REHABILITATION AND RELEASE OF

BEARS

FOR THE WELFARE OF CONSERVATION OR FOR THE CONSERVATION OF WELFARE?

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Including Presentations and Results of the Workshop on "The Evaluation of Bear Rehabilitation Projects from a Conservationist's Point of View: Creating a Linkage between Different Fields of Interests" held by the International Bear Foundation (Alertis) and the Bear Taxon Advisory Group (Bear TAG) of the European Association of Zoos and Aquariums (EAZA) in November 2000

Editors:

Lydia Kolter & Jiska van Dijk

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* presented during the workshop on "The Evaluation of Bear Rehabilitation Projects from a Conservationist's Point of View: Creating a Linkage between Different Fields of Interests" held on 26th and 27th of November 2000, at Ouwehand Zoo, Rhenen, The Netherlands.

Captive Management of Orphaned Black Bears (*Ursus americanus)* Intended for Release at the Cochrane Ecological Institute in Canada: A Case Report

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Introduction

Two orphaned, female, sibling black bear cubs (*Ursus americanus)*, collected from the wild by Alberta Fish & Wildlife, were transferred to the Cochrane Ecological Institute (CEI) to be raised for eventual release into their original habitat in northern Alberta The cubs' dam was killed by a vehicle on the outskirts of the town of Edson, Alberta, in early April 1999. They were transferred to CEI approximately eight days after the death of their dam. On arrival at the CEI, the cubs were found to be dehydrated and malnourished and were kept under close scrutiny. The cubs spent 45 days indoors before being moved outside to a treed enclosure (60m x 30m). In August 1999, the cubs were introduced to a one-hectare square area of wooded natural forest in order for them to learn climbing and foraging skills in preparation for their eventual release. Wild browse, berries, fruit, nuts and road-killed wild ungulates were provided to the bears, in addition to dairy produce, alfalfa, sugar beet-pulp and grains. The bears hibernated over the winter of 1999/2000. Behavioural observations of the bears were made throughout 1999 and 2000 and captive management practices, including behavioural observations, remained consistent throughout 2000. Comparisons were made between documented studies of wild black bear foraging and exploratory behavioural activities and the foraging and exploratory behavioural activities of the orphaned cubs at the CEI. Within the limits imposed by the enclosure, the foraging and exploratory behaviour of the bears developed sufficiently for them to be released in the summer of 2001.

The Bears

On 18th April 1999, two sibling, female black bear cubs were collected from the side of the highway, near the city of Edson, Alberta, by officers of the Alberta Department of the Environment. The cubs' dam had been killed by a vehicle between eight and ten days prior to the collection of the cubs. Repeated calls from the public on sighting the

cubs along the edge of the road in the vicinity of their dead dam established that she had probably been killed around April 10,1999. The cubs were dehydrated and very thin. Cub A, Jemima, weighed 4.4 kg and cub B, Juneau, weighed 4.5 kg. Shortly after collecting the cubs, the Alberta Environment officers transferred them to the care of the CEI.

Facilities

The Cochrane Ecological Institute (CEI) facility consists of five buildings and 25 enclosures within 65 hectares of fenced natural prairie/montane habitat set at 1,330 m above sea level in the foothills of the Rocky Mountains. The CEI is a conservation research centre concentrating on captive breeding for re-introduction, wildlife rehabilitation and release and the development of non-intrusive wildlife survey methods. Although it is used as an educational resource, the CEI is not open to the public.

Indoors

Within the main CEI building is a small (3 x 5m) north-facing room, which is used for orphaned or sick wildlife in need of intensive care. There are windows on the outer wall that provide natural daylight whilst windows on the two interior walls permit the observation of animals without necessarily entering the area. Upon arrival at the CEI, the cubs were put into this small treatment room. A nest box (75 x 50 cm) containing a hot water bottle wrapped in bedding was provided along with a large tree trunk. Each animal was given 60cc of electrolytes by injection. Esbilac milk formula along with fruit, meat, and cereal were then offered in a bowl, which the cubs ate willingly. Daily observations of a minimum of two hours were undertaken by four observers from both inside and outside the room. The cubs did not evince any desire to interact with the observers, nor did they exhibit fear of them. The person taking care of the bears did not spend time observing them. The cubs were fed on an *ad-lib* basis, feed bowls were replenished when empty, and feed was removed and replaced if not eaten within two hours of presentation. The food offered consisted of Esbilac milk formula, indigenous grasses, meat (wild game), boiled mixed cereals, and seasonal fruit. The Esbilac formula, meat and fruit were the preferred foodstuffs of the bears.

Small enclosure

By June 2, 1999, an outdoor enclosure had been constructed for the bear cubs. This enclosure measured 60 x 30m and was constructed from a series of 2.75m high panels with three lines of electric fencing wire (900 volt, plastic and wire twist), which were

set at 50 cm intervals along the inside. Trees occurring near the fence were cut down and removed. This enclosure was well grassed with naturally occurring vegetation indigenous to the area and contained four spruce trees (*Picea glauca)* ranging in height from 5-10m, two 10-13m high aspen trees (*Populus tremuloides)* one large platform (3 x 3m, 2.7 m above ground), a metal bath measuring 2 x 1 m and a small wooden shelter (3.2 high by 3.2 m long) insulated by two straw bales. Both the aspen trees had 1m wide aluminium collars set approximately 3m above the ground in order to prevent the bears from climbing the trees and moving to adjacent aspens on the other side of the fence. Keepers entered this enclosure to feed the bears and provide them with large rotten logs to encourage exploratory foraging behaviour. At this point there was more than one person taking care of the bears.

Large enclosure

On August 17th, 1999 the outer panels of the small enclosure were removed allowing the bears access to a larger, one-hectare enclosure. This larger enclosure was heavily treed, 20% per cent of the trees in this enclosure were spruce and 60% were aspen, a variety of native mosses, shrubs, plants, and grasses typical of western prairie aspen bluff ecosystem occurred throughout. The southwestern fence line of this enclosure was exposed to an open area of aspens, overlooked by the CEI main building and the CEI animal health center. The closest building was 120 meter from the enclosure's southwestern fence line. The other three sides of the enclosure back on to spruce woodland in the north and mixed spruce and aspen on both the eastern and western sides.

This enclosure contained an 2,5 meter diameter igloo-like artificial "cave" constructed from rubber tyres topped with flax bales, and a large galvanized metal horse/cattle trough, and several large fallen trees. Since the enclosure had been used for other species in previous years, there were large piles of brushwood in the area and six telephone poles with vertical heights ranging between 4.5 and 7.5m. In addition, the trees that had been cut down along the interior of the perimeter fence were sawed into 60 cm lengths and stacked up. Perimeter fencing consisted of 2m high game fencing, surmounted by a further 1.2 m heavy gauge weld-mesh, with a 1.2m wide strip of heavy gauge weld-mesh running along the base of the perimeter fence with large stones placed on top along its length. The electric fence encircling the enclosure consisted of metal wire carrying 900 volts and was set at heights of 60, 120 and 150 cm. The smaller enclosure was contained within the larger enclosure.

Introduction to the small enclosure

The bears were introduced to the enclosure on June 4th, 1999 when it was considered that they had gained significant weight. By this time Bear A weighed 9.3 kg and Bear B weighed 10 kg. Initially they were unafraid and exploratory. Both cubs examined the enclosure and did not stray more than 30 cm apart from one another. The first contact with the electric fence by Bear A caused Bear B, who had not touched the fence, to climb a spruce tree. Bear A, who had touched the fence, barked, ran back, then advanced repeatedly to touch it again. Bear B (in the tree) barked and hummed whenever Bear A touched the fence and barked. Both bear cubs evinced fear. Bear A repeatedly touched the electric fence until, reaching a corner; she simultaneously got a shock on her nose from deliberate contact and another shock, accidentally, on her backside. This caused her to leap upward, clearing the first and second lines of electric wire, but getting shocked again by the third line of wire. She continued to climb the fence and had to be lifted down by a keeper. She was transferred to the same tree as that occupied by her sibling and both bears were observed for the next six hours. Neither bear attempted to touch the electric fence again. Keepers were then restricted to a maximum of two individuals (one full-time and one part-time). The time spent in the enclosure was only in order to feed the bears by scattering their food over an area near the enclosure entrance. Otherwise keepers did not travel any deeper into the enclosure.

Feeding and foraging

Both individuals spent time digging along the edge of the fence, turning over rocks and eating earthworms and grubs. Throughout their time in the small enclosure the bears were provided with rotten logs of various sizes and spent a considerable time examining and demolishing them. On average, a 4 m long poplar or aspen log of 20 cm diameter would be reduced to shards in 10 to 12 hours.

Throughout the early summer both cubs spent 40% of time observed up in the spruce trees. The cubs were seldom further than 1 meter apart while on the ground. They sat in the bath each time the water was changed (daily). The pair constantly dug and turned over the ground at the base of the trees in the enclosure and stripped the upper branches of the spruce trees. A peacock (*Pavo cristatus*) that had free range of the CEI, regularly flew into the bear's enclosure to feed on the remnant feed left by the bears. Throughout 1999, the bears exhibited fear of the bird and, when it spread its train, both bears would run away from it and climb up into the spruce trees. In the autumn of 2000, one, or both, of the bears killed and ate the peacock, although the circumstances of this incident went unobserved. The peacock's remains were found inside the bear enclosure.

Introduction to the large enclosure

Initially, the bears were reluctant to leave the area that formerly comprised the smaller enclosure. The pair exhibited extreme reluctance to cross the area from which the panels had been removed in order to give them this extra space. Food, milk, boiled grain, fruit, and meat were placed in full view of the bears in the newly opened enclosure. After two hours up one of the spruce trees, the bears cautiously explored the newly opened area before moving into the larger enclosure and approaching the food dishes. Throughout both bears stayed very close together, touching one another, when entering the new area. There appeared to be no observed loss of appetite despite this somewhat stressful situation. While exploring the new area, the cubs were never further than three feet apart. Bear A was always slightly in advance of Bear B, and the cubs frequently touched one another.

The cubs showed little desire to climb the aspens, while eagerly climbing both the spruce trees and the telegraph poles. Both bears were observed to climb all the spruce trees within the first two days of access. After four days the cubs no longer showed any interest in the telegraph poles, while after one week they began to use the largest spruce tree to sleep in.

When keepers entered the bear enclosure with food, or in order to refill the water tub, the bears would behave in a confidential and social fashion, readily coming over to the keeper to examine the food provided or to watch the water tub being filled and to get into it while the hose was running. If the keeper moved any logs, or removed debris from the enclosure, the bears would walk beside the keeper and examine the area where logs had been shifted or from which objects had been taken. Feeding and watering took place on a daily basis, cleaning took place about three times per week but decreased to twice a month in the second year.

Feeding and foraging

As the weather became colder in the autumn, fewer fruit and vegetables were used in the bears' food and a greater percentage of boiled grain (oats/barley/linseed), milk, meat or fish, sugar beet pulp, and nuts were provided. The keepers, sometimes in or under logs, spread the food all over the enclosure. The bears would carry the meat or fish off, but eat the other foodstuffs on the spot. A mix consisting of boiled grain, sugar beet pulp and milk was fed in containers near the "cave". The bears frequently moved the container, up ending it and spreading it out, or carrying it off. The bears did not appear to like the boiled grain and beet pulp, choosing instead to spread these items on the ground. Preference was given to root vegetables, meat or fish, and nuts. From October

1st, 1999, food provided to the bears was reduced daily until November 15th, 1999, when no further food was provided. By December 16th, 1999 the bears had entered the igloo-like "cave" and closed the entrance with a flax bale, which they pulled in behind them.

Hibernation

Daily inspections were undertaken in the bear enclosure to check if the bears reappeared. No sign of their exit was noted until March 16th, 2000. They did not appear to have lost weight. Bear A's coat was compressed and worn on the left rear and Bear B's across the rear. Both bears showed considerable fear of their keeper and ran off to climb the large spruce that they had utilised the year before. This avoidance behaviour is similar to that reported by Pazethnov (2005) for European brown bears. The bears were fed fish/ meat, soaked alfalfa cubes, sugar beet pulp and boiled grain. The fish and meat were consumed but other food items were spread on the ground. The bears were not observed to enter the "cave" again, but spent considerable time on top of it, ripping the bales apart or dragging the bales off to a distance of approximately 3m from the "cave". The interior of the moved bales, in some cases, was still frozen. Both bears appeared to recognize the electric fence wire and avoided contact.

Behavioural changes after hibernation

Within 15 days of the bears' emergence, the aspen buds in the enclosure had started to swell. From April to mid May, the bears spent an observed average of six hours up in the top of the aspens, feeding on the buds and breaking off branches. Their foraging behaviour on the ground became more marked as they removed large stones from beneath the perimeter electric fence, ripped apart rotten aspen logs and debarked sections of older trees in the enclosure. Fresh browse was provided in the form of willow (*Salix* sp.), birch (*Betula* sp.) and rosebay willow herb (*Epilobium angustifolium*). Initial interest was shown in the browse by turning it over and eating flowers or buds, however, interest was lost within thirty minutes of the initial presentation.

When the keeper entered the bear's enclosure to fill their water tub or to provide food, the animals would remain in the trees, or if on the ground, run from the keeper and climb a tree. They would not approach the food or water until the keeper had left the enclosure.

Over a total of 51 observation hours in 14 days, no consistent activity pattern was discerned in the bear's behaviour. The bears were consistent only in sleeping in either one of the two spruce trees in the enclosure. One spruce was set in a group of 4 spruce

trees on the northern edge of the enclosure and the other spruce was among a grove of 8 spruce trees on the east side of the enclosure. Observations of the bears were reduced to daily notes by the keeper. Weekly observations, ranging in time from 4 to 8 hours at a stretch, were undertaken by an undergraduate student who the bears were not familiar with as she never entered their enclosure. Over a four-hour period the bears would spend two hours foraging, often play fighting whilst doing so and the remainder sleeping up in a tree. In general, both bears were active at the same times over the course of the observations.

Road killed ungulates were dragged into the enclosure and left in the more exposed southwestern section. If the animal were a mule deer (*Odocoileus hemionus*) or white-tailed deer (*O. virginianus*) the bears would drag the carcass off into the northern sector of the enclosure in a co-operative manner. When provided with a four-year-old male moose (*Alces alces)* carcass, the bears were unable to move it. In this case, they tried to cover it with a 2.2 x 2.2 x 3m plywood A-Frame. Several hours were spent trying to maneuver the A-frame over the moose carcass. They were not observed to leave the vicinity of the carcass for two days. Both bears would gorge on ungulate carcasses until their bellies were noticeably distended. When provided with a porcupine carcass, however the bears showed no interest.

Conclusion

The behaviour of this pair of orphaned black bear cubs, which were raised under captive conditions in a large natural enclosure developed in a manner which led us to believe that their foraging and climbing skills had developed sufficiently to enable them to survive in the wild. The first winter hibernation period appeared to be a behavioural watershed. The 1 m. wide aluminum collars on the aspen trees in the small enclosure appeared to have instilled a reluctance to climb aspens in the bears during their first year, whereas this reluctance was no longer in evidence after hibernation. Both bears continued to recognise electric fencing as dangerous before and after hibernation. Both of these bears showed a distinct wariness of their keepers after hibernation, appearing to indicate that they had gained a level of independence in stark contrast to the confidentiality of their first year. The two bears were released and their progress monitored by radio telemetry. No nuisance bears were reported in the areas surrounding the release site in 2003 or 2004. However, neither bear was relocated in spring 2004 – this may have been due to ear tag transmitters not reactivating after hibernation (Waters, 2003). This is a common occurrence with ear tag transmitters (D. Carney, pers. comm.)

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