



Report on Yupik (Yupi), a Polar Bear Living at the Morelia Zoo May, 2015

Team of Polar Bear Experts

Our expert team included Dr. Andrea Goodnight, a veterinarian with expertise in bears , Margaret Whittaker, an animal management and enrichment specialist, and Alaska Zoo director Pat Lampi , who who brings considerable captive polar bear experience to the group. The team members were pleased to have full access to Yupi's enclosure and an ability to properly observe her. The following is our team report on Yupi's condition and facilities:

Biological and Behavioural Needs assessment

Since Zoocheck's first visit to observe Yupi in 2005, and subsequent visits by our representatives, a number of modifications have been made to Yupi's facilities and enrichment program. A sand pit area has been added in both the front display area and the off-display area; two small salt water pools have been added to the off-display area; an air conditioner has been added to one of the small rooms in the back of her enclosure, as well as a large window; and a sun shade has been added to the front area of the enclosure. Additionally zoo personnel have implemented some basic enrichment programming to try to engage Yupi, even though staff are limited in resources at this time.

Unfortunately, even with these significant improvements, Yupi is still expressing aberrant, stereotypic behaviours. They suggest an abnormal interaction between Yupi and her environment and may be caused by an overall lack of stimulation, frustration and boredom resulting from the following factors:

- The majority of Yupi's enclosure is encircled by tall white concrete walls, with only a few small windows through which visitors can view inside. Behind these visitor viewing stations are additional white walls. This enclosure design severely limits visual, auditory and olfactory stimulus for the bear.

In the wild, polar bears live on pack ice for part of the year, hunting seals and searching for carrion, with the rest of the year spent on land, including along coasts and in forested areas. Polar bears have a well developed sense of smell for hunting prey and also are known to have good hearing and eyesight. Limiting Yupi's line of vision and her ability to hear and smell what is going on beyond her enclosure walls removes a great deal of stimulation and may severely diminish her quality of life.



The following photos show the relatively expansive enclosures at the Cochrane Polar Bear Habitat in Ontario, Canada, a facility with space and climate appropriate for polar bears. The natural substrates, ability to see and smell beyond the enclosure barriers, cold water and other features provide natural enrichment for the bears. Additionally providing them with natural foods and providing an environment where they can dig helps to keep them physically active and healthy.



Polar bear playing with carcass of a road-killed animal. Providing whole carcasses can often be a useful nutritional supplement for bears .



This employee is standing inside a den dug by the bears at the Cochrane Polar Bear Habitat.

This facility in Ontario has the advantage of being located in the southern range of polar bears, so the climate and habitat is appropriate to the species.



By contrast the following are photos of Yupi's enclosure, which provides little, if any, natural environment.



Yupi's enclosure has no natural vegetation and very little soft substrate. The high walls around the enclosure restrict visual, auditory and olfactory stimulation. The majority of her enclosure, including the pool, is not adequately cooled to temperatures appropriate for polar bears, who have evolved to live in cold climates.

- The majority of Yupi's enclosure is concrete or gunite, with no natural vegetation and limited digging opportunities since the sand pit area is only 40cm deep.



- The high walls around the enclosure restrict sensory stimulation (sight, sound, smell) from outside,. Staff have employed artificial enrichment to try to engage Yupi, keep her occupied and reduce abnormal behaviours, but they have been unable to mitigate against the detrimental impacts of her environment. Yupi continues to spend a significant part of her day stereotypically pacing or swimming.
- The high enclosure walls combined with the water spouts situated around the interior pool wall create a very loud white noise inside Yupi's main enclosure area. Recent studies indicate that chronic white noise can be harmful to captive animals, including bears.
- Morelia's warm climate is a significant problem for Yupi and not one that can be easily rectified. Polar bears have evolved to live in cold climates and have biological adaptations which facilitate heat retention, such as black skin, hollow guard hairs to allow heat from the sun to penetrate to the skin, and an up to 10 cm layer of blubber not found in other bears. These adaptations make it very difficult for polar bears to properly cope in warm climates. Polar bears can overheat at temperatures as low as 0°C.
- The vast majority of Yupi's enclosure, including the area in the front where she spends most of her day, is not temperature controlled. The zoo has recently added an air conditioner, set to 15°C ,in one very small room that she can access during the day, but this room is barren and lacks any bear appropriate features. The sunshade in the main part of Yupi's enclosure provides some relief from the direct sunlight, however there is no way to mitigate the ambient temperature of the enclosure when it gets hot.
- The large pool in the front is not cooled and staff indicate that it remains at approximately 21°C. Polar bears normally spend their time in water that is between 0 - 10°C. The temperature of the water in Yupi's enclosure is too warm to provide her with adequate cooling opportunities, even while immersed in the water. Additionally, this pool is treated with chlorine. Wild polar bears frequent relatively pristine aquatic environments without direct exposure to chemicals. When housed in captivity, it is preferable that they be provided with ozone treated salt water pools, rather than chlorinated pools.
- On the second day of the team's visit, zoo staff provided Yupi a small pile of shaved ice in the front area of her enclosure under the sun shade. She immediately went to the shaved ice and rubbed her body and face in it. It was clear that was a positive experience for Yupi, but we were informed that this is only the second time over the past 12 months that shaved ice has been provided for her. We recognize that shaved ice is likely expensive, possibly not easily accessible in Morelia and, due to the heat, will not last very long , but it is still a useful enrichment technique that could be employed more . Having said that, ideally Yupi should be provided with colder temperatures, access to snow, natural substrates, living vegetation for 1/3 or more of each year as these will facilitate natural movements and behaviours.



Health

Oakland Zoo veterinarian Dr. Andrea Goodnight, conducted an initial visual assessment of Yupi and consulted with Morelia Zoo veterinarians about Yupi's health history and current status. Dr. Goodnight's written report is attached for detailed reference.

The Morelia Zoo veterinarians all agreed that Yupi is in good health considering her age and circumstances and Dr. Goodnight saw nothing during her visual assessment which suggested otherwise. Yupi appears to have some tooth abscesses and lacks proper muscle mass, which is not uncommon in bears living in an environment where they are unable to exhibit a full range of natural activities, but otherwise appears to be in good health. The zoo was unable to produce medical records for Yupi, except for the 2012 medical assessment report and one parasite test report from earlier this year.

During our visit Dr. Alejandro Villasenor indicated that he feels that Yupi should receive another full medical assessment under anesthetic similar to the one conducted in 2012. The 2012 medical report included a recommendation that a full assessment be done every two years, which is now about a year overdue. Dr. Goodnight agrees that a full medical assessment would provide more information and a more accurate assessment of Yupi's health and that there does not appear any reason to delay such an examination.

Dr. Goodnight has discussed Yupi's case with a heart specialist experienced with bears. In their discussion they determined that there is evidence that the drugs used on Yupi during her medical assessment in 2012 can cause significant effects on the hearts of anesthetized bears, and may lead clinicians to interpret an otherwise normally functioning bear heart as severely abnormal. Since heart conditions are extremely rare in polar bears, and because Yupi's symptoms leading up to the examination could be attributed to the stomach ulcers she also had at the time, her heart rhythm may have been impacted temporarily by the anesthetic used to sedate her. After the 2012 assessment Yupi received treatment for the stomach issues at the same time as she began taking a very low dose of heart medication (10% of what would normally be prescribed for an animal of her weight). This low level of medication would be unlikely to reduce her symptoms if she had a heart condition. Therefore, it is reasonable to conclude that Yupi may not have a heart condition, but rather that the treatment for the ulcers impacted her clinical signs.

In any event, both the Morelia Zoo veterinarians and Dr. Goodnight agree that Yupi appears to be in good physical health currently, therefore there is no reason to delay another comprehensive medical assessment using different anesthetic drugs to ensure the diagnosis is not distorted.



Conclusions

1. Yupi appears to be in good physical health currently and is overdue for another full medical assessment. Such an assessment should be done as soon as possible. Dr. Goodnight and possibly a heart specialist will be available to attend the next medical assessment and to assist in her diagnosis.
2. The Morelia Zoo management are to be commended for making a significant effort and substantial financial investment in Yupi's enclosure. Unfortunately, while these efforts have possibly led to a marginal increase in Yupi's welfare, substantial positive welfare outcomes have not yet been achieved. Yupi still continues to express abnormal stereotypic behaviours and, at other times, excessive inactivity. The basic design of Yupi's enclosure is lacking in many respects. It is still small, restricts visual, auditory and olfactory stimulation, lacks natural substrates, furnishings and living vegetation and cannot be temperature controlled.

The design and construction of a modern polar bear enclosure that would address at least some of the current problems, including maintaining appropriately cool temperatures throughout much of Yupi's living space, and that would allow Yupi to express a significant range of natural behaviours would cost in the range of 100 million Mexican pesos or more. This level of financial investment for an elderly, 23 year old polar bear may not be fiscally possible and, even if undertaken, may not increase Yupi's welfare status to an appropriate level.

Ideally, Yupi should be moved to a cold climate facility that can more appropriately accommodate her biological and behavioural needs. Zoocheck is willing to assist in locating an appropriate facility and to pay for her relocation. Additionally, we are also happy to explore the feasibility of providing technical and material support to refurbish the polar bear enclosure to accommodate other animal species, should Yupi be moved and/or to provide special training for Morelia Zoo staff to enhance overall animal husbandry, care and management of the zoo's live animal collection. We believe that by working together we can not only address Yupi's concerns, but we can also help the Morelia Zoo and enhance the zoo's national and international reputation.