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Factors influencing ovarian cyclicity, breeding and cub survival in captive tigers (*Panthera tigris*)

K Ibuse*

Department of Animal Breeding and Genetics, Nagoya University, Nagoya, Aichi, Japan

*Corresponding author. E-mail: kenji@gmail.com

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DESCRIPTION

Breeding success and population growth rates are impacted by factors that affect reproduction and progeny survival, making them crucial for the management of threatened species in zoos. Intensively controlled breeding programmes use these data to inform their strategic suggestions, which are supported by science and aim to produce populations that are both genetically varied and demographically stable. Tigers (*Panther tigris*) are one of the animals that are most frequently on display in zoos around the world, despite being severely endangered in the wild. Numerous regional zoo associations throughout the world conduct cooperative breeding programmes for tigers, which act as a "genetic lifeboat" by offering breeding advice targeted at preserving genetic diversity and demographic stability. Comparatively to other extensively studied large felids like lions and cheetahs, however, relatively little published information is available on the factors impacting mating success and cub survival in tigers (Bashaw, 2007).

One of the longest-running managed breeding programmes in North America is the Association of Zoos and Aquariums Tiger Species Survival Plan (Tiger SSP), which also maintains comprehensive long-term breeding, pedigree, and survivorship records for tigers in local studbooks and other databases. In order to evaluate female reproductive state, the SSP recently created a hormone database for female tigers. In order to achieve the demographic and genetic population goals, annual breeding and transfer plans specify how many breeding pairs are required and which animals are to be coupled for breeding over the course of the plan's one-year period. To produce these recommendations, SSP coordinators take into account factors including logistics, health status, and behaviour in addition to information on the age of the animal, relative genetic value, and relatedness of individuals (Beekman, 1999).

Preliminary data indicate that some biological and management-related factors may be potentially significant in predicting tiger breeding success and cub survival. These parameters have been proven to affect reproductive success in other zoo-held felids. One of the biological characteristics that have been most frequently identified as affecting mammal reproductive success is female age, with young adult ages typically being when success is at its highest (Brown, 1994). The impact of a woman's age on her offspring's survival is unclear, though. While some research has identified no substantial negative link between female age and offspring survival in captive primates and mammals, other studies have found one. It has been demonstrated that cheetah parental age and female parity have an impact on cub survival. Inbreeding level and the size of the litter have both been shown to be important indicators of cheetah cub survival. In addition, given the sufficient sample size of this analysis, raising procedure was included as a potential predictor of cub survival. However, the influence of rearing type on felids has not been thoroughly investigated.

Breeding success and child survival in managed environments may also be impacted by management procedures and staff experience. According to certain research, constant contact with possible mates encourages effective reproduction among felids. Pairs should only be introduced during the females estrus cycles, according to other studies that have demonstrated that keeping cats together has a negative impact on reproductive success. Additionally, it is unclear how staff members' expertise breeding tigers may affect pregnancy outcomes and cub survival. Whether tigers that are intended for breeding are already housed at a particular facility or need to be moved may also have an impact on breeding success because of transfer delays or the stress of transfer. The main objective of this study was to objectively establish if biological and/or

management-related factors influence the success of tiger breeding and cub survival in zoos by using a long-term data collection from Tiger SSP breeding recommendations (de Rouck, 2005). In order to determine whether female age and parity were connected with the frequency of ovarian cyclicity and cycle duration, hormone profiles from 38 female tigers were also employed.

As a result, administrators are able to make recommendations that are more scientifically supported, alter management and breeding tactics, increase reproductive success, and eventually, better manage tigers in cooperative breeding projects on a worldwide scale. Increase the viability of the population for this critically endangered species. Although the demographic and genetic effects of such a strategy would need to be taken into account, allowing females to breed at prime ages with a focus on the younger age classes could boost breeding success. At Tiger SSP breeding facilities, breeding and rearing techniques from the experiences of experienced employees should be included in a manual that will be produced and distributed. Amur, Malayan, and Sumatran tigers must maintain high rates of reproduction in captivity because it is estimated that each species has fewer than 500 wild members. Finally, similar studies of breeding recommendation data may contribute significantly to scientific knowledge to enhance the demographic stability and sustainability of felid populations housed in zoos. These findings are likely relevant to other intensively maintained felid species (Laurenson, 1994).

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