

Summary of the human-polar bear conflict reduction and mitigation workshop, February 26-28, Tromsø, Norway

Background

Local people and scientist report increasing interaction between humans and polar bears since the 1970's and relate these to deteriorating sea ice conditions (i.e. early break-up in the spring preventing polar bears to reach the sea ice so that they remain on shore). Global warming results in earlier sea ice break up, which forces polar bears to spend longer time on shore where they get in contact with people. Use of land by polar bears during the ice-free season appears to be increasing in certain locations, such as in the Southern Beaufort Sea, and the Western Hudson Bay.

A variety of measures are being implemented throughout the Arctic to reduce the potential of human-polar bear conflicts and to make sure people and bears can live safely in each other's vicinity. Examples are polar bear patrols in Russia and Alaska, the distribution of bear safe bins for food storage, electric fences around camps and dog facilities, etc. There are many lessons to be learned between and within the different Arctic countries on best practices to reduce and minimize human-polar bear conflicts.

To increase consistent collection of data on human-polar bear conflicts and biological data on polar bears throughout the Arctic, the Polar Bear Human Interaction Management System has been developed for the polar bear Range States. In an earlier meeting between the Range States in Churchill, Manitoba, it was agreed to further develop and implement the PBHIMS by allowing Russian and increased Norwegian participation, and to maintain momentum on this project ahead of the next Range States meeting.

Purpose of the workshop

The purpose of the workshop was to share best available knowledge and tools in human-polar bear conflict reduction and mitigation amongst managers and experts from across the range states, and seek ways how these can be made easily available and accessible. The workshop focused on:

- Sharing best practises in human-polar bear conflict 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).

This workshop brought together over 35 professionals from Canada, Greenland, Norway, Denmark, Russia, USA, UK and the Netherlands who have experience with human-polar bear conflicts and polar bear conservation in a variety of professions (conservationists, tour operators/ tourist guides, government, police, local people's organisations) .

Day 1. Introduction to conflict in Range States and conflict reduction in local communities

The first half of the day was used to give an overview of polar bear management, the history of human-polar bear conflicts and the human-polar bear conflict situation in each of the Range States. Only Norway presented this on the third, all Norway- focused day. Main discussion and action points were:

- Plans to reduce conflicts need to be ready before the actual crises hits with a lot of public pressure.
- Issue of crowd control when a polar bear approaches a settlement.
- Greenland is working on a link between the Governmental database and PBHIMS.
- Curiosity of bears turning into dangerous situations is a continuum. Need to understand the signals of polar bears.
- Make better use of understanding bear behaviour from other species which is probably to a certain extent relevant for polar bears.
- Bear spray does not seem effective with bears approaching fast after use of flares.

In the second half of the day presentations were given about the human-polar bear conflict situation and reduction measures applied in local communities. Main discussion and action points were:

- Community involvement is very important for successful patrols. Also long term commitment is required, make sure that the patrol gets well known in the area.
- Patrols need to move quickly and consciously.
- Keep attractants away from settlements → better waste management, whale carcasses far from the settlement.
- We need to better understand the feeding ecology of polar bears while on land and the critical time span (tipping point) on land before condition of the animal is being negatively affected (date off the sea ice until date going back onto the ice).
- Importance of occurrence reports (monitoring). To be able to decide on the best management option to be pursued and to analyse possible patterns in incidents so that better response can be pursued (adaptive management).
- PBHIMS should also capture the effort being made to prevent and mitigate conflict (e.g. number of incidents resulting in a successful avoidance of conflict).
- Need to further spatial analysis of conflict over time. Understanding patterns (in space and time) of conflicts better in order to improve response.
- Importance of education. Schools, pamphlets.
- Deterrent research. What techniques are working and under what circumstances?
- Conflict and interaction between people and polar bears are relatively new phenomena in Greenland. Before the quota system was installed, polar bears could be shot when approaching settlements. Now other measures need to be implemented.

At the end of day one a discussion started about whether there is sufficient funding for the initiatives to reduce conflict or to support research. Since it is to be expected that conflict will be a bigger problem in the future, we need to be prepared now, but it is difficult to find unified funding mechanisms. PBHIMS aims to collect standardized information to identify hotspots in time and space, which is very relevant in times of shrinking budgets. The experience is that tracking performance of compensation & prevention schemes is important to continue to secure funding base – role & responsibility and contribution of community (institutionalization) is important. In Russia, the Government does not provide funding at all.

- All: start to think of funding mechanisms and seek funding sources outside Governments and NGO's (e.g. tourism and industry?).

Day 2. Lethal vs. non-lethal control and PHIMS

The first half of the day continued with topical presentations about lethal and non-lethal control of polar bears in conflict situations. The main points raised were:

- Aversive conditioning can be used to teach bears other behaviour (make it an unpleasant experience to be close to people).
- Repellents (bean bags, cracker shells, flares, etc.) to deter polar bears. Hazing to actively move them away from settlements (with snow mobile): make sure polar bear does not get overheated!

- Other non-lethal measures: electric fences, guard dogs, food storage, detection systems, trip-wires, barriers and caging around houses and stairs, tazer guns.
- Pair well trained patrollers with inexperienced ones as training programme.
- Chukchi villagers perceived polar bears as a serious threat but would rather not kill them. More education is needed on conflict reduction.
- Idea to institute a state inspector in every community , for centralized purchase of deterrents and to monitor migration patterns.

Extra attention was paid to the use and effectiveness of bear spray. Common concerns are that it is not effective, may affect the user or is influenced by characteristic Arctic conditions such as high wind and cold temperatures. However, there are also very good experiences with bear spray. It has been documented to be effective, and there are also documented situation where experts can point out that if used human and polar bear lives could have been spared. Before the actual spray reaches the bear, the animal is often startled by the sound the spray makes when released in the air. Bear spray is not for aversive use, for which other tools should be used. 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 it from safe vantage point (structure or vehicle).

The second half of the day was used to give an introduction on the PBHIMS and share preliminary results of the Range States which already worked with it. Main points were:

- Database allows identifying conflict hotspots. And take targeted (efficient) management measures to prevent further conflict.
- Next Steps: rolled out Arctic wide by 2015. Now populate the database (US and Norway done, Greenland and Canada underway, Russia is still open). Set-up the application using the web to aide decentralized access (for managers and public) and upload data (by country using extended access options)
- Issue of definition: some conflict kills are being reported as subsistence harvest kills, only actual conflict or also bear approaching settlement? Will be made clear in user's manual.
- Important contextual changes should be incorporated, e.g. when was a dump closed? When did polar bear patrols start? What was the sea ice condition? New industrial activity?
- Need to record the collective behaviour of the group – was attack on group provoked or not provoked? Important to take corrective measures in protocols when it turns out to be provoked attack.
- All this analysis interpretation is based on polar bears killed in conflict! Need to somehow record interactions which did not result in casualties so that preventive measure's effectiveness can be evaluated.
- One way to get better data collection: for instance government agency requires recording of all interaction as a condition for issuance of permits.
- Important to also upload polar bear sightings. In process of developing an automated form for tourism and public to upload their information.
- Possibilities and prospects of development and use of mobile APPs to allow increase in generation of cases (especially those which did not result in conflict + sightings) for science & management, and also to engage public (education) and even crowd sourcing.

In the closing discussion of the day it was mentioned that attractant management is key and that people need a better understanding of behaviour of both bears and people. Learn to interpret the behaviour of polar bears and how to respond to that. PBHIMS needs to become available for local communities and remote places.

Day 3. Special focus on Svalbard and closing session

The third day was specifically focused on the human-polar bear conflict situation in Svalbard, Norway. During the first half of the day an introduction was given about the polar bear management

and polar bear conflict occurrence in Svalbard after which presentations were given about the tourism sector and conflicts. Tourism is an important sector for Svalbard and many tour operators face interactions with polar bears. The main points from these presentations were:

- About 2 bears are shot per year on average in defence of life and property.
- The preferred line of action is to move a problem bear (hazing or translocation) and avoid shooting it.
- Svalbard Tourism Board has set guidelines which are good to minimize negative encounters. However, expect always an unpredictable polar bear. It is not wise to travel around in polar bear territory without an experienced guide.
- Huskies prove to be excellent guard dogs and respond on polar bear presence (warning).
- Guides should be trained in areas with many polar bears, such as Churchill to really learn how to interpret polar bear behaviour.
- Tour guide steps when polar bear is encountered: not allowed to chase it etc. If polar bear comes closer, then guide has to withdraw the visiting group (100 – 70 meters). Then warning shots & flare gun (effective). If 40 – 30 meters and flares and shots make no effect and the polar bear continues to approach, allowed to fire at the polar bear.
- Can we avoid all visitor conflicts? No; but increased understanding of polar bear behaviour amongst visitors is important.
- Visitors need to be aware of the unpredictable nature of polar bear behaviour. Curiosity can easily shift to aggressive behaviour in a split second.
- AECO likes to see common rules between countries on what kind of equipment is required for guides.

One of the presentations started a discussion about a fear based approach in conflict management now. Arriving on a scene in a mental state to be safe with a rifle means that we are there in an already escalated state of mind. In Svalbard you are forced to take a gun and are thus forced to be in an escalated state of mind. Better to be present in a state of mind to avoid conflict. To have the gun also results in panic reactions which further escalate the situation. The dominant premise of the rule of the gun is fear-based, polar bears are dangerous and shoot to kill as “management”. Suggestion: replace fear with understanding polar bears. Polar bears are more predictable than unpredictable. Management on the basis of knowledge, empathy and training. See polar bear as natural predators rather than bloodthirsty animals. And polar bears are a threat only if managed incorrectly. Guns are not fool-proof. Pepper spray is also not fool proof but its use will save polar bears from being shot instead. Uneducated guides with rifles are much more dangerous – will result in more polar bears and people getting killed in conflict. Combination of understanding and learning with a non-lethal deterrent should be allowed in Svalbard. Need formal, obligatory training in polar bear and predator behaviour.

During the second half of the morning attention was paid to polar bear management and research on Svalbard and the reconstruction of two well documented polar bear attacks on visiting tourists.

- Individual travellers are encouraged to carry safety equipment. Campsites are required at least 1 means of detection (i.e. keeping a polar bear watch routine which would fulfil this requirement – as well as watch dogs and tripwire as possibilities).
- Current situation: not many incidents; most visitors with guides, few individual travellers; short stay of visitors; qualified guiding is needed; challenge however is still to provide adequate information to visitors.
- Priorities for future: capture information from scientists, tourists and residents; specific conditions; updating PBHIMS.
- Concern regarding pepper spray: It is readily available to the public and can be dangerous if used incorrect (wind directions).
- Old army trip wires are very effective and sure. Used by scientists, but difficult to obtain for public.

- Signal pistol is a good tool to scare polar bears away. But do not get the flare behind the polar bear – it will drive the polar bear towards you. Keep on training with all weapons to maintain ability to operate quick and efficiently.
- Dart guns with only a needle work effectively to scare away polar bears
- Tempelfjorden case: 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 wires without setting it off and one of the group leaders was unable to unlock his gun.
- Extremehuken case: two kayakers were attacked on shore; the polar bear broke through the trip wire without setting it off and dragged one guy out of his tent. Also stepped on the shotgun which could no longer be used. The other guy eventually found a rifle and shot the bear. Victim survived
- Main lesson learned from these cases: the alarm systems did not work and cannot be fully trusted
- In the last incident people kept food in their tent and camped too close to the shore. People do get instructions on where to camp or prepare/ store food but may need to be improved

In the afternoon the group was split into four groups to have discussions about the following topics:

- A. Human Dimensions
- B. Bear Behaviour Research
- C. Tools and Methods
- D. PBHIMS / Data Collection

The groups used the following questions to guide their discussions and to look for future possibilities and follow up 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?

Main conclusions of each of the groups:

Group A. Human dimensions

1. People (local people, scientists, tourists) need more knowledge and understanding of polar bears, their behaviour and how to respond to that.
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
Local knowledge should be used for newcomers and guides should do exchange visits with other places.
2. Exchange visits between countries in northern countries, with use of exchange funds to facilitate this. Important aspects are body language of bears and people. For people who live near polar bear should understand polar bear body language.
Example of project where you film a group of elders, scientists and at same time bear behaviour. People explain what they see and analyse behaviour. Also analyse videos of human behaviour when interacting with bears (like the one with the bears pray) 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.

All together gives 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.

Group B. Bear behaviour research

1. Gaps and focal projects to follow-up:
 - a. Knowledge on predictability of bear behaviour
 - i. 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)
 1. Action: expand planned conflict workshop by Doug Clark in Churchill to not just focus on Canada. WWF can cooperate with expansion
 - ii. Have experts review / interpret bear behaviour queues (yawn, smacking, etc.) on videos linked to described conflict situations
 1. Action: have range states request a study and compilation of videos, etc. Could be a funded research project
 2. 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.
 - iii. Connect more with zoo keepers, trainers, and traditional knowledge to exchange knowledge on behaviour (discussed the "Do bears smile" research)
 1. Action: invite to expert workshop
 - iv. Which bear behaviours could be influenced by deterrence measures
 1. Action: Design research program on effective deterrence (some could be tested in Wapusk compounds with Doug Clark's on-going programs)

Group C. Tools and methods

1. Behaviour training:

- 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 (e.g. pepper spray)
- Legal analysis of tools permitted in the various Range States (e.g. pepper spray in Norway)

2. Canada – suggested continued work in Churchill/ Wapusk National Park in Manitoba

Russia – suggested a renewed connection between the Special Chemistry Institute and the Nature Protection Institute to test pyrotechnic/noise projectiles. Also interested in chemical projectiles.

Greenland – suggested use of Greenlandic dogs, especially close to settlements

Norway and the United States – nothing suggested

3. Training:

- Manual and video
- Workshops

- Continued research into “new” techniques (pepper spray, noise cannons, tasers, new projectiles etc.)/

Ultimately: circumpolar standards adopted by all Range States.

Group D. PBHIMS/ data collection

1.
 - a. 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)
 - b. 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)
 - c. integration of reports (film, pictures) involving encounters with polar bears from scientists & filmmakers, tour operators, media stations (e.g. BBC) into PBHIMS
 - d. translations of database in Russian, 3 native Canadian languages, Greenlandic, French
 - e. development of a web-based platform to enter and retrieve data
 - f. western Hudson Bay pilot needs to be uploaded in PBHIMS
 - g. 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.
 - h. develop a portable app for data forms which can be filled-in anywhere in the field.
 - i. WWF human polar bear conflict demonstration programmes collect data compatible with PBHIMS database variables.
 - j. Russian – English speaking graduate student to work with Edward and Anatoly to collect conflict information in Chukotka.
 - k. Student collecting old conflict records from police reports, newspapers etc. in Greenland.
2. Integrated in gaps above
3. See points a, b and c above

Final notes of the workshop and points of attention

PBHIMS:

- PBHIMS could be driver for effective fundraising since it shows hotspots and could aid in identifying effective deterrence and prevention measures with actual data
- Need to have focal points assigned in each country to feed data into system (not yet appointed in Russia and no data provided yet).

Knowledge sharing:

- There needs to be more knowledge sharing between the experts on various bear species
 - a. Behaviour
 - b. Deterrence
 - c. Preventions (e.g. fences, compensation programs, etc.)
 - d. Hunting/predator management
- Bear Spray: is an effective tool for last-ditch effort to avoid being killed (self – defence) but should not be used as a replacement of protection with firearms or as a deterrence tool.

Funding:

- Need to identify clearer budgets on costs of prevention / deterrence programs. People mentioned various numbers but some included staff time, others not. No standardized way of estimating costs makes it hard to compare effectiveness
- 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.