INTERNATIONAL ASSOCIATION FOR BEAR RESEARCH AND MANAGEMENT (IBA)

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Your Excellency Minister Dulamsuren Oyunkhorol
Ministry of Environment, Green Development and Tourism
United Nations Street 5/2
Government Building 2
15160 Chingeltei District
Ulaanbaatar
Mongolia

Re: Scientific assessment of strategies to achieve population recovery of critically endangered Gobi bears, Mazaalai, in the Gobi desert of southwest Mongolia, especially regarding proposals for captive breeding and improving carrying capacity.

Your Excellency Minister Dulamsuren Oyunkhorol ,

We write with regard to the conservation status of the Gobi bear, or Mazaalai, which is of great importance not only to the people of Mongolia, but certainly to the International Association for Bear Research and Management (IBA) and to the biodiversity of bears in the world.

We are a non-profit organization of professional biologists, wildlife managers, and others dedicated to the conservation of the 8 species of bears (www.bearbiology.com). Our membership includes bear experts from around the world. The IUCN Bear Specialist Group is an integral part of our organization and we have over 550 members from more than 70 countries. Our goal is the conservation and restoration of the world's bears through research, management, and education. To this end, we provide scientific advice to national and regional governments, sponsor international conferences, publish a peer-reviewed scientific journal, *Ursus*, and provide grants for research, management, and collaborative exchange.

As a science-based conservation organization, we commend the Mongolian Ministry of Environment, Green Development and Tourism (MEGDT) for its reliance on scientific evidence in deciding which conservation actions are likely to be most effective and for

its leadership in supporting research and management designed to increase the population of Mazaalai. We were honored to have Dr. J. Batbold, former MEGDT State Secretary, as an opening ceremony speaker at the 23rd International IBA Conference held in Greece last October. He opened a workshop on the present status of Mazaalai, strategic goals for the bear's recovery, proposed methods for improving habitat, and encouraged international input on methodologies used.

We have followed this situation with particular attention and applaud the substantial *in-situ* conservation efforts of the MEGDT. We are, of course, very interested in working with the Ministry to consider conservation strategies that would be most effective in conserving the Mazaalai. Therefore we are very willing to continue our discussion that we had in Greece about the possible collaboration between your government and the IBA. We strongly agree on the importance of improving the habitat and water sources within the Great Gobi Strictly Protected Area (GGSPA) as key to increasing carrying capacity and helping to achieve recovery. The increased support of MEGDT for ranger patrols and illegal activities which can negatively affect bears' use of water sources are also important forward steps.

On the topic of a potential captive breeding program, however, we felt it was important to consider this issue separately. After careful consideration and much discussion, we feel obligated to specifically recommend against establishment of an *ex-situ* (captive) breeding program because of the substantial conservation risk associated with reducing the number of Mazaalai, particularly females, in the Great Gobi Strictly Protected Area, the last remaining area in the world where they are known to exist.

To summarize our recommendations concerning captive breeding of Mazaalai, we find that despite past successes of captive breeding for conservation of some species and populations (including some in Mongolia), there are several issues that make this approach unlikely to succeed for Mazaalai and could even result in their extinction.

- First and foremost, it may be too risky to this extremely small wild bear population to remove females for purposes of captive breeding. Removing even a few will likely result in a significant reduction in the viability of the wild population and an increase of the extinction risk.
- Moreover, the habitat in which Mazaalai exist is an extreme and complex environment where food and water are widely dispersed. Because offspring must learn the locations and seasonality of these resources from their mothers in order to survive, even construction of large and very expensive captive breeding enclosures would be highly unlikely to prepare offspring for the huge area needed to fulfill habitat requirements that would enable wild bears to survive.
- Additionally, carnivore reintroduction efforts around the world using captive-bred animals have a very poor success rate, usually related to low survival rates, particularly for bears,
- Finally, there are numerous risks and uncertainties that challenge the potential success and benefits of a captive breeding program.

We provide a detailed explanation of our 4 primary conclusions in the following paragraphs:

1) **Small size of the Mazaalai population.**
The current Mazaalai population is likely too small to yield individuals, particularly females, for captive breeding. Taking even a small number of females out of the natural population would put the remaining wild population at an extreme risk of eventual extinction. A criterion always recommended by organizations that develop policies on conservation-oriented captive breeding programs is that the removal of animals from wild populations for captive breeding should in no way increase the conservation risk of the remaining wild population. For example,

The International Union for Conservation of Nature (IUCN) Captive Breeding Policy states that:
"Captive breeding programs need to be established before species are reduced to critically low numbers" (IUCN Captive Breeding Policy Statement 1987).

The IUCN Policy on Reintroductions and Other Conservation Translocations (2013) states that: "*Where risk is high and/or uncertainty remains about risks and their impacts, a translocation (conservation reintroduction) should not proceed*."

Similarly, the World Wildlife Fund (WWF) Captive Breeding Policy states that: *"It is exceedingly difficult…. It is also expensive, and should not be seen as a substitute for in-situ efforts, except in rare circumstances…. However, removal of animals from the wild for captive breeding must not endanger the survival of already vulnerable wild populations."* (wwf.panda.org/CaptiveBreedingPolicyStatement2007)

In assessing the conservation status of the Mazaalai population, the 2009 DNA-based population survey (Tumendemberel et al. 2011) identified only 8 females in the estimated population of 23 animals, and most bears in the population were genetically sampled. A recent similar survey in 2013 yielded only marginally higher results yet provides evidence that the population is not declining. Mazaalai population numbers are certainly critically low. Furthermore, the research team has direct evidence of natural reproduction (a minimum of 12 offspring observed) over the 10 years they have been studying Mazaalai, so there is some time to develop a greater understanding of key factors that are limiting these bears and apply remedial management that will improve their probability of persistence.

The issue of removing bears from a very small population also relates to the need for captive breeding populations to have sufficient genetic variability. As a general rule, the smaller the number of founders in the captive population, the lower is the probability of success. Therefore, captive breeding programs need to maximize the number of founders to mitigate the accelerated loss of genetic diversity that occurs in small programs. The primary solution to these challenges is to start with a larger number of founders. Because there are so few remaining Mazaalai, this is likely impossible. This, of

course, is why the IUCN and WWF captive breeding policies emphasize the need to initiate captive breeding programs well before the number of remaining wild animals reaches critically low numbers. The other reason is because the probability of success is so low, captive breeding programs are not worth the risk if they reduce the viability of the wild population.

2. Offspring learning from their mothers would be compromised.
From our cumulative extensive experience in bear research, we know that bears learn how to use their habitat and survive during the time they spend with their mothers before they become independent. The studies conducted by Harry Reynolds, Dr. Michael Proctor, Odbayar Tumendemberel, Dr. Luvsamjamba Amgalan, Tuya Tserenbataa, and the Gobi Bear Project team, have shown that Mazaalai is surviving in what is likely the most extreme environment of any extant bear population. Food and water resources are limited and dispersed over large areas, within a matrix of low-quality habitat, leading us to conclude the maternal learning may be particularly important for the survival of offspring in this environment. Learning from their mothers the locations and techniques of extracting these important food and water resources is critical to the survival of all individuals in the population. Also, bears need to learn how to find and interact with other bears they encounter. And finally, bears need to learn how to respond to humans they encounter and maintain their natural shyness. Numerous studies have demonstrated a captive setting may lead to inappropriate responses to humans. Therefore, removing bears to be captive-bred would deprive any surviving captive-bred offspring the maternal lessons required to locate the dispersed food and water resources to survive and reproduce once released, as well as the necessary social skills relative to other bears and humans.

3) **The survival of released captive-bred offspring will likely be very low.**
The above issue related to bears born in captivity without the benefit of learning from their mother in the first years of life, in combination with habituation to humans during captive breeding, and reduced immune system development will likely result in very low survival rates for bears released into the wild.

We offer a review paper that supports this view. Jule et al. (2008), published in the scientific journal *Biological Conservation*, explored success patterns in 49 carnivore re-introduction projects that included 1169 wild-caught and 983 captive-bred individuals. They found that only 13% of re-introduction projects succeeded when captive-bred animals were used, and 31% succeeded using wild source populations.

These results were primarily related to the low survival of re-introduced animals. Annual survival averaged 52% for wild-sourced animals and 32% for captive-bred individuals. From 282 individuals from Ursidae (various bear species) re-introduction projects, survival was below the average of other carnivore species at approximately 25%.

Causes of mortality were related to human encounters, starvation, and disease. Animals having difficulties surviving in the wild and who were habituated to humans (through

captive breeding) were eventually attracted to human settlements in search of food requiring lethal removal. Other captive-bred animals unfamiliar with their new environments died of starvation as they lacked the necessary maternal training required to survive. And finally, they tended to be more susceptible to disease as immune system development in captivity was insufficient for wild environments.

Other scientific papers support this supposition that release of captive bred animals into wild habitats has a "*notoriously poor track record….. with little to no improvement over the past 20 years*" (Stamps and Swaisgood 2007).

4) **Risks and uncertainties associated with captive breeding programs**.
There are many uncertainties that challenge the success and potential benefits of a captive breeding program. For instance, in captive breeding programs, the reproductive rate needs to be maximized to resist excessive loss in genetic diversity, particularly when a small captive population is involved. This is often accomplished by maximizing energy and nutritional intake which usually results in larger bears. Any larger (well-fed) bears that are then released into the Gobi Desert (as offspring) would also have higher energy and nutritional requirements and very likely would become food stressed in the wild, less productive habitat of the Gobi. This may lead to bears seeking out human food sources, creating conflicts with humans, which often result in lethal removal and an increase in poaching. Not only would this reduce successful recruitment into the wild population, but previous efforts with bears and other carnivores show this often results in negative human attitudes toward bear conservation and acceptance of the captive breeding program in general.

Another issue is the fact that not all wild-caught animals adapt to captivity and actually breed. While on average about 40% of wild caught brown bear females have bred in captivity, none of the females taken into captivity from the Abruzzo population in Italy (another small and isolated brown bear population) reproduced in their captive breeding program. Finally, there is the issue that captive bears may undergo different forces of natural selection than wild Mazaalai. This "relaxed selection" may inadvertently contribute to undesirable traits being passed on to the wild population.

We realize that Mongolia has been successful in re-introducing Takhi, (Przewalski's horse) back into the wild with the help of the world zoo community. A number of life-history traits among ungulates are conducive to captive breeding and re-introduction but we note that bears generally lack such favorable traits. Takhi have a much higher reproductive rate (1 offspring / year versus offspring every 4-8 years for brown bears in similar extreme environments, Nawaz et al, 2009). They also have vastly different habitat requirements (grasslands vs the complexity of bear foraging options in the Gobi) and minimal conflict potential with humans relative to brown bears. Therefore, we do not think the Takhi conservation effort is an appropriate model for the Gobi Bear for the reasons discussed above.

Finally, we also are aware that Mongolia declared 2013 the Year of Protecting the Gobi Bear, a bold initiative that we applaud. The Gobi Bear Project has been researching

Mazaalai for a number of years and we understand they have a set of management recommendations that would be useful for consideration in applying in-situ conservation efforts in lieu of captive breeding. Captive breeding programs are very expensive and would likely drain resources and conservation attention that could be directed at priority *in-situ* conservation actions. The success of your supplemental feeding program and evidence of wild bears successfully reproducing strongly suggests there is time for *in-situ* conservation measures to be applied effectively. Improvement of habitat to increase carrying capacity for Mazaalai and other species was an important recommendation of an UNDP project carried out in the GGSPA during 2004-2007 (Batbold and Suvd 2007). Implementing those recommendations could be key for increases in carrying capacity for Mazaalai.

In conclusion, given scientific evidence, we recommend that consideration be given to *in-situ* conservation in lieu of a captive breeding program for Mazaalai. In that regard, the IBA would be pleased to assist the Mongolian Ministry of Environment, Green Development and Tourism in developing effective conservation strategies and specific actions for Mazaalai conservation.

Respectfully yours,

Karen V. Noyce
President
International Association for Bear Research and Management (IBA)

cc: State Secretary Tumendemberel Bulgan

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