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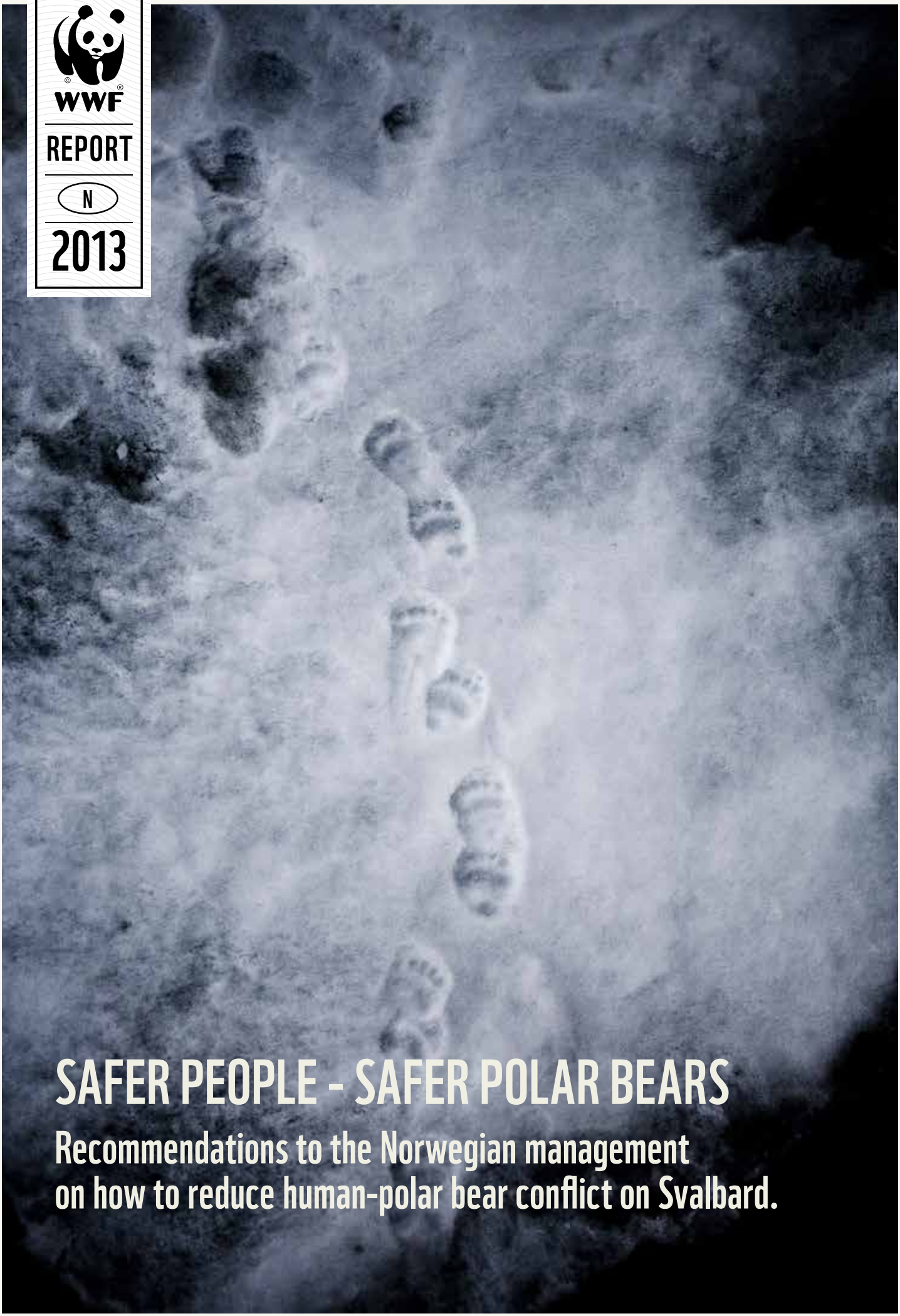

SAFER PEOPLE - SAFER POLAR BEARS

Recommendations to the Norwegian management on how to reduce human-polar bear conflict on Svalbard.

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diversity, ensuring that the use of renewable natural resources
is sustainable, and promoting.

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Polar bear *(Ursus maritimus)* with head covered in blood walking on ice flow, Spitsbergen, Norway.

SUMMARY

Sea ice conditions are rapidly deteriorating due to global warming. This is resulting in increased polar bears *(Ursus Maritimus)* spending more of their time ashore, in a state of heightened hunger. Due to the loss of important sea ice hunting grounds, polar bears are facing an uncertain future.

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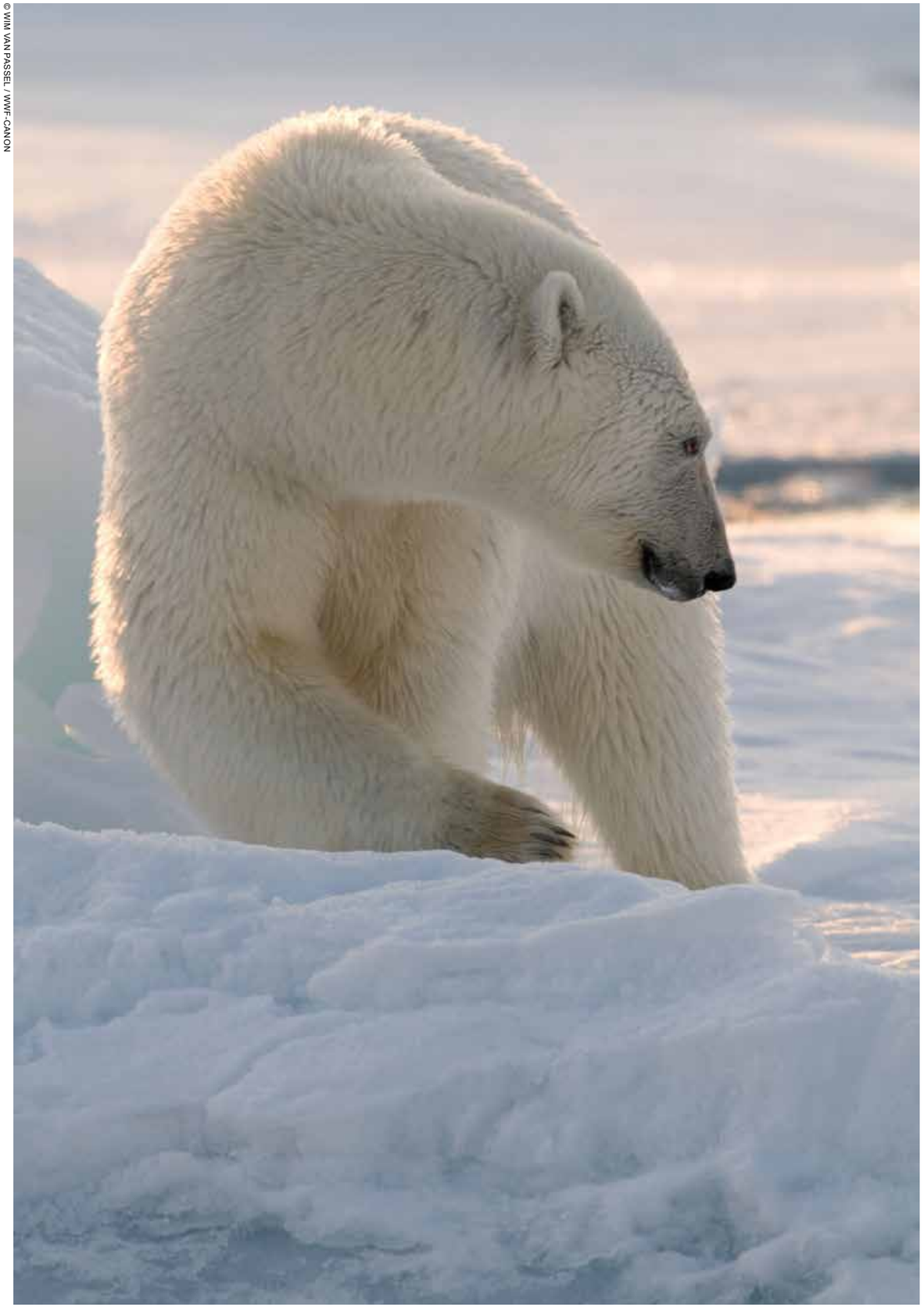
Polar bear road sign, Longyearbyen, Svalbard, Norway.

A MAJOR COMPONENT OF POLAR BEAR MANAGEMENT IN TIMES TO COME WILL BE TO MINIMIZE UNNECESSARY INTERACTIONS WITH POLAR BEARS

Moreover, less sea ice is increasing the accessibility of polar bear territory to human activity. These factors are likely a major contribution to the rise in polar bear–human encounters. An increase in interaction between polar bears and humans is giving rise to more conflict situations where both bears and people are harmed. There is reason to believe that many such incidents could be avoided if appropriate preventive or deterrence measures were applied. A major component of polar bear management in times to come will be to minimize unnecessary interactions with polar bears, and as such will be an important component of Arctic climate change adaptation through minimizing unnecessary polar bear fatalities. In February 2013, WWF organised a human-polar bear conflict reduction and mitigation workshop in Tromsø, Norway, with practitioners and experts from across the polar bear range states. This report is based on the summary of discussions that are most useful and applicable to the situation for human polar bear interaction on Svalbard. Three main topics arose from the workshop; standards of practice for tourism, the efficacy and need for allowing bear spray on Svalbard, and the need for maintaining a pan-Arctic database on the interactions of between humans and polar bears, to benefit state of the art management.

Recommendations to Norwegian policy and decision makers are listed in conclusion.



Polar bear, Svalbard, Norway.

INTRODUCTION

Researchers and local communities in the Arctic report increasing interaction between humans and polar bears *(Ursus Maritimus)* since the 1970s and relate this partially to deteriorating sea ice conditions resulting from global warming.

This deterioration entails early break-up of the sea ice in the spring, making it more difficult for polar bears to access the sea ice on which they rely to hunt their main prey: seals *(Pinnipedia)* with offspring. The timing of female polar bears to come out of their maternity dens with their cubs in the springtime is closely associated with the timing of pupping of these sea-ice bound seals. The result is that an increasing number of polar bears spend longer durations of the year ashore. Increased shore-time coupled with increased accessibility of polar bear territory to tourism, research, and industry not only results in increased likelihood of polar bear – human en-counters, but also in an increasing number of nutritionally stressed bears seeking out meals associated with human settlements and activities[1-5,1].

ENSURING THE SAFE COEXISTENCE OF PEOPLE AND POLAR BEARS WILL BE AN IMPORTANT COMPONENT OF ARCTIC CLIMATE CHANGE ADAPTATION IN COMING YEARS

Increased polar bear-human interaction is resulting in conflicts, primarily to the disadvantage of the bears[5-7]. On Svalbard an average of two bears are killed a year in perceived self-defence, and attacks on tourists have caused death and serious injury to people as well[1]. The loss of polar bears to conflicts comes as an additional potential stress to their populations which across the Arctic face an uncertain future due to rapid loss and change of habitat, as well as reduced health and reproduction due to bio-magnification of environmental toxins[8]. There is reason to believe that many incidents could have been prevented if appropriate preventive or deterrence measures were applied. Management can contribute to maintaining polar bear populations by minimizing polar bear deaths resulting from negative bear-human interactions, and the necessity for measures to minimize the potential of human-polar bear conflicts has become clear in recent years. In the different countries initiatives are underway and there are many preliminary lessons to be learned between and within the different Arctic countries on best practices to reduce and minimize human-polar bear conflicts. A pan-Arctic sharing of best available knowledge, fitted and applied to local needs is needed to ensure further development of appropriate intervention measures and to mainstream functional techniques and approaches across larger areas. Ensuring the safe coexistence of people and polar bears will be an important component of Arctic climate change adaptation in coming years.

In February 26-28 2013, WWF organised a human-polar bear conflict reduction and mitigation workshop[1] in Tromsø, Norway, with practitioners and experts from across the polar bear range states[2]. Brought together were over 35 professionals from Canada, Greenland, Norway, Greenland, Russia, USA, UK and The Netherlands who have experience with human-polar bear conflicts and polar bear conservation in a variety of professions[3]. The workshop's purpose and questions raised were:

- Sharing best practises in human-polar bear conflict prevention and mitigation measures from across the Arctic: What are best practices and lessons learned? What additional measures would be applicable to Svalbard?
- How to further improve the storage and retrieval of basic parameters in the circum-Arctic Polar Bear Human Interaction Management System (PBHIMS).

Three main topics arose from the workshop

- Standards of practice for tourism
- The efficacy and need for allowing bear spray on Svalbard
- The need for a pan-Arctic maintained database on the interactions of between humans and polar bears, to benefit state of the art management

Through the insight gained on these three principal topics everyone involved in polar bear management, conflict mitigation, or research will have an intrinsic interest in and benefit from reading this report.

This report is supplemented where necessary with relevant background literature, and gives recommendations to Norwegian policy and decision makers.

VENTURING REQUIRES COMPETENCE

Svalbard is the only European destination which is accessible enough to attract flocks of visitors hoping to see polar bears in their natural domain. Most visitors generally travel with guides, and usually stay only a short time.

Clear distinctions exist however between land-based tourism which is often small self-containing groups overnighting within polar bear territory, and cruise based tourism which is often in larger groups that only daytrip on land, often under experienced guides. These two categories of travellers entail different needs with respect to preventing interactions with polar bears. While it is strictly forbidden to seek out bears, sightings are not uncommon for both visitors and residents. About 2 bears are shot per year on average in defence of life and property by both visitors[4] and residents, and the last incidences involving human death or injury were in 2010 and 2011 involving tourists[5]. If a so-called problem bear[6] is identified in the surrounding area of a settlement, the preferred line of action is to haze[7] or translocate, rather than shooting it. The Svalbard authorities have a number of rules and guidelines in place to safeguard bears and people. The revised version of the Svalbard Environmental Act[8] has provisions on protection against polar bear attacks:

- Anyone travelling outside settlements, except for visitors and residents who participate in organized hikes, are required to have knowledge on protection against polar bear attacks. Necessary measures shall be implemented to avoid the danger of attack from polar bears and to avert such an attack without damage or kill the animal.
- Anyone travelling outside settlements, except for visitors and residents who participate in organized hikes, shall have appropriate means of intimidation and driving off polar bears.

It is clear that a great deal of responsibility is laid on tourism operators to possess the knowledge and means to keep their customers, and the objects of their interest, safe from one another. In the latter provision, *have appropriate means* is currently the Svalbard Authority's guideline of carrying a firearm as the primary line of defence and deterrence, accompanied by a small arsenal of secondary deterrents[9] depending on the nature of the undertaking while in polar bear country. The Svalbard Tourism Board has gone further by writing guidelines which are to minimize negative encounters including standards of practice for guides when bears are observed:

- Do not pursue polar bears;
- If a polar bear approaches at 70 to 100 meters, guides must withdraw their group, then discharge warning shots and signal flare as deterrence;
- If polar bear at 40-30 meters is non-responsive to deterrence and continues approach, lethal defence is advised.

Though it is unadvised for visitors to travel around in polar bear territory without an experienced guide, there is currently no standardized requirement for the level of experience and knowledge of either guides, lone visitorsor researchers, who take groups into polar bear territory, other than firearms competency.

Dog sled tourism, Svalbard, Norway

FOREMOST IN OUR MINDS SHOULD BE HOW WE CAN AVOID CONFLICTS

One of the Svalbard related presentations at WWF's workshop sparked a discussion about a current "fear based" approach in polar bear conflict management. It was put forth that the firearm carriage requirement, as well as the advice to shoot bears approaching closer than 40 meters, reinforces a fear-based premise of polar bears being dangerous and deserving of death if a person feels threatened. Furthermore, that the requirement to carry a firearm puts many carriers in an escalated, pro-conflict mind state, while the optimal mind state should be conflict avoidance. Logically, a potentially dangerous encounter could be more quickly recognised if one was not reliant on solving such a situation with lethal force. Carriage of firearms can also results in panic reactions which worsen the situation. It was argued that uneducated travellers with rifles, including guides, are the biggest danger and will result in episodes of avoidable human bear interaction with tragic outcomes. Though WWF does not endorse the banning of firearm carriage as a means of last line defence against polar bears, WWF does rather support that management combine firearm carriage and mandatory competency with a clear empathy mind-set and knowledge based approach.

BEAR SPRAY IS A VERY EFFECTIVE POLAR BEAR DETERRENT

At the WWF polar bear human conflict workshop, extra attention was paid to the use and effectiveness of capsaicin[10]-based deterrent spray on polar bears. Also known as pepper spray, and as a specially concocted bear deterrent known as bear spray, it can be an important part of one's polar bear deterrent arsenal. An aerosol can which is carried on one's person at all times discharges spurts of atomized capsaicin in clouds up to eight metres.

The capsaicin causes the membranes of the eyes, nose and lungs of the receiver to swell with a strong burning sensation. This results in considerable discomfort with temporarily impaired vision and breathing. To be effective, the capsaicin must make contact with the eyes and nose of the bear. The issue of carrying bear spray is certainly not a case of using it explicitly as an alternative to lethal force by firearms. It is one of a number of options that should be included when other long range deterrents have failed, or if one has the opportunity to use if from safe vantage point such as a structure or vehicle [1]. Not only does it save lives, it also educates polar bears and deescalates human-bear encounters. Before the actual spray reaches the bear, the animal is often startled by the sound the spray makes when released in the air. Further to the value of using bear spray, there are a large number of observations giving credence to bear spray's effectiveness in adversely conditioning bears, including polar bears, to avoid seeking out people and their infrastructure[1,10], more so than the use of firearms as warning.

In Norway, capsicum-based deterrent sprays, including the bear deterrent versions, are considered weapons and require special permits for carriage that are seldom granted. The allowance of bear spray in Norway's Arctic is a topic of debate. Currently, the carriage and use of bear spray against polar bears is not supported by the authorities on Svalbard[11]. As per policy all applications to the Svalbard authorities for acquisition and carriage of certified bear spray are currently denied. Svalbard authorities justify this foremost through their recommendation that the primarily line of polar bear defence be the rifle, while the secondary line of defence be the signal pistiol[11]. The Svalbard authorities are critical to the use of bear spray, citing their consideration of its short range and that if one is surprised by a polar bear or feel threatened at close range, that deadly force can legally be exercised. Furthermore the authorities believe that the signal pistol is adequate also in emergency situations when bears suddenly show up. Further reasons for bear spray's disallowance are based on scepticism towards its effectiveness, and application under arctic conditions such as sub-freezing temperatures and wind. Also cited is what they consider to be a lack of knowledge on bear spray contents in the event that a carrier accidently sprays themselves. There is however a growing pool of knowledge on the efficacy of bear spray as a deterrent, including situations involving polar bears.

Examples of use

A study by Smith *et al.* (2008)[12] on the efficacy of bear deterrent spray in Alaska concludes with a recommendation that bear spray represents an effective non-lethal alternative to firearms and should be considered as an option for personal safety in bear country. In 72 cases where individuals sprayed bears with capsaicin in defence, the bears' undesirable behaviour was stopped in 92% of the cases when used on brown bears (*U. arctos;* 50 incidences in total) , 90% for black bears (*U. americanus;* 20 incidences in total), and 100% for polar bears (*U. maritimus*; 2 incidences in total). Of all carriers of capsaicin sprays that experienced altercations with bears, 98% were uninjured, while 3 only suffered minor injuries (no hospitalization required) by brown bears. Wind reportedly interfered with spray accuracy in 7% of cases, yet always reached the bear. In only 14% of spray incidents, users reported negative side effects upon themselves ranging from minor irritation (11%) to near incapacitation (3%). Both polar bear incidents involved sub-adult bears approaching humans in a vehicle parked to observe bears feeding on the remains of bowhead whale (*Balaena mysticetus*) near a village. Neither of these bears returned to the truck following spraying. Although mentioned but not included in the study's dataset were two additional polar bear incidents from Russia and one from Canada, which supported Smith et. al.'s findings[13,14]. Furthermore, another Smith *et al.* study (2012)[15] on the efficacy of firearms for bear deterrence in Alaska, based on 269 incidents, contrasts the recommendations of the Svalbard authorities regarding firearms carriage and usage. Here it was found that firearm bearers suffered equivalent injury rates from altercations with bears, regardless of whether they used their firearms or not. Firearms were successfully used for deterrence in only 3 of 6 documented conflicts with polar bears.

ACCORDING TO THE US FISH AND WILDLIFE SERVICE, IN 12 OF 38 INCIDENCES BEAR SPRAY COULD HAVE SAVED LIVES OF BOTH PEOPLE AND BEARS, HAD IT BEEN AVAILABLE

James Wilder with the Anchorage US Fish & Wildlife Service, and co- author of the Smith, *et. al.* (2008) publication, presented an expanded pan-Arctic dataset[11] on the efficacy of bear spray specifically on polar bears at WWF's Polar Bear-Human Conflict Workshop[10]. Wilder has collected data from available sources on use of bear spray to deter polar bears, summing up to 14 documented cases (Canada: 7, Russia: 4, U.S.A: 3). In 13 of the 14 cases, bear spray stopped undesirable behaviour of a polar bear. No polar bears or humans were killed or injured in the 14 incidents in which bear spray was used. In only one case, the use of a rubber shotgun slug was required to make the bear leave the area. Three incidences of successful use involved stopping attacks, including one that involved a mother bear with offspring. In two other incidents polar bears exhibited persistent aggressive behaviour which was successfully altered by the use of bear spray after other deterrent efforts failed. In five of the 13 incidents of successful use, other common methods of deterrence[12] were employed without success prior to successfully using bear spray. In the 14 incidences the mean distance from the user and the polar bear when first seen was 24 meters, while the mean distance between the user and the polar bear when sprayed was 2 meters.

Wilder further described a dataset of 38 polar bear attacks and attempted attacks from Norway and the U.S. Two people were injured, three lost their lives, while 11 bears lost their lives. According to, in 12 of these incidences bear spray could have saved lives of both people and bears, had it been available. This entails that I; the polar bear was first sighted at an adequate distance, II; that the interaction lasted an adequate length of time, and III; other deterrents were administered and failed[13].

A GAME-CHANGING MANAGEMENT TOOL

The greatest challenge to sound management of polar bears, particularly in regard to the human interaction aspect, is the lack of knowledge[1,16].

Quantifiable data human-polar bear interactions and conflicts is sporadic. Reported incidents are incomplete in terms of variables that are relevant for knowledge based decision making, and analysis is hampered by lack of standardized record keeping across the polar bear range states. Because it is expected that interactions and conflicts between humans and polar bears will be an increasing issue in the future, it is imperative that polar bear managers assemble a database of critical information related to bear-human interactions. In March 2009 the Polar Bear Range State representatives met in Tromsø, Norway. There the U.S. in collaboration with Norway was tasked with leading an initiative to establish a polar bear- human interaction database for review at the next Range States Meeting in Canada in 2011. This initiative titled Polar Bear Human Interaction Management System (PBHIMS), has the goal of preventing injuries and death of polar bears and people through informing management with quantifiable data on human-polar bear interactions. The objective is to develop a user-friendly, Range State-wide database of bear-human interaction and natural history information that can analyse key variables associated with bear-human interactions linked with a spatial display format.

Three main types of data, historical and current, are stored in the PBHIMS; Polar bear sightings, interactions (i.e. encounters and incidents), natural history, and management data (Figure 1) . According to Wilder (2012) PBHIMS benefits Human Safety and the conservation of polar bears through:

- Storing all polar bear data in one dynamic system and thereby establishing “institutional memory” on the data collected.
- Pinpointing hotspots (cause & location) to focus resources and efforts.
- Tracking hotspots of conflict through time.
- Tracking individual problem bears.
- Analysing effectiveness of different deterrence techniques.
- Tracking and analysing unusual natural history events such as polar bear starvation, drowning, and intra-specific predation events.
- Determining common causes of bear-human incidents and developing management plans accordingly.
- Analysing the effectiveness of bear management plans over time.
- Developing specific bear awareness/safety education materials based on local/ regional issues.
- Tracking performance of compensation & prevention schemes will give credence the funding base of such programs[1].
- Contributing to educating people on conflict prevention and deterrence, also help to educate the bears that encounter those people.

THE POLAR BEAR-HUMAN INTERACTION MANAGEMENT SYSTEM

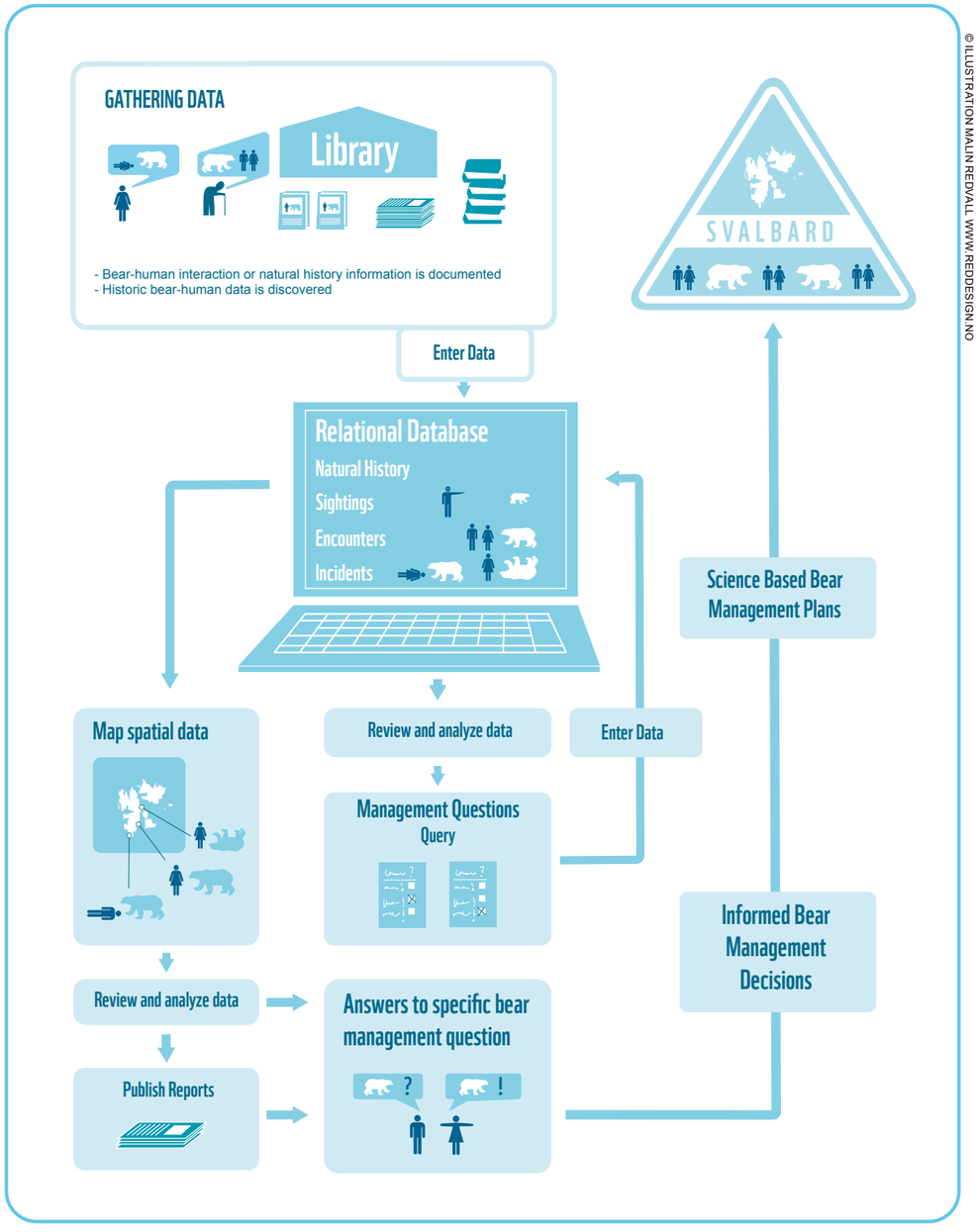


Figure 3: Flow chart of how the Polar Bear Human Interaction Management System functions to improve polar bear management[17].

At the 2011 Range state meeting, the U.S. / Norwegian PBHIMS pilot was well received and it was agreed upon to further its development and implementation through a group comprised of members approved by each Range State. The work at this point thus consists of PBHIMS being populated with information. The U.S. and Norway, as pilots, have completed this task, with Greenland and Canada underway and Russia still in need of implementation. The web based application is being developed to aide decentralized access for managers and public. It is hoped that the PBHIMS application will be deployed and taken into use by polar bear managers by 2015. The main threats to the full deployment of this important tool is the lack of long-term allocated resources, both financial and human, from each range state to maintain their responsibility toward quality data entry, storage and maintenance. Current needs in this respect are mentioned in the report appendix. It is imperative that this issue be resolved through clear commitments from each range state to actively participate and contribute. As stated at WWF's human-polar bear conflict reduction and mitigation workshop;

"If everyone in bear country behaved properly all of the time, and were educated in bear behaviour and how to properly interact with them, we would truly conserve a great many bears, and protect the people those bears encountered as well[17]."

Polar bear (Ursus maritimus) walking on ice, Svalbard, Norway, June 2007

SAFER PEOPLE AND SAFER POLAR BEARS

The high Arctic, an extreme environment which has demanded heighted adaptation for the life that thrives here, is in the dawn of unprecedented change.Challenges and opportunities are materializing, but continued thriving in this transforming region will demand even greater adaption, also to the human inhabitants and visitors.

Adaptation includes how human inhabitants and visitors of the Arctic learn, share, and practice best methods of management of their region's biodiversity. For the polar bear, a large amount of stress to their continued existence will be alleviated when all the below recommendation are followed, not only in Norway, but across the Range Stages. Both polar bear and humans will live safer lives.

Tourism

- Leaders of any form of organised party venturing into polar bear territory must be qualified according to a standardized list of required experience, knowledge, and equipment carriage, established by Norwegian management bodies. It is further desired that Norwegian authorities take a lead in working to establish that an equivalent set of tour operator prerequisites be applied in all range states with their cooperation.

Conflict mitigation plans

- The relevant Norwegian management bodies and Svalbard authorities must cooperate on the development of a polar bear-human conflict reduction plan, in line with the Range States polar bear conservation plan.
- The relevant Norwegian management and authority bodies must cooperate on the development of a standardized and comprehensive conflict mitigation training manual, with video material, with the long term goal of cooperating with the other range states on making a standardized plan for the entire Arctic.

Bear spray

- The Norwegian Polar institute should conduct a compressive literature and field study on the effectiveness and applicability of bear spray and other close-range deterrents on polar bears.
- Until the concerns of the Svalbard Authorities about the effectiveness and applicability of bear spray can be confirmed, both the Norwegian Ministry of the Environment and Environment Agency should, based on existing knowledge, instruct the authorities of Svalbard to allow the optional carriage of certified bear spray as part of an obligatory deterrent and defence arsenal for individuals venturing into Norway's polar bear territory.
- A combination of understanding and learning regarding deterrent and defence approaches must be encouraged by authorities and tour operators in Svalbard.

Knowledge needs

- The relevant Norwegian management bodies and Svalbard authorities must cooperate on a comprehensive field study of the effectiveness of available deterrence and prevention measures.

Polar bear human interaction management system

- It is a matter of utmost importance that the relevant Norwegian management bodies and Svalbard authorities coordinate on ensuring full range state cooperation and commitment of necessary financial and human resources towards implementing and maintaining this system. If fully implemented PBHIMS is likely to be the cornerstone of future conflict mitigation.

When all of these core needs are met by Norwegian authorities, Svalbard will truly be a star example of successful approaches in minimising harm and conflicts between humans and polar bears.

Polar bear (Ursus maritimus) standing upright, on his hind legs, and sniffing the air, Spitsbergen, Svalbard, Norway.

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ENDNOTES

1. Southern Beaufort Sea, and the Western Hudson Bay, areas of Green land and Russia.
2. To view the Range states, visit this online map belonging to the IUCN/SSC polar bear specialist group, and click on «nations»; http://pbsg.npolar.no/en/dynamic/app/.
3. Conservationists, tour operators/ tourist guides, government, police, local people's organisations.
4. "Visitors" includes not only tourists, but also field researchers.
5. - Tempelfjorden 2011: A British student and group leader were killed, and two others injured by a polar bear while camping on shore with a group of students. The polar bear had passed the trip flare without setting it off and one of the group leaders was unable to unlock his gun.
   - Extremehuken 2010: Two kayakers were attacked while camping on shore. The polar bear broke through the trip wire without setting it off and dragged one person out of the tent. The shotgun was stepped on by the bear and made useless. The second person found the other rifle which was pack away and shot the bear. Victim survived.
6. A problem bear is a bear involved in repeated bear incidents[9].
7. Hazing is a technique where deterrents are administered (independently, simultaneously, or consecutively) to a bear to immediately modify the bear's undesirable behaviour[9]
8. http://oldweb.sysselmannen.no/hovedEnkel.aspx?m=45303
9. Chiefly signal flares and trip-wire activated flares, electric fences.
10. Active component of chili peppers, which are plants belonging to the genus *Capsicum;* http://bit.ly/10HSaeQ
11. As part of data collection initiative for the PBHMS.
12. Rifle- warning shots, Boat motor, Shotgun- banger rounds, Pistol- banger rounds, Chased bear with ATV, Shotgun- rubber slugs, Dog, Shotgun-warning shots, Yelling, Shaking of "bear rattle".
13. Multiple deterrents were used without success in 8 of the 12 incidents.

APPENDIX: NEEDS ACCORDING TO WORKSHOP PARTICIPANTS, 2013 TROMSØ

The following appendix is extracted from the final day of WWF's workshop, when participants were split into four groups to discuss future possibilities and post workshop follow ups within the following topics; Human Dimensions, Bear Behaviour Research, Tools and Methods, PBHIMS/Data Collection. The following questions guided their discussions after this workshop;

1. What are knowledge/funding gaps?
2. Focal pilot areas in each country?
3. What are the top 3 activities to advance progress in addressing human – wildlife conflict in these sections?

What follows is a concise summary of the topical group suggestions.

Their suggestions and ideas should be taken into regard by polar bear policy/decision makers.

Human dimensions

People (local people, scientists, tourists) need more knowledge and understanding of polar bears, their behaviour and how to respond to that.

1. People judge by situation, everyone has a different perception of risk, so move away from fixed rules. Risk perception is connected to knowledge so important to improve that.
2. Local knowledge should be used for newcomers and guides should do exchange visits with other places.

Exchange visits between northern countries, with use of exchange funds to facilitate this. Important aspects are body language of bears and people.

- Project example; film a group of elders, scientists and at same time bear behaviour towards them. People explain what they see and analyse behaviour. Also analyse videos of human behaviour when interacting with bears. What is proper behaviour and what not? Also on deterrent methods, videos of the effect of a measure on the bear like rubber bullet, electric fence etc.
- This would give a better view of people and bear behaviour and effects of deterrence. People may have a better understanding of that and react more appropriately.
- Could use a videogame with situations to practice, scenarios with variables. For people on shore, in boats, etc.
- Not only 'educate ' people but select situations where it is most needed.

Bear behaviour research

Need expert workshop to compare observed behaviour across species to address questions such as a) how could ecological behaviour be leveraged for better prevention (how do polar bears learn?), b) do polar bears behave similar to other species (general wisdom is they are different but not tested)?

- Suggested Action: expand planned conflict workshop by Doug Clark in Churchill to not just focus on Canada.

Have experts review / interpret bear behaviour queues (yawn, smacking, etc.) on videos linked to described conflict situations.

- Suggested Action: have range states request a study and compilation of videos, etc. Could be a funded research project
- Suggested Action: Team of 2-4 experts visit conflict hotspots (e.g. Kaktovik, Barrow, Churchill, Svalbard, Chukotka) to compare behaviour directly to avoid biases. Report to Range States Meeting.

Connect more with zoo keepers, trainers, and traditional knowledge to exchange knowledge on behaviour (discussed the "Do bears smile" research)

- Suggested Action: Invite to expert workshop.

Which bear behaviours could be influenced by deterrence measures?

- Suggested Action: Design research program on effective deterrence. Some could be tested in Wapusk compounds with Doug Clark's on-going programs.

Tools and methods

Behaviour training needs:

- Knowledge on bear behaviour and ecology, in general and especially as it relates to bears in communities.
- Training and increased knowledge in the available methods of polar bear deterrence.
- Standardized and comprehensive training manual (with accompanying video) to be used by all Range States.
- Workshops for operational staff (e.g. polar bear monitors, eco-tourism leads) throughout the Range States.
- Circumpolar training standards for polar bear monitors (firearms, deterrence techniques, bear behaviour etc.). Reference was made to work done by Andy McMullen in Canada. The idea here is to bring together existing expertise and share it effectively.
- Mandatory, annual refresher courses (i.e. re-qualification) for those on-the-ground in: bear behaviour, firearm use (competence), deterrence training etc.
- Mechanism for sharing of difference experiences with the different tools that are available.
- Legal analysis of tools permitted in the various Range States.

Range state suggestions:

- Canada; Continue work in Churchill/ Wapusk National Park in Manitoba.
- Russia; Renewed connection between the Special Chemistry Institute and the Nature Protection Institute to test pyrotechnic/noise projectiles. Also interested in chemical projectiles.
- Greenland; Use of Greenlandic dogs, especially close to settlements.
- Norway and the United States; Nothing suggested.

Training:

- Manuals, videos, and workshops
- Continued research into "new" techniques, i.e. pepper spray, noise cannons, tasers, new projectiles etc.

Ultimately: circumpolar standards adopted by all Range States.

PBHIMS/ data collection

- Integration of data (sheets) collected by polar bear patrols of North Slope Borough in PBHIMS – after updating PBP data sheets to match of PBHIMS variables (US).
- Adapt Chukotka Polar Bear Patrol data sheets to fit PBHIMS variables as much as possible to be more suitable for local communities (hunters), and then make data sheets available to PBHIMS data entry point person Anatoly Kochnev (Chukotka branch of TINRO).
- Integration of reports (film, pictures) involving encounters with polar bears from scientists & filmers, tour operators, media stations (e.g. BBC) into PBHIMS.
- Translations of database in Russian, 3 native Canadian languages, Greenlandic, French.
- Development of a web-based platform to enter and retrieve data.
- Western Hudson Bay pilot needs to be uploaded in PBHIMS.
- Decide which of the multiple Canadian agencies involved in polar bear management will take responsibility for collecting and uploading data for the other 15 Canadian sub-population.
- Develop a portable app for data forms which can be filled-in anywhere in the field.
- WWF human polar bear conflict demonstration programmes collect data compatible with PBHIMS database variables.
- Russian – English speaking graduate student to work with Edward and Anatoly to collect conflict information in Chukotka.
- Student collecting old conflict records from police reports, newspapers etc. in Greenland.

Knowledge sharing

There needs to be more knowledge sharing between the experts on various bear species regarding behaviour, deterrence, prevention and hunting/predator management.

Funding

- Need to identify clearer budgets on costs of prevention/deterrence programs.
- There should be a concerted effort to look at effective funding mechanisms of conflict mitigation via for example Tourism fees, to establish compensation and response funds, etc.

Safer people - Safer polar bears

2 BEARS

Are shot per year on average in defence of life and property by both visitors and residents.

3000

About 3000 polar bears have their home on Svalbard.

5 ARCTIC STATES

Are responsible for polar bear populations and they must work on managing the polar bears' home in ways that will take into account the Arctic's shrinking ice, and increasing industrial interest.

2013

Marks the 40th anniversary of the 1973 Agreement on the Conservation of PolarBears - a concerted international action to protect this magnificent species and its habitat.

Why we are here
To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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