

An historical overview on captive breeding attempts of the Apennine brown bear, *Ursus arctos marsicanus* Altobello

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With 1 Figure and 1 Table

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Ein historischer Überblick über Zuchtversuche mit Apennin-Braunbären, *Ursus arctos marsicanus* Altobello

Abstract

A short account on the history of the Apennine brown bear, *Ursus arctos marsicanus*, in captivity is presented for the first time. So far, captive bears have had mostly an educational role. However, considering the recent population decline even inside protected areas, it is argued for a more active role of captive breeding in the conservation of this Italian endemic subspecies.

Key Words

Captive breeding, European biodiversity, protected areas, Zoological gardens

Introduction

Together with the Apennine chamois, *Rupicapra pyrenaica ornata*, the Apennine brown bear had represented the main reason for the establishment in 1922 of the Abruzzo National Park (now the Abruzzo, Lazio and Molise National Park or PNALM) in central Italy, about 100 km east of Rome. The subspecies was described only in 1921 by the Italian zoologist ALTABELLO, but his taxonomic status has been disputed since then by many authorities (e.g. CORBET 1978), although the distinctiveness of this form had been already noted before his formal description by Rome Zoo director (KNOTTNERUS-MEYER 1914). Recent studies based on cranial morphometrics clearly separate the skulls of Apennine bears from those of Alpine and Pyrenean animals (VIGNA TAGLIANTI in BOITANI et al. 2003). Brown bear represent a typical case of a presumed man-caused population fragmentation which obscures real and sometimes very ancient and complex phylogeographic patterns, only revealed by mt DNA studies (TABERLET & BOUVET 1994). Two of the 13 distinct populations surviving the XXI Century in Western Europe are now on the verge of extinction, and re-stocking programmes are underway, in the case of the Pyrenean population using

individuals belonging to a different genetic lineage (ARQUILLIERE 1998). In the Apennines, the brown bear population was estimated not to exceed 80 individuals, of which about half in the Abruzzo National Park (BOSCAGLI 1990) and the population size is suspected to show recurring fluctuations (FABBRI et al. 1983). Actually, a dramatic decrease of the population size is suspected, making the Apennine brown bear the most endangered terrestrial mammal in Italy. A genetic study of brown bear hairs over most of the range identified 30 individuals and evidenced a low genetic diversity in the surviving population (LORENZINI et al. 2004). Captive breeding may prove a valuable tool to increase the effective population size of such a small population and to provide a safe "genetic" bank to use for re-introduction/re-stocking projects. Captive breeding may prove crucial for the long-term conservation of phylogenetically distinct populations of European mammals (GIPPOLITI 2004). The present work offers an historical overview on the former captive breeding attempts and discusses the possible role of captive breeding for the conservation of the Apennine brown bear.

Apennine brown bear in captivity

The first "modern" Apennine brown bears in captivity appears to be the animals kept at the Royal Zoological Garden of Turin (1863–1886) (MASCHIETTI et al. 1988). At the time, the Savoia family only could hunt the species in the Royal reserve and six individuals of unreported sex were held in Turin from 1865 to 1878 (LESSONA 1889, p. 542). No breeding has been reported, while Alpine bears were kept and bred at the Royal Zoological Garden of Florence in 1867 (DESMEURE 1868). Lone cubs become sometimes available in the XX Century and were held by the Rome Zoo or by the ALMNP itself. It appears that even some adult bears were captured to be exhibited, also after the creation of the National Park. (CERETTO 1962, see photo 1), and in 1955 two cubs were captured by the park staff (GALLARATI SCOTTI 1958). Early sixties saw the first serious attempts of breeding captive Apennine bears (Anonymus 1960). The following year a new moated enclosure for these two females was completed in Rome (Anonymus 1961), but it is not recorded if these females later returned to the ALMNP. However, in the same years, GALLARATI SCOTTI (1960) reports the intention of the Abruzzo National Park of donating a female bear to be paired with a male of unknown origin held near Trento (Eremo di S. Rodedio). Longevity of captive Apennine bears is also poor, considering that captive *Ursus arctos* can easily reach the thirties (record longevity: 47 years) (KITCHENER et al. 2001). A critical re-examination of nutrition and general husbandry of captive bears held in the ALMNP is obviously needed.

Management and husbandry problems of captive brown bears

In general, brown bear reproduce easily in captivity and this caused a surplus problem in zoos which led to an almost complete stop of breeding in Europe (HUBER 1996). It is therefore amazing that captive breeding does not play any role in the conservation of the several threatened populations in Western Europe (ANDRÉN et al. 1997) and of the Apennine bear in particular. Much attention is nowadays paid to behavioural necessities of captive bears and to highlight awareness of bear conservation problems through large and natural exhibits (KOENE 1996). Bears maintained in standard zoo enclosures develop a number of stereotype behaviours due to inade-



Abb. 1. Male Apennine brown bear in the Rome Zoo (1933)

Tabelle 1. Individual Apennine brown bear *Ursus arctos marsicanus* known to have been kept in captivity.

sex	Name	Date of arrival	Date of death	Location
M juv.		1913	1914	Rome Zoo
M juv.		11. IV. 25	1925	Rome Zoo
M juv.		11. IV. 25	?	Rome Zoo
F juv.		11. IV. 25	?	Rome Zoo
M		1933	1943	Rome Zoo
F juv.	Lilla	1937	1947	Rome Zoo
M	Bruno	?	?	ALMNP – Pescasseroli
M	Villa	?	?	ALMNP – Pescasseroli
M	Turchio	1955	?	ALMNP
F	Marcolana	1955	?	ALMNP (after 1960 Rome Zoo)
F	Lecce	1956	?	ALMNP (after 1960 Rome Zoo)
M	Sandrino	1982		ALMNP – Villavallelonga
F	Yoga	1988		ALMNP – Villavallelonga
M	Michelino	1990	17. VIII. 96	ALMNP – Pescasseroli
F	Lauretta	1994		ALMNP – Pescasseroli

quate environmental complexity and unnatural feeding regime. Although a solitary animal in the wild, captive bears seem to be able to develop strong social bonds, especially among related animals, and in very large enclosures up to 10–15 bears may be kept together (Huber 1996, VAN DER EIJK 1996). It is obvious that a number of considerations should be made concerning a captive breeding programme for the endangered *Ursus arctos marsicanus*.

- I.) At least in the beginning, the programme should be managed by one institution (ALMNP) in one or two different locations.
- II.) Exhibit design a bear management must alleviate possible conflicts between breeding necessity and recreational and educational role of captive bears in the ALMNP.
- III.) There is a real need for establishing a formal relationship with the European zoo community in view of information sharing, future enlargement of the programme and need of factual cooperation (for example, to avoid hand-rearing of lone cubs). Most of captive Apennine bears were captured as infants (often lone infants) and hand-reared, and this may in part explains poor breeding records in captivity.
- IV.) Further founders are needed for the long-term viability of the captive population, yet they may become available in an unpredictable way (for example through the capture of 'difficult' individuals that came in close contact with humans or of single individuals at the fringe of species range) as at the moment the wild population presents the main conservation priority. A high degree of flexibility is thus required in a CBP programme for the Apennine bear.

Traditionally, captive Apennine bears in the PNALM have been seen as fulfilling an educational role and little interest has been paid to breeding. Of the three individuals currently in captivity, a pair is kept in the Villalonga Bear Centre and the younger female is in the Pescasseroli Zoo. Considering the alarming situation of the bears in Central Italy, it seems worthwhile to consider captive breeding as an important component of the conservation strategy of *Ursus arctos marsicanus*, not as a distraction for the more pressing problems.

Conclusions

An upsurge of poaching even inside protected areas, coupled with losses derived from collisions with vehicles led to a severe recent decline of the bear population in the Apennine. Although attention should not be distorted from the protection of the free-ranging population, it is unlikely the Apennine bear will be able to reach and maintain a safe population level in the foreseeable future. Thus, it is time that the feasibility of a breeding programme aimed to maintain genetic diversity be thoroughly considered.

Zusammenfassung

Es wird eine Übersicht gegeben über die Geschichte der Haltung des Apennin-Braunbären, der erst 1921 als eigene Unterart *Ursus arctos marsicanus* beschrieben wurde. Bisher wurden diese Bären aus pädagogischen Gründen zur Anschauung gehalten. Obwohl dieser Bär in Italien streng geschützt ist, hat der Bestand im Freiland rapide abgenommen, so daß ihre Anzahl

schätzungsweise nur noch 80 Exemplare beträgt. Damit ist der Apennin-Braubär das gefährdetste Landsäugetier Italiens. Vorschläge zur Zucht in Menschenhand werden gemacht.

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