5) were placed in front of 5 marking of trees on the fishing sites;

. Lake Kurilskoe and Southern Kamchatka Sanctuary on the map of Kamchatka peninsula.

3. Non-invasive hair-collecting barbed wire stations (N = 30). Population size will be calculated using genetic analysis. Long-term stress will be assessed via hair cortisol analysis and diet via stable isotope analysis.

Results and Discussion

Observations of Behavior

We have studied seasonal dynamics of demographic and behavioral characteristics of the population, allowing us to evaluate the well-being of the brown bear group inhabiting the shores of Kurilskoe Lake. Measured demographic parameters included number of bears present at the spawning sites, age and sex structure, and composition of family groups. Behavioral studies described types and frequency of social interactions, fishing stereotypes, average fish intake, success of fishing behavior, movements of animals, and marking activity of bears. In the future, photo identification of naturally marked individuals and continuous recording of their behavior will enable us to trace precisely their behaviors for several years, including fertility and reproductive success of females, the average daily and total seasonal fish intake and the dynamics of the social hierarchy. For cubs and juveniles, it is important to study the ontogeny of foraging and social behavior, social learning, age of independence after disintegration of the family group, and survival rates.

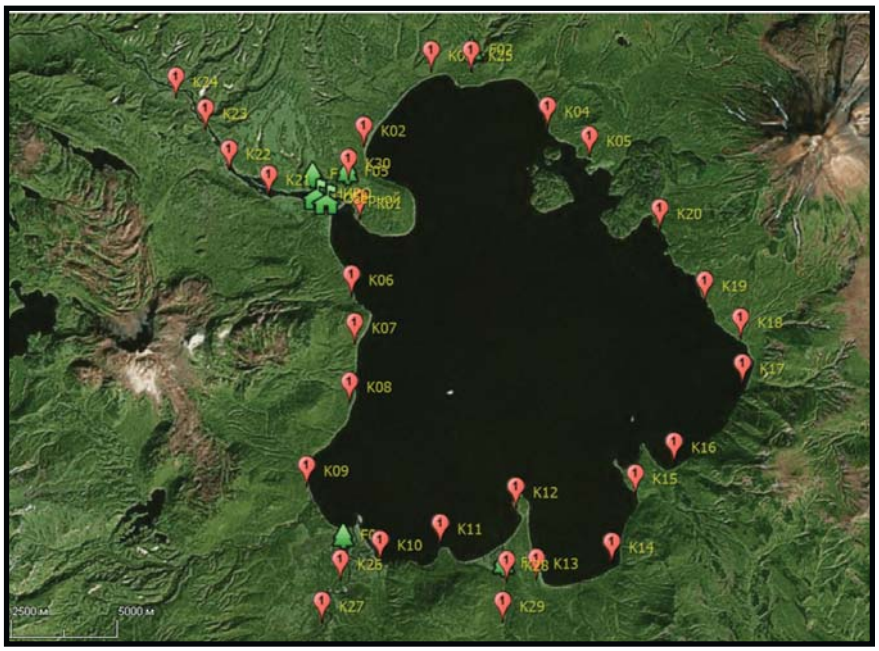
Two adult unrelated males play in the water.

A bear sow with her 4 cubs of the year.

(left)A yearling cub begs for fish from his mother, while an adolescent bear approaches aiming to steal it.
(right) High density of bears on the spawning river. Bears fish on salmon in August 2016.

Non-Invasive Hair Sampling

In 2016, we collected 1067 samples of bear hair from 30 stations installed around the perimeter of the Kurilskoe Lake and on the banks of 4 flowing rivers. As soon as we find a sponsor, DNA analysis will be performed to calculate the relative number of individuals via capture-mark-recapture models (McLellan 2004), and estimate the sex ratio for the population in the Kurilskoe Lake basin. Recaptures of the same individuals at different stations will provide information about their movements. In addition, we will define the haplotypes of individuals in order to estimate the level of genetic diversity in the population. Besides, the same hair samples can be further used to evaluate the long-term stress and the diet composition (Lafferty et al. n.d.). All these parameters will be compared with similar data collected in Kronotsky Reserve (N = 1442 hair samples, 2003) and at Azabachye Lake (N = 436 hair samples, 2015).



Locations of 30 hair collecting stations (red drops) and 5 remote camera traps (green trees) on the Kurilskoe Lake and influent rivers.

Conclusion

We intend to continue this project for several years and to test the spatially explicit individual-based approach to predict the population dynamics using life histories of individuals. Individual-based or agent-based models that are capable of simultaneously distinguishing animal densities from habitat quality can explicitly represent the environment and its dynamism, can accommodate spatial patterns of inter- and intra-species mechanisms, and can be used to explore feedbacks and adaptations inherent in these systems (Grimm et al. 2006, Watkins et al. 2015). We will use the model to compare 2 types of data: 1) estimates of the overall population size, age-sex structure, and hierarchical structure, and 2) information about birth rates, mortality rates, dispersal patterns, and other life history events of bears. Potentially we will discover how various biotic, abiotic and anthropogenic factors affect the Kamchatka brown bear population.

We are grateful to the International Bear Association and the Homer Bear Conservation Fund for supporting our project in 2015-2016.

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Marking Behavior, Population Density Estimates, and Terrain use of Andean Bears *Tremarctos ornatus* – Generating Knowledge for the Conservation of a Threatened Umbrella Species

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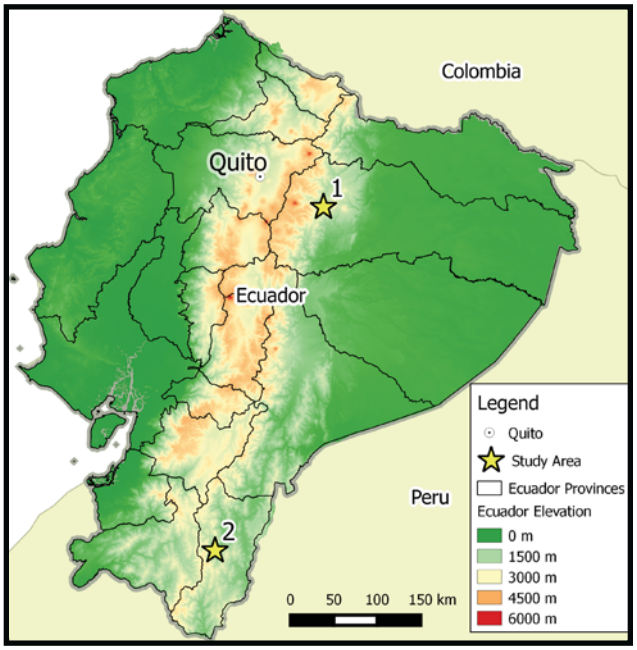
During a pilot study on the eastern slopes of the Ecuadorian Northern Andes in 2012-2013, we investigated marking behavior of Andean bears. During 306 camera trapping days, we recorded 22 video recordings of at least 8 individuals. Despite our limited and self-funded research set-up, we produced 3 valuable key findings. First, in comparison to other Ursids (Clapham et al. 2012, Taylor et al. 2015), Andean bears displayed similar scent marking behavior. We suggest that this behavior serves as a means of chemical intraspecific communication. Second, we only documented marking behavior in males. Third, all observations were recorded during daytime, suggesting that Andean bears are primarily diurnal, in accordance with previous research (Paisley and Garshelis 2006).

These findings, however, raised many new research questions. We are still not sure what the functional significance is of Andean bear marking behavior. Although a researcher has observed marking behavior in females (Isaac Goldstein, pers. comm.), we did not, and thus we are not sure if scent marking is purely a male attribute in Andean bears or if only the bears in our study area exhibited this strictly sexually segregated life-style. A habitat analysis related to this behavior is also missing. Moreover, marked sites represent an interesting resource for genetic material that could be used for population estimates and genetic analysis.

To answer these research questions we developed a new project in 2015, and thanks to financial support from a Research and Conservation Grant from the International Association for



Map with the positions of our 2 study areas in Ecuador. Study area 1 is located on the border of the Sumaco Biosphere Reserve (0°S, 78°W) in the province of Napo. Study area 2 is situated in province Zamora Chinchipe and is part of the Podocarpus National Park and its buffer zones (4°S, 79°W). Elevations of both study areas range from approximately 1500 to 3000 m a.s.l. and both study areas contain cloud forest.

Bear Research & Management (IBA) and a Nature Conservation Grant from Bears in Mind, we began its implementation in 2016. Our main research goals are to I) reveal the functional significance of marking behavior in Andean bears, II) estimate local population densities of Andean bears, and III) identify key habitat features for marking behavior, habitat selection, and bear travel networks. In addition, IV) we wish to establish a biological sample database (e.g., hair, fecal sample) for concurrent as well as future research projects.

Andean bear scent marking after climbing up the rub tree. Recorded by our camera trap.

To achieve these research goals we have been working in 2 study areas in Ecuador. The first study area (hereinafter study area 1) is close to our previous study area in the eastern slopes of the Northern Andes, in the province of Napo. The second study area (hereinafter study area 2) is situated in the south of Ecuador, in the province of Zamora Chinchipe. Both study areas are covered by cloud forests where bears form trails along which they mark trees and substrates. So far we have discovered 6 bear trails with 24 marking sites. We installed 19 camera traps at marking sites with highest marking activity (presence of rubbing and number of claw marks) (hereinafter camera sites) in both study areas. We also performed habitat measurements at the camera sites, evaluating vegetation structure and coverage, signs of marking behavior and human activity.

At this point, we have completed several deliverables of our project. We submitted a manuscript focused on the results of our pilot study to the journal *Ursus*. We presented the contents of this manuscript and our current project goals and achievements at the III Congreso Ecuatoriano de Mastozoologia and at the 24th International Conference on Bear Research and Management, where we also deepened our current and made new collaborations. For example, we discussed our project and made future plans with researchers focusing on marking behavior in brown bears. Together with Russ van Horn and Megan Owen from the San Diego Zoo, Institute for Conservation Research, we developed a habitat measurement data sheet that we have already started applying in the field. The new data sheet will enable us to use and compare data from both our and their projects. Later, we organized a workshop for our field technicians in the south of Ecuador focused on habitat measurements, and the installation and maintenance of camera traps. Finally, we started an Andean bear genetic databank with samples collected at the marking sites. These samples can be used by other researchers for their genetic purposes. Feel free to contact us.

Last but not least, our current field work has also brought some interesting outcomes and observations. We obtained our first bear video recordings from study area 2. Bears sniffed, rubbed and claw marked rub trees at the camera sites. We also observed a novel behavior from some of the individuals. These bears rubbed the tree first, then climbed 3 – 4 m up the tree where they repeated rubbing, after which they climbed down the tree and left. A short video (*https://youtu.be/9FMtiaDauVw*) of all the above mentioned marking activities can be seen on our YouTube channel (*https://www.youtube.com/channel/UCxoqDnQ9qk0vQQqeFHuMb2Q*). Further, we encountered an interesting and to us new challenge in study area 2. Bears there, almost immediately after the camera trap was installed, showed interest in the camera traps and started attacking them, causing a loss of 3 cameras already.

As for our future plans, we still need to find appropriate trees and tree heights for all of our camera traps in study area 2, or find another strategy to stop bears from attacking them. We would also like to find more trails and install more camera traps in study area 1. We already have some bear genetic material for our databank and in the future we would like to continue collecting this material. To find out if Andean bears communicate chemically, we will create experimental sites in the field. We will finish the habitat measurements at all bear marking sites in both the rainy and dry season. We also need to further document when cattle are present at the adjacent pastures in order to see possible changes in bear behavior and visiting frequencies. Meanwhile, our 19 camera traps, and much more in the near future, keep on collecting new videos of Andean bear behavior at the marking sites. Keep following our YouTube channel and blog (*https://andeanbearblog.wordpress.com/*) to stay up to date.

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Black Bear Abundance and Habitat Selection on a Multi-use Landscape with Grizzly Bears

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The International Union for Conservation of Nature estimates that American black bear (*Ursus americanus*) harvests in the U.S. and Canada total 40,000–50,000 annually (Garshelis et al. 2008). Despite the popularity of black bear hunting in North America, reporting of harvest success is not required in many portions of their range, including Alberta, Canada. Aside from harvest and conflict records, no empirical data exist in Alberta to estimate black bear abundance and density, and the provincial estimates of the minimum number of black bears in permanently occupied habitat are over 20 years old (Alberta Forestry 1993). Black bear tags are issued to licensed hunters in the spring and fall and private landowners can harvest black bears year-round without a tag; neither licensed nor un-licensed hunters are required to report harvest success, and the only available harvest data are voluntary online surveys completed by licensed hunters.

In addition, southwestern Alberta reports some of the highest rates of human-large carnivore conflicts in the province. Conflicts with bears come with costs: an increased safety risk for humans and threats to large carnivore populations because animals involved in conflict may be relocated or killed. Human-wildlife conflict levels and hunter success are often used by provincial and state managers as indicators of population change (Roseberry and Woolf 1991). However, long-term or supplemental data often are needed because conflict levels and hunter success are heavily tied to food availability (Noyce and Garshelis 1997, Obbard et al. 2014).

Black bears in southwestern Alberta also face a changing landscape, including an increasing grizzly bear (*Ursus arctos*) population (Morehouse and Boyce 2016). Previous research suggests that grizzly bears can alter feeding behaviour, activity patterns, and home range sizes of black bears via dominance hierarchies, ideal despotic distribution, and intra-guild predation avoidance hypotheses (Fretwell and Lucas 1969, Schwartz et al. 2010, Jacoby et al. 2014).

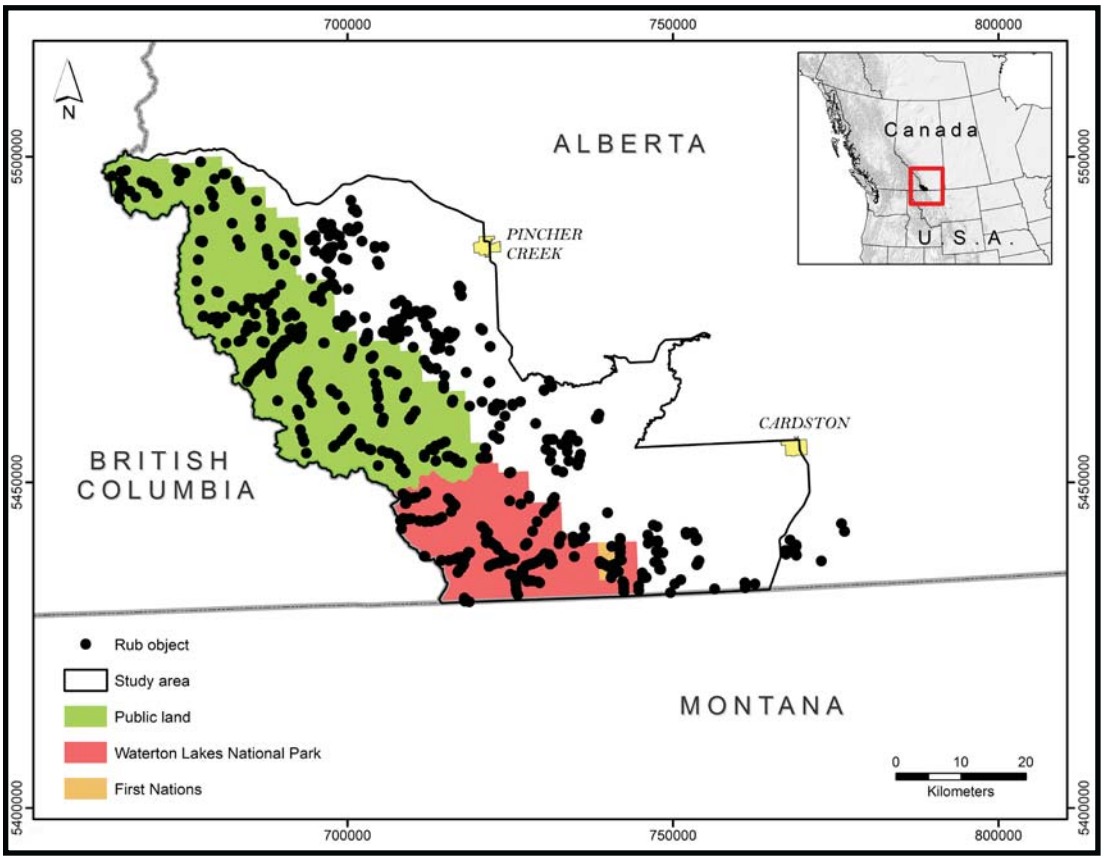
Where grizzly and black bears are sympatric, non-invasive genetic sampling provides a unique opportunity to target more than one species. We have partnered with a grizzly bear monitoring project (Morehouse and Boyce 2016) to address two objectives: 1) estimate black bear abundance and density using spatially explicit capture recapture models, and 2) evaluate differences in habitat selection between sympatric black and grizzly bears.

We established 899 rub objects (trees, power poles, fence posts and lines) to collect bear hair in 2013 and 2014. A genetic prescreen (G10J) indicated that roughly 40% of hairs sampled during the grizzly bear monitoring project were from black bears (Morehouse and Boyce 2016). Rub objects were sampled 8 times, once every 3 weeks from May to November. During the first visit of each year we removed old hair from the barbed wire and the remaining 7 visits were collection events. Hair samples were sent to Wildlife Genetics International (WGI; Nelson, BC) for genetic analysis to determine species, individual ID, and sex.

Ted Loosen

Ryan Peruniak

(left) Southwestern Alberta is a multi-use landscape, but agriculture is the primary industry.
(right) A black bear rubbing in Waterton Lakes National Park, Canada.



Study area map for southwestern Alberta, Canada.
Rub objects (black dots) were sampled for bear hair in 2013 and 2014.

In the fall of 2015, we received results from WGI. In 2013, we had 306 detections of 126 male black bears and 177 detections of 101 females. In 2014, we had 294 detections of 122 males and 168 detections of 100 females. We are in the process of analyzing our data using explicit capture recapture (SECR) models to estimate abundance and density for southwestern Alberta. For our second objective, resource selection functions (RSF) (Manly et al. 2002) are a common method for associating use-availability data with habitat covariates. However, methods to directly and quantitatively compare RSFs between different species have lagged. Recent developments of the latent selection difference (LSD; Latham et al. 2011, Erickson et al. 2014) allows for a direct comparison of the habitat-selection patterns between species and produces a quantitative measurement of the strength of the relationship. Preliminary results indicate that black and grizzly bears were rarely detected at same rub object during the same sampling occasion. As well, black bears selected sites closer to human developments and roads relative to grizzlies, providing some evidence for niche separation between the two Ursids in southwestern Alberta. This work was generously supported by IBA's Research and Conservation Grant and was presented by Master's student Anne Loosen at the 24th International Conference on Bear Research & Management in Anchorage, Alaska.

American black bears are a species of low conservation concern for much of North America, except where isolated populations remain threatened. In contrast, grizzly bears are a species of high conservation concern, particularly in the southern portion of their North American range, and as a result, grizzly bear studies far outnumber black bear studies in western North America (Mowat et al. 2005). For species like black bears that face an increase in a more dominant species like the grizzly bear, the future holds unanticipated changes in spatial and temporal use of the landscape. Having current population data will provide insight into the number of unique individuals and the sex ratio in southwestern Alberta. Ultimately, these data will provide a better understanding of population abundance and distribution and will help to create sustainable and appropriate harvest objectives.

Acknowledgements

Project support from Alberta Environment and Parks; Parks Canada; Waterton Biosphere Reserve Association; Drywood Yarrow Conservation Partnership; Minister's Special License Grant Program; Alberta Conservation Association; Alberta Professional Outfitters Society; Natural Sciences and Engineering Research Council of Canada; Riversdale Resources; Safari Club International – Northern Alberta Chapter; TD Friends of the Environment; Crowsnest Conservation Society; International Association for Bear Research and Management Research and Conservation.

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Individual Identification in Sun Bears: Testing Methods to Capture Chest Marks and Hair Samples

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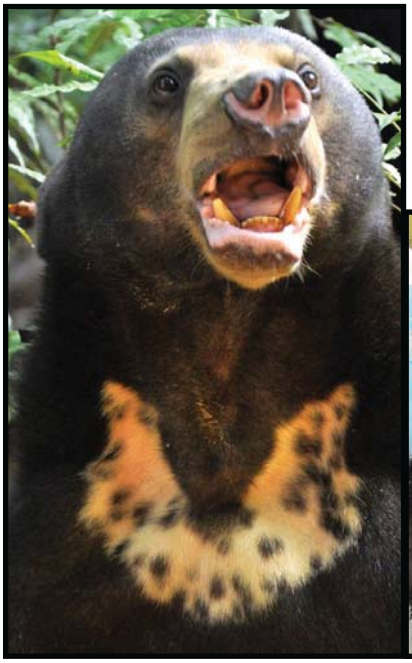
The sun bear (*Helaractos malayanus*) is the smallest and among the least studied of all bear species in the world. The Bornean sun bear (*Helaractos malayanus eurispylus*) is the only Ursid in Borneo (Servheen 1999). Compared with mainland sun bears (*H. m. malayanus*), it is smaller and has a correspondingly smaller skull, but relatively large maxillary teeth (Meijaard 2004). The future for sun bears is threatened by rapid economic development in Southeast Asia and the conversion of tropical forest to agricultural monocultures such as Acacia and oil palm plantations (Laurance 2007). In 2007, sun bear conservation status was changed from "Data Deficient" to "Vulnerable" (Fredriksson et al. 2008); globally, sun bear populations were believed to have decreased by 30% during the past 3 decades from the collective impacts of habitat loss, hunting, and illegal trade in bear parts (Wong, 2002, Foley et al. 2011;). Although the sun bear is legally protected throughout its range, law enforcement is challenging and leaves much to be desired (Lee et al. 2015). Apart from a few studies on its biology and habitats, site-specific information regarding sun bear occurrence is scarce and there are few reliable estimates of population status or trends.



In 2012, Ngoprasert et al. (2012) provided the first density estimates of *Ursus thibetanus* and *H. malayanus* in Khao Yai National Park, Thailand, using photographic capture-recapture sampling. Individual identification was possible from the unique pattern of each bear's chest-mark. We are testing a similar approach for *H. m. eurispylus* at the Bornean Sun Bear Conservation Centre (BSBCC) in Malaysia, and are also testing methods for snagging sun bear hair to collect genetic samples. The height of

(left) Sun bears typically possess a crescent-shaped chest patch that is yellowish or white in color, with a pattern of dark spots. (center left to right) Individual sun bears possess unique chest patterns, which facilitates individual identification.

(left) A sun bear crossing a hair-snagging device in the rainforest enclosure at the Bornean Sun Bear Conservation Centre. Two cables wrapped with duct tape were set at different heights (0.20m and 0.35m) 0.5 m apart and covered with duct tape to snag sun bear hair. The second cable succeeded in securing hair if the bear avoided the first cable by crawling underneath it. The tape functioned well in the rain and high humidity typical of rainforest conditions in Sabah. (center) Two sun bears with different chest-marks approaching the bait. (right) A captive sun bear standing up to grab the bait.

the remote cameras and bait stations were modified for the smaller size of *H. m. eurispylus.* Two camera traps were set 3.5 m to 4.0 m away from bait at a height of 0.6 m. Bait consisting of peanut butter and honey was placed inside a piece of fire hose and tied 1.5 m above the ground. Bears were able to reach the bait by standing up on their hind legs and exposing their chest markings to the remote cameras.

Sun bear hair is shorter in comparison to other bear species and lacks underfur, which makes traditional barbed wire hair traps and alligator clips less effective at snagging hair (Gardner et al. 2010). Instead, we used a double-steel cable covered with duct tape set 0.35 m and 0.2 m from the ground. Hairs with follicles were successfully collected with this approach and the duct tape remained sticky for more than 10 days despite daily showers and humid conditions.

We will be applying these methods in the field to collect data from a 100-km^2 area at Tabin Wildlife Reserve to gain insights into the population status, distribution, and genetics of sun bears in this area. This study is supported by Sunway University (Malaysia); Lancaster University (UK); the Bornean Sun Bear Conservation Centre, and the International Association for Bear Research and Management.

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More Reflections of Black Bear Harvest Management

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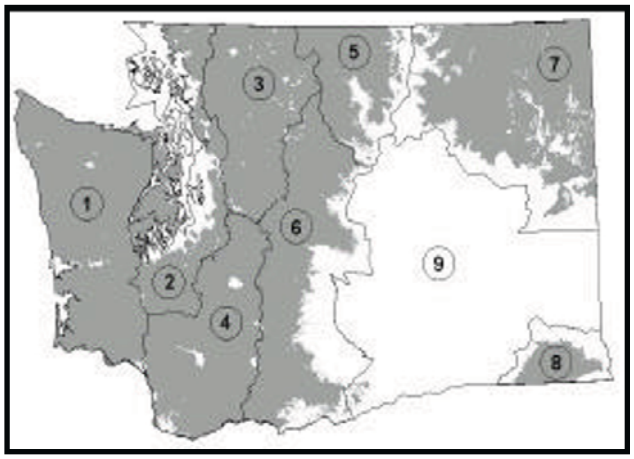
If you are an agency black bear manager or not, there are at least 2 articles not available in the peer-reviewed literature, but absolutely of high caliber, that have been published in Black Bear Workshop proceedings that I highly recommend you read; Garshelis (1990) and Clark (1999). I appreciate what these gentlemen have contributed to our field, they are both leading bear researchers but they also both have considerable experience as agency bear managers. This makes their work of significant value to managers because they understand the decisions that we need to make with imperfect data. These 2 articles occupy my mind considerably when I review bear harvest data and our team tries to interpret those statistics.



Black bear distribution and black bear management units (BBMUs) in Washington.

Like other agencies, in Washington we collect annual harvest and hunt information including bear harvest by sex, hunt participation, hunter effort, % hunter success, #days hunted per kill, % female in the harvest, and median ages by sex. We then use general harvest guidelines to evaluate our level of concern. Most agencies use a similar general formula as explained by Garshelis (1990). In Washington, the state is divided into 9 black bear management units (BBMUs), each of which is comprised of approximately 15 Game Management Units (GMUs). Harvest levels of course vary between BBMUs depending on hunter access, local population dynamics, habitat and environmental conditions. We apply the guidelines in Table 1 to each BBMU and if modifications to harvest levels were necessary they would be proposed on a three-year rotation through the Fish and Wildlife Commission process.

Throughout my career in this state, so far I have not seen harvest be a potential issue using these guidelines. Is that because everything is ok? It's possible. But I ask myself questions similar to those asked by Garshelis (1990) regarding data analysis and I take seriously the sensitivity analysis and discussion of population growth made by Clark (1999) and wonder if a guideline that offers females 1-2 reproductive litters is ideal. But I also wonder whether we are analyzing data at the appropriate scale. As I briefly mentioned in a spring 2015 IBN article, interpretation of kill statistics at too large a scale can be misleading. My team conducted an analysis in 1 BBMU where female harvest averaged 31% of the total kill, well below our acceptable guideline and actually qualifying for a more liberal harvest. However, when analyzed at the GMU level over a decade the 35% female guideline was exceeded 45% of the time (range =39-67%) in some GMU's. Might smaller BBMU's or simply using the GMU level address this concern and allow a more refined management approach? There are similar questions regarding tooth collection and the use mean or median age that were also discussed by Garshelis (1990). We informally discussed age criteria at an evening session at the 12th Western Black Bear Workshop in Alberta, Canada when we learned some managers were questioning whether tooth collection was even necessary because guidelines are so rarely violated. In an exchange I had with John Beecham, he asked the group what they thought about using a percentage of older age classes as a potential harvest management guideline

General black bear harvest guidelines used in Washington (Game Management Plan 2015)

	Harvest		
Parameter	**Liberalize**	**Acceptable**	**Restrict**
% Female in harvest	< 35%	35-39%	> 39%
Median age of harvested females	> 6 years old	5-6 years old	< 5 years old
Median age of harvested males	> 4 years old	2-4 years old	< 2 years old

Manager's Corner

(e.g. X% of 10+ year olds in the harvest). That's an interesting consideration.

I think it's safe to say that as bear managers we should never be on "management cruise control" and we should always question our interpretation of the data. Thanks to people like Garshelis, Clark, Beecham, and many other IBA members, I always will. I am hoping to start a discussion on these and other topics on the manager's internet forum so please watch for it and consider offering your input. For those that have not yet discovered the articles I mentioned, any many, many more, every proceedings of the Eastern and Western Black Bear Workshop is available electronically for free download on IBA's website at *www.bearbiology.com* under IBA/Managers Corner/Black Bear Workshops.

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Conference Announcements

25th International Conference on Bear Research & Management November 12 - 17, 2017 QUITO, ECUADOR

For the 25th International Conference on Bear Research and Management, the Planning Committee 2017 has chosen to focus on "*New frontiers for bear Research and Conservation in the Tropics*". The theme was specially selected by the Scientific Committee regarding that bears in tropical areas are the most endangered but the less studied. We especially encourage papers with aspects on ex situ conservation, bears of the world, Andean bear research and conservation, ecology and biology, genetics, bear management and climate change, environmental awareness.

This is the first time the Conference is taking place in South America. Quito, the capital of Ecuador, will host the Conference from November 12th to 17th, 2017. The historic center of Quito has one of the largest, least-altered and best-preserved historic centers in the Americas. Quito and Krakow, Poland, were the first World Cultural Heritage Sites declared by UNESCO, in 1978. The central square of Quito is located about 25 kilometers (16 miles) south of the equator and at an elevation of 2,850 meters (9,350 feet) above sea level. It is the highest official capital city in the world and the one which is closest to the equator.

Quito is possibly one of the richest districts in the world regarding bird species biodiversity. There are over 550 bird species registered specially in the Northwest where you can find the best kept Andean forests in the District and where an important population of Andean bears lives. Furthermore, Quito is the home of 400 orchids, 112 mammals, 53 reptiles and 92 amphibians.

Come to enjoy the city as well as exchanging experiences on bear research & conservation. Look for more details on lodging, air travel, registration and call for abstracts in our official website that is coming soon in December.

Important dates:

- Call for Abstracts December 01, 2016
- Submission Deadline March 15, 2017
- Acceptance Notification June 01, 2017

As soon as the conference website is active a link to it will be posted on the IBA website (*http://www.bearbiology.com/index.php?id=conf01*).

Andean bear.

Online Professional Networking for Students

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Students are repeatedly told the importance of networking but feel intimidated to approach people that they revere and forget that their peers in their courses and day to day life are their network as well. Networking in person (at conferences, workshops, networking events, etc.) I will save for another time. In this column are some tips on online networking.

Some of you may feel that you already network via social media (e.g. Facebook, Twitter, Instagram) and although that is true it is most likely you are only networking to your personal network. There may be professional contacts in that personal network but what you share within each network is important. Your professional network doesn't want to see your family vacation photos, drunk photos, reshares of funny cat videos, or that you broke a toe on your coffee table. Your professional network are interested in what you are doing for your career, techniques you are developing, challenges you are experiencing, articles published, or articles that you find interesting. Some people find it useful to have two accounts on the same platform, one personal and one professional.

There are many options for online professional networking and the pros and cons depend on the field you are in, if you are looking for a job, and who you want to connect with. Networking can give you access to jobs that are not posted and are passed along via the email/social media pipeline. Also, don't limit your network to just people within a narrow field, people on the fringe or in other fields may have connections that will help you with a job search or future career as well.

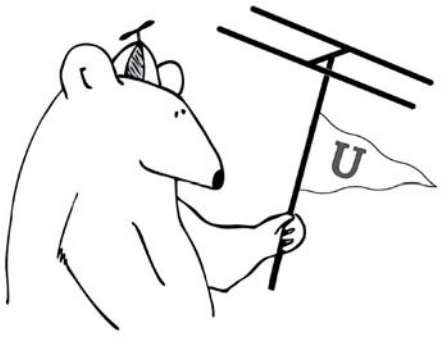
If you join one of the many professional network sites (e.g. LinkedIn, ResearchGate, Academia.edu) take the time to build a strong, accurate profile and relevant network connections. Building a network can be done multiple ways, e.g. search for people you know in your field by name or email and/or connect to your email address book to 'Find Connections'. Some networking sites are one-way: have open profiles where anyone can see your full profile and you can 'Follow' other member profiles (changes to profiles are emailed to you); others are two-way: show partial profiles to everyone and require a connection between two people (invite & acceptance of invite means they follow you back) to see full profiles (changes to profiles are emailed to you). Most of these sites encourage posting (updates, links to/comments on interesting articles you wrote or read), some encourage questions which your network or the wider network can see and answer.

So check out the various online networking sites, see what's out there and which you prefer, and remember, you don't have to pick just one, cross-platform networking will reach different audiences and may benefit you in different ways. And in the future you never know, you may meet up with or bump into one of your online network contacts at a conference or meeting and that first in-person conversation might not be so stressful for you.

Student Forum

Truman Listserv and Facebook Page

- Discussions pertaining to bear biology, management, or study design challenges
- Assistance with proposals and study design through IBA professionals
- Job searches, announcements, information regarding the IBA and student membership
- Planning for IBA student activities and meetings
- IBA membership is encouraged, but not required, for initial sign-up



Listserv Signup Instructions

- Visit: *http://www.bearbiology.com/iba/stu.html*
- Follow the links to request an invitation
- If you're a new member, please submit a paragraph about your project and include your contact information so we can all get to know you.

Facebook Signup Instructions

- Visit: *https://facebook.com/groups/IBA.Conference/*

Job & Volunteer Postings

PhD Graduate Student Wanted

PhD graduate student opportunity in an international collaboration. Project involves using captive grizzly bears at the Washington State University Bear Center to:

1. Explore the use of collar-mounted and implantable activity sensors and heart rate to identify discrete bear behaviors.
2. Measure the energetic costs of movement and other activities using a treadmill and indirect calorimetry.
3. Develop a model using the above information to accurately estimate activities, their costs, and daily or seasonal energy expenditure of foraging bears.

Project will involve close interaction, observation, and training of grizzly bears on a daily basis. Linkages to field research programs and field data will form part of the project. A student that already has an MSc with strong computer and statistical skills along with some experience publishing and working in a team environment is preferred.

Project is expected to last 4 years. Student will be supported through assistantships (research or teaching). Expected start date: May 2017. Application deadline is January 15, 2017.

Contact Dr. Charles Robbins at ctrobbins@wsu.edu for more information.

Publications

Recent Bear Literature

Marion Schneider
Email: mfschneider@gmx.de

If you have a recently published article please email the citation for inclusion in the next issue of Recent Bear Literature. The deadlines for the next issues are:

- Spring Issue: 5 February: Agnieszka Sergiel: agasergiel@gmail.com
- Summer Issue: 5 June: Agnes Pelletier: asg.pelletier@gmail.com
- Fall Issue: 5 October: Marion Schneider: mfschneider@gmx.de

For easy access to articles, we are including the DOI citation and corresponding author email address, if available. To open articles from their DOI, enter the DOI citation in the text box provided at the following website: *http://dx.doi.org*

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Terms for membership in the IUCN Bear Specialist Group expired in early September, 2016, coincident with the World Conservation Congress, and election of new Species Survival Commission (SSC) Chair, Jon Paul Rodriguez (replacing Simon Stuart). Coincidentally, one of Jon Paul's first peer-reviewed papers was on Andean bears, and he presented this at the 9th IBA conference in Missoula, Montana in 1992.

We were reappointed as co-chairs of the BSG, and at the time of preparation of this newsletter, were in the process of appointing chairs of the BSG Expert Teams. The list of chairs will be shown in the next and all forthcoming issues of IBN.

If you are currently not a BSG member but wish to be considered for membership, please send us an email explaining your interest in the BSG and how you think you can contribute to the organization and to bear conservation.

D. Garshelis.

Simon Stuart (center) and his immediate staff were celebrated for their indomitable work in species conservation at the 6th World Conservation Congress, September, 2016, in Honolulu, Hawaii.

Bear Specialist Group

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About the International Association for Bear Research and Management (IBA)

The International Association for Bear Research and Management (IBA) is a non-profit tax-exempt organization open to professional biologists, wildlife managers, and others dedicated to the conservation of all bear species. The organization has approxmiately 500 members from over 50 countries. It supports the scientific management of bears through research and distribution of information. The IBA sponsors international conferences on all aspects of bear biology, ecology, and management. The proceedings are published as peer-reviewed scientific papers in the journal Ursus.

IBA Mission Statement

Goal: The goal of the International Association for Bear Research and Management (IBA) is to promote the conservation and restoration of the world's bears through science-based research, management, and education.

Objectives: In support of this goal, IBA's objectives are to:

1. Promote and foster well-designed research of the highest professional standards.
2. Develop and promote sound stewardship of the world's bears through scientifically based population and habitat management.
3. Publish and distribute, through its conferences and publications, peer-reviewed scientific and technical information of high quality addressing broad issues of ecology, conservation, and management.
4. Encourage communication and collaboration across scientific disciplines and among bear researchers and managers through conferences, workshops, and newsletters.
5. Increase public awareness and understanding of bear ecology, conservation, and management by encouraging the translation of technical information into popular literature and other media, as well as through other educational forums.
6. Encourage the professional growth and development of our members.
7. Provide professional counsel and advice on issues of natural resource policy related to bear management and conservation.
8. Maintain the highest standards of professional ethics and scientific integrity.
9. Encourage full international participation in the IBA through the siting of conferences, active recruitment of international members and officers, and through financial support for international research, travel to meetings, memberships, and journal subscriptions.
10. Through its integrated relationship with the Bear Specialist Group of the World Conservation Union (IUCN)/Species Survival Commission, identify priorities in bear research and management and recruit project proposals to the IBA Grants Program that address these priorities.
11. Build an endowment and a future funding base to provide ongoing support for IBA core functions and for the IBA Grants Program.
12. Support innovative solutions to bear conservation dilemmas that involve local communities as well as national or regional governments and, to the extent possible, address their needs without compromising bear conservation, recognizing that conservation is most successful where human communities are stable and can see the benefits of conservation efforts.
13. Form partnerships with other institutions to achieve conservation goals, where partnerships could provide additional funding, knowledge of geographical areas, or expertise in scientific or non-scientific sectors.

Deadline for the Spring 2017 issue is 5 February 2017