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THE EUROPEAN BREEDING PROGRAM (EEP) FOR *LUTRA LUTRA*: ITS CHANCES AND PROBLEMS

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ABSTRACT – Due to different reasons (bad condition of collected wild animals, poor food and housing conditions etc.) the Eurasian otter *(Lutra lutra*) has been among the most difficult species to kept and bred successfully under captive conditions. Only in the seventies of this century regular captive breeding of this species has been achieved in very few European Zoos and Private Centres. Based on the experiences of the last decades, "husbandry guidelines" have been developed within the "European Breeding Program" (EEP) for this species, giving recommendations for enclosures, breeding, feeding, veterinary care etc. Now in the early nineties the number of institutions breeding otters regularly grew to more than twenty. In 1992, 43 viable births have occurred. The problem of small number of founders (many potential founders are not in a situation to breed due to the absence of suitable facilities) and the question of subspecies in captive otter population are discussed.

Key words: *Lutra lutra*, Breeding program, Europe.

RIASSUNTO – *Programma europeo per la riproduzione della lontra: problemi e chances* – A causa di differenti ragioni (precarie condizioni sanitarie degli animali reperiti in natura, alimentazione non adatta, condizioni inidonee di allevamento ecc.), la lontra *(Lutra lutra*) è stata una delle specie piu difficili da allevare e riprodurre in cattività. Solo negli anni '70 regolari riproduzioni Sono state ottenute in pochi Zoo europei c centri privati. Sulla base delle esperienze maturate negli ultimi vent'anni, Sono state definite, nell'ambito del "European Breeding Program" **(EEP),** le modalità di allevamento della specie, fornendo raccomandazioni per la costruzionc dci recinti di contenimento degli animali, per la riproduzione, l'alimentazione, le cure veterinarie ecc. Nei primi anni del 1990, i Centri che riproducono regolarmente la lontra Sono più di 20 e nel 1992 Sono nati 50 cuccioli, di cui 43 Sono sopravvissuti. Nel presente lavoro Sono discusse le problematiche legate al basso numero di animali fondatori della popolazione presente in cattività (molti potenziali riproduttori vivono in condizioni poco adatte) e quelle relative alla presenza negli allevamenti di sottospecie di *L. lutra*.

Parole chiave: *Lutra lutra*, Programma di riproduzione, Europa

INTRODUCTION

Though the otter (*Lutra lutra*) serves as a symbol for nature protection in Europe and "otter centres" have been created in many European countries, a studbook for this species was established very late. The first steps were undertaken by Claus Reuther in 1982 who started collecting data from all over Europe. The next step was made by Klaus Robin - then at the Berne Zoo - who intensified data collecting and started giving recommendations for exchanges of otters between different institutions.

The late beginning of the otter-studbook is due to the fact that captive breeding for many decades seemed almost impossible, it even was difficult until

the late sixties to keep European otters alive over a longer period under zoo-conditions. There might be different reasons for this failure, including the idea that captive breeding seemed unimportant as long as the free-living otter population in many countries appeared to be stable.

There is no doubt that Wayre (1972) from "The Otter Trust", Bungay (UK), was the first person who succeeded in breeding otters regularly. Unfortunately here is also the origin of some basic difficulties concerning the studbook and EEP for this species.

Another difficulty - which certainly also applies to other breeding-programs, but probably in a less drastic way - is due to the almost complete lack of modem research concerning the systematics of the European/Eurasian otter in its very large range, covering most of Eurasia and parts of northern Africa.

The importance of breeding-programs seems to be evident for most people interested in the captive management of endangered species but still might need some explanation for those who doubt that there is any justification for keeping and breeding wild animals under captive conditions.

WHAT IS EEP?

This abbreviation is derived from the German "Europaisches Erhaltungszucht Programm" which means "European breeding program for self-sustaining captive populations". EEPs were initiated in 1985 by colleagues of the European zoo-community and now EEPs have been established for 83 species. The institutions participating in an EEP - Zoological Gardens, specialized breeding-centres and also private breeders - agree to inform the person in charge of the EEP (the species-co-ordinator) about all events occurring in their stock. They agree to co-operate with respect to proposed transfers of individuals becoming necessary in order to minimize inbreeding in a limited population, to equalize founder-representation and so to maintain genetic diversity at its highest possible level.

For the management of small populations and their genetic analysis a special computer-software ("zrbook") was developed by Princée (1989).

Among other tasks every "species co-ordinator" (Neugebauer et al., 1989), together with the so-called "species-commission" (elected by the member institutions of the EEP) has to provide information for new and inexperienced keepers, the "husbandry guidelines" for the species he is in charge of.

DEVELOPMENT AND ACTUAL SITUATION OF THE OTTER-EEP

In 1990, when 1have been appointed as studbook-keeper and EEP co-ordinator, the first questionnaires were sent out to ask the known institutions to participate in the Otter-EEP. In a first step 36 institutions agreed, representing ca. 60% of those co-operating with the studbook. In 1992 a second inquiry was started, mainly to include institutions from the British Isles. Now (1993) 55 (91%) out of 60 otter-keeping institutions included in the studbook have accepted to co-operate in the Otter-EEP.

The development of the EEP otter-population between 1978 and 1992 is given in Fig. 1. In this period, though the number of institutions keeping *L. lutra* remained almost stable except the last *3* years, there was a clear increase in the number of

surviving cubs per year. In 1992 the total captive population was 196 individuals and 43 cubs out of 50 were survived.

Based on these facts the situation can be interpreted as follows.

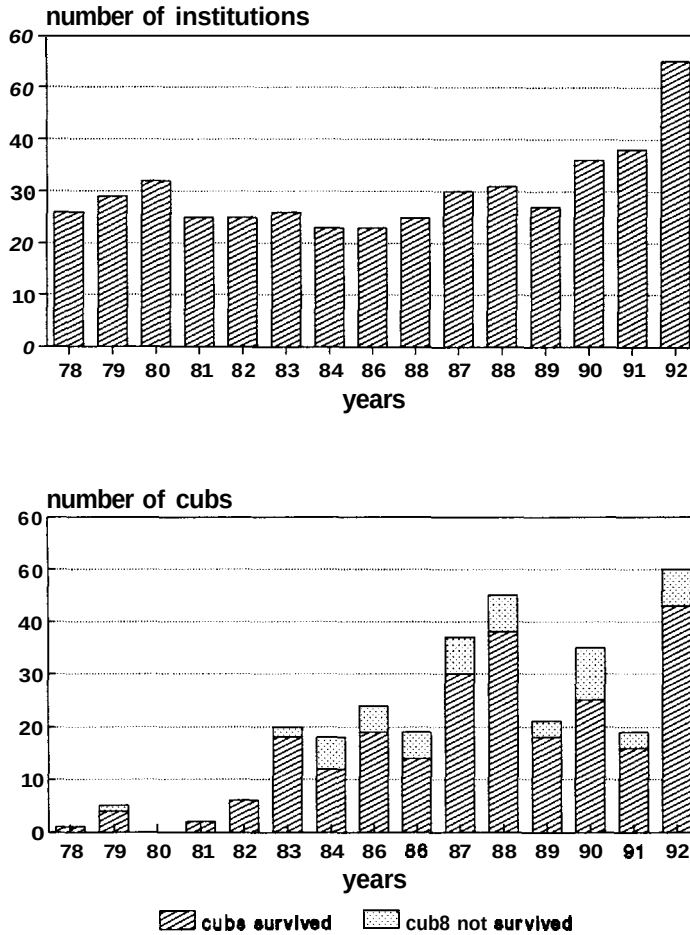

Fig. 1 - Number of institutions keeping *L. lutra* from 1978 to 1992 and number of surviving cubs per year. Data between 1978 and 1989 are taken from the studbook since there was no EEP yet established.

Though there has been some slight growth - due mainly to births - of the captive population during the last few years, breeding still succeeded in only a small number of institutions. Until 1990 breeding was limited to about 10 collections, in 1991/92 this number has almost doubled. Still only one third of the participants are more or less regular "breeders" but nevertheless at the end of 1992 67% of the EEP otter-population were captive born.

With respect to geography breeding occurred mainly in Western Europe. Institutions from Central and Eastern Europe still keep mainly wildcaught animals - which are of course the most important possible founders - and only seldom bred successfully. Additionally there are doubts about the origin of the most successful founder-animals.

The import of wildcaught otters into the EEP-population has been very low (ca. 5-10 animals per year, among them many were badly injured and did not survive) and was limited to collections of Central and Eastern Europe. In Western Europe where wild otter populations are more endangered (with a few exceptions) or have been completely exterminated, no wildcaught otters from the local population have been incorporated in the program for many years.

PROBLEMS RELATED TO THE EEP FOR *L. LUTRA*

FOUNDER-ANIMALS

Only incomplete information is available about the origin of the most successful founder-animals (ca. 40 individuals). Their descendants represent about 95% of all captive born otters alive in 1992. **As** far as can be deduced from the information available their ancestors were wildcaught otters from the British Isles, mainly from Scotland. Pedigrees exist only for about half of the above-mentioned founders. This unfortunately leaves many questions open.

The suspicion that even founders from South-East Asia representing the subspecies *Lutra* l. *barang* may have contributed to the actual EEP/studbook-population has no real basis. **As** far as is documented in the International Zoo Year-book, reproduction of *Lutra* l. *barang* occurred at "Norfolk Wildlife Park", Great Witchingham in 1974, 1975 and 1976 (International Zoo Year-book, 1976, 1977 and 1978). At that time, when captive births were almost non existent, it was unlikely that offspring of this otter subspecies could have survived.

Another great problem derives from the fact that a large number of wildcaught possible founders from Central and Eastern Europe do not contribute to the "gene-pool" of the EEP-population. Therefore all possible efforts have to be undertaken to improve the conditions for otter-keeping in this part of Europe. If this can be achieved it will enlarge the genetic diversity of the captive population. The additional import of 1 - 2 individuals per year could increase the chance of keeping this population genetically viable for many generations.

INEQUALITY OF MAINTENANCE CONDITIONS

This problem seems less difficult to solve: husbandry-guidelines based on the experiences of the more successful institutions should improve the conditions with respect to housing, feeding, management, cub-rearing and veterinary care. A first version of "husbandry guidelines" for *L. lutra* is available and can be ordered from the Krefelder Zoo.

SUPPOSED GEOGRAPHICAL DIFFERENCES WITHIN THE SUBSPECIES *LUTRA L. LUTRA.*

According to literature (Harris, 1968) and many experienced otter specialists there is only one subspecies within the whole of Europe. Its range extends even farther to the east throughout Siberia up to the Pacific Coast. The differences between *Lutra* 1. *lutra* and the seven to nine (or more) other subspecies of *L. lutra* described in literature are not well defined and rarely based on a sufficient number of specimens.

In contrast to this lack of precise definition there is an endless and redundant discussion about supposed differences between otter-populations living in different parts of Europe, for example "Scandinavian", "British" (even "Northern-Irish"), "French" etc. otters. The same discussion of course concerns many other endangered species and it makes breeding-programs2 difficult attempt. Considering the ability of otters to move over long distances across land and water, it seems probable that at least originally there were no sharp boundaries between "subpopulations". On the contrary, slight changes of features within the large range occupied by this species seem more probable. Even for the Scandinavian "sub-population" of *Lutra* 1. *lutru* a few thousand years since the end of the last ice-age were too short for the evolution of a new subspecies or species, quite apart from the various chances for an aquatic mammal like the otter to have genetic contact with the "continental" population.

We have to admit that genetically based differences (concerning anatomical, physiological and behavioural traits) between smaller units of a population exist - as shown for nonmetrical features of the otter-skull from different regions in Germany (Ansorge & Stubbe, 1992). Today these may become even more effective due to the "splitting" of geographical units by human influence. But there is no scientific basis for the existence of different subspecies or even species within Europe. An attempt has been started by Schreiber (1992) to analyze blood from otters of different origin but so far not enough samples are available.

STATUS OF THE EUROPEAN OTTER IN THE WILD

The results of field-studies were collected by Mason & Macdonald (1986). In general the situation of the otter in most parts of Europe is so poor that all kinds of efforts to protect this species are justified. Among other efforts to improve the situation of this species is the management of a captive population serving in the first place as an "ambassador" for public awareness. In order to keep it healthy and viable over many generations we have to respect the principles of population-genetics (De Boer, 1989). This of course makes close co-operation necessary.

CO-OPERATION WITH "OTTER-BREEDING-CENTRES"

Though co-operation between zoological institutions has improved during the last decades there are still several breeding-centres in Scandinavia and the United Kingdom not agreeing to participate in an European breeding-program. Unfortunately they do not even agree to send information concerning their otter-

stock and experience to the studbook-keeper. This regrettably leads to a loss of information on both sides.

There might be different reasons for such an attitude: an almost political interest to preserve a "pure-bred" line of otters peculiar to each country, veterinary regulations and the fear of mixing up European otters with another subspecies, for instance *Lutra l. barang*. Apparently there is no other solution to this problem than to accept the facts and to try to convince in the long run.

CONCLUSION

The development of the captive otter population justifies some optimism though there are a number of difficulties. Apparently there are no more insuperable obstacles to the keeping of this species in good health and to breed it successfully. Enclosures offering a variety of features necessary for its well-being have been developed, based on the experience of an increasing number of institutions.

On the other hand there is still a relatively high juvenile mortality, a lot of possible founders are still genetically excluded and the population size has to be increased in order to enhance the genetic variability.

Kept in aesthetically and naturally designed enclosures captive otters can serve as a kind of "ambassador-species" to increase the public's interest in nature protection, especially the preservation of water-ecosystems. Even a "good" enclosure without animals being visible during day time - Eurasian otters tend to be more active during the night than during the day - can be instructive for the public (Vogt, 1987).

Within a few years a self-sustaining captive otter population can be established (if no unforeseeable obstacles arise) for exhibition, research and - after thorough preparatio **is** and if agreeable by the authorities concerned - for reintroduction. In regions where the otter has been extinct for a long time and where no chance for recolonization is possible, reintroduction should not be neglected completely. Of course the ecological situation in the release area has to be studied thoroughly and to be found appropriate for a sound release program.

Considering the problems and uncertainties mentioned above and the partially good status of the otter in the wild, the otter-EEP should best be managed at "low intensity".

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