

*Expanded abstract:*

## International Studbook for Muskoxen in Captivity

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In order to improve Muskox husbandry, it was proposed to establish an International Studbook for this species in 1984. This proposal was put forward by the Copenhagen Zoo, and it was approved by the IUCN (International Union for Conservation of Nature) and the IUDZG (International Union of Directors of Zoological Gardens) in 1985. Copenhagen Zoo was at the same time appointed Studbookkeeper.

### *Collecting data*

By sending out questionnaires to all institutions known to have muskoxen in their stock an overall picture of the status in captivity was established. Vital data such as date of birth, parents, whereabouts, transfers and date of death were collected for all specimens as well as autopsy reports for all deceased animals. Through these data all specimens were traced back to their wild origin, their state of relatedness could be established, and the subspeciation, «moschatus» and «wardi», was decided on the basis of place of origin. Although the subspeciation is questioned, the Studbook operates with two subspecies until there is definite evidence to the contrary effect. Furthermore all institutions are recommended not to mix the two.

Annual updates of the Studbook are made each January by sending out questionnaires asking for any changes in the stock during the year.

### *How to read the Studbook ?*

The Studbook is divided into two sections. The first section contains four introductory chapters written by experienced scientists working with muskox either in the wild or in captivity. Systematics, behaviour, ecology and status of the muskox in Greenland and Canada is presented in order to introduce the muskox. Following these introductory chapters you will find the register of muskoxen in captivity as per January 1st, 1990. The register falls into two parts:

- A. Total Studbook Population listing all specimens registered in the Studbook
- B. Living population as per January 1st, 1990 distributed on each institution.

All registered animals are identified by a 4-digit studbook number which is given consecutively. Parents are either identified by their studbook number or – in case these are not known – by the terms «WILD» or «UNKN». «WILD» means that they can only be traced to their place of origin, i.e. the wild, but not to a specific specimen. «UNKN» is given to all animals which neither can be identified by their studbook number nor by the status «WILD». In addition to the studbook number each animal gets a breeder code referring to the breeding performance of the institution in question. «cop 3»

thus means the third calf born in Copenhagen Zoo. Included is also a list of institutions listing all institutions keeping or having kept muskoxen.

#### *How to use data?*

So far 679 muskoxen have been registered and traced back to their wild ancestors (place of capture). Based on the origin of their ancestors they are classed as either «wardi», «moschatus» or of unknown subspecies. Several specimens have turned out to be «hybrids» between the two subspecies, and these will be avoided in future breeding programmes. Of the 679 registered animals, 366 were still alive as per December 31, 1990. They were distributed on 60 institutions, primarily zoos, all over the world, and nearly all of these institutions participate each year in the annual update of the studbook. This makes the studbook an efficient tool in the global management of the muskox as well as for research concerning this species. The studbook data in the studbo-

ok already forms the basis of genetic and demographic analyses of the captive population and will in the future also be used for research concerning the existence or non-existence of the two subspecies. Blood samples from animals of known origin will be compared in order to detect possible genetic differences. And if such differences exist a closer examination of the geographical line between the two subspecies will be initiated.

#### *Future Studbooks?*

The next issue of the studbook will appear in 1993 and will include a chapter on the history of muskoxen in captivity, the results of genetic and demographic analyses and an updated register of the captive population of muskoxen. Further efforts will be put into husbandry guidelines and analyses of death causes in captivity.

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