The Natural Resource Institutions for Conservation of Wildlife

Dr. Jitendra Kumar Singh
SOMC, Sanskriti University, Mathura, Uttar Pradesh, India
Email id- jitendra.somc@sanskriti.edu.in

ABSTRACT: ***This study describes a Biological Resource Bank developed to assist Iberian lynx reproduction and in situ and ex situ conservation. Its design emphasized the preservation of the population's genetic and biological variety, as well as the safe sampling of samples. These deceased animals' germ cells and tissues, as well as somatic cells and tissues from 69 distinct individuals, were processed and cryopreserved to offer prospective reproductive possibilities. This reserve of somatic cells comprises a substantial proportion of the population's biodiversity, allowing for a broad variety of research that can readily be extrapolated to the whole population. We developed a non-destructive method to isolate stem-like cells. These cells may be useful in the future for therapeutic purposes and may be a suitable source for somatic cell nuclear transfer. Some people's pee and faeces were also stored. For epidemiological studies to be conducted, or for bio-sanitary research to be conducted, samples must be properly stored. This paper discusses the practical implementation of the Iberian Lynx Biological Resource Bank as a model for creating similar banks for other endangered species.***

KEYWORDS: ART, Biological Resource Banks, Endangered Species, Somatic Cell Nuclear Transfer, Wildlife Conservation.

1. INTRODUCTION

The goal of animal protection is to preserve and, if possible, enhance the biodiversity of the world's animals. The most effective method to accomplish this goal is via the preservation of the natural environment. In situ conservation techniques, on the other hand, are often unsuccessful when it comes to maintaining the dispersion of tiny populations and the maintenance of enough genetic diversity. In addition to the above-mentioned strategies, ex situ programmes aiming at maintaining a viable population via captive breeding and cryopreservation of animal genetic resources should be implemented in order to supplement them. Biological Resource Banks (BRBs) are collections of biological materials that have been collected, processed, and preserved. They are sometimes referred to as genome or genetic resource banks. Its use in the management and preservation of endangered species is being actively pushed on a large scale. Recent examples include the Frozen Ark Consortium and the Wildlife BRB of Southern Africa, both of which are based in South Africa. If managed correctly, these reserves have the potential to preserve current genetic diversity in populations while also providing future reproductive possibilities via a variety of methods[1].

The vast majority of cryobanks previously listed in the literature are specialized in gametes and embryos, with several of them specializing exclusively in gametes and embryos. In this case, the deposits are germplasm banks, which mostly include samples of sperm and eggs. One of their primary goals is to produce children via the use of assisted reproductive methods (ART), which may include artificial insemination as well as IVF and embryo transfer among other procedures. These methods have been successfully used to domestic animals, and, after the groundbreaking work of Kraemer et al., they now seem to be a viable strategy for the protection of endangered species as well. The cryopreservation of spermatozoa from a variety of non-domestic species has shown to be successful, despite the fact that further research into the reproductive biology of wild animals is required. These example forms must be included as a fundamental component of any Biological Resource Bank, since they are required by law[2].

Despite this, wild endangered animal semen banks are currently underdeveloped, perhaps as a result of the difficulties in obtaining semen samples and, as a result, a scarcity of fundamental knowledge on species-specific cryopreservation methods for the animals. The issue is considerably more complex in the case of oocyte cryopreservation, with the selection of viable oocytes only being possible from recently deceased or imprisoned females. Consequently, if only gametes from endangered species are preserved, it is very difficult to prohibit the use of a genetic pool that is representative of the population's diversification.

We also addressed the fact that, in addition to gametes and embryos, biological resource banks need contain additional biological sources, such as somatic tissues and cells, in order to be complete. During biopsies and necropsies, it is possible to acquire some samples that are both easy to get and completely safe. Consequently, via selection and processing of both the male and female populations, we will be able to attain the maximum

potential genetic diversity in both populations. Tissues and somatic cells offer a broad range of applications, including genetic, toxicological, and epidemiological research, among others.

The use of somatic cells as providers of human genetic inheritance in somatic cell nuclear transfer (SCNT), often known as cloning, is another potential use of somatic cells. There are reports of 16 different animal species that have been successfully cloned and have given birth to healthy offspring. The list includes sheep, calves, rats, goats, pigs, cats, rabbits (including musk oxen), mules, horses (including musk oxen), and endangered mammal species such as bovid, mouflons, felids, and wolves (among others). These infants were conceived via the use of intra- and inter-species variants of this method. Somatic cell nuclear transfer has therefore been suggested as a potentially important component of wildlife management efforts in the future. Although this system now has a relatively low efficiency rate, more research and methods are needed to improve its performance[3].

The preservation of other biomaterials is often beneficial in the context of biodiversity conservation. Due to the fact that these materials may be converted into serum, plasma, blood cells, DNA, and tissue/cell cultures, researchers addressed the processing and preservation of blood and tissues early in their research. It is possible to utilize these biomaterials for the investigation of genetic variation, phylogeny, paternity, gene flow, and/or preference. Fecal or hair samples are frequently utilized as non-invasive genetic identification techniques since they are non-invasive in their collection. It is common practice to collect fecal samples in order to identify gastrointestinal parasites and, via the measurement of different metabolites, to monitor the reproductive activities of parasites. Blood and urine samples are utilized in epidemiological research, and they are often collected on a regular basis for routine hygienic checks. While such biomaterials are often gathered separately and seldom kept, they are required for accurate research to be carried out. If it is feasible, we believe it is desirable to regularly collect, process, and preserve this kind of biomaterial in endangered species in order to enable any study that may be conducted in the future to support in situ conservation[4].

For the endangered wildlife of Spain, which includes animals, fish, and numerous bird species, we established the Biological Resource Bank in 2002, with the goal of providing a financing instrument for breeding and conservation programmes. Beginning as a cryopreserved tissue and somatic cell bank, it has now grown to encompass additional biological samples, particularly in the case of endangered or critically endangered species. This study focuses on the Iberian Lynx Biological Resource Bank, which was created by our group in collaboration with the Environmental Council of the Regional Government of Andalusia and members from the Captive Breeding Program. The Iberian lynx is one of the world's most endangered felids, with fewer than 170 animals believed to be located in the south of Spain in just two meta-populations that are isolated from one another.

The Iberian lynx is also the world's most endangered felid. The World Conservation Union categorizes it as severely endangered, which is an official designation. In addition, we discovered that the preservation of the whole existing genetic and biological variety of the population should be a top goal in the establishment of a biological reserve. In order to do this, all samples were obtained in a safe manner from as many individuals as was feasible. In accordance with these conservation approaches, a diverse range of sample types was selected, processed, and stored in order to: (a) allow any potential bio-sanitary studies to be conducted in order to enhance the conservation of existing individuals in their natural habitat; and (b) provide future reproductive opportunities through all practicable techniques, taking into account both gametes and somatic cells, among other things[5].

According to this second objective, a novel technique has been developed in order to improve the effectiveness of somatic cell nuclear transfer by a factor of two. To find cells in cell cultures that had two important stem cell characteristics: a high rate of proliferation and the capacity to form spherical colonies known as embryonic bodies, our team looked for cells that have both characteristics. Recently, a number of investigations have shown the presence of stem cells in adult tissues. Stem cells go through more replication steps and have more flexibility than somatic cells that have reached their maximum differentiation potential. Our theory is that cells with stem-cell-like features will be more conducive to the nuclear reprogramming that will be required during the nuclear transfer method of somatic cells. As a result, we are searching for cells that have stem-cell-like characteristics.

This complementary conservation approach is presently being developed as a supporting tool for reproductive and worldwide conservation efforts, both in situ and ex situ, and will be implemented both in situ and ex situ.

In this paper, we explain the technique that was utilized during the 2003-2006-time period for the treatment of each part of the Iberian lynx BRB that was established by our community, taking into consideration the aforementioned goals and conservation methods. Our goal is to identify the essential elements of its functional implementation as a model that might be used to establish similar banks for other endangered species in the future, in order to make the bank more helpful for other endangered species.

1.1 Celebrities Influence:

Nowadays, television viewers are exposed to a plethora of worldwide superstars from all walks of life. Millions of people are likely to be familiar with exceptional sportsmen such as former NBA champion Michael Jordan and professional golfer Tiger Woods, top-earning performing artists such as Madonna and Justin Timberlake, and film stars such as Tom Cruise and Nicole Kidman. These individuals' increasing exposure to professional sports, artists, and other media personalities has resulted in very high profits for them via advertising contracts over the course of the last few decades. According to advertising studies, celebrities may successfully boost product sales by increasing customer knowledge of and positive sentiments toward the goods they support. Celebrities have been shown to be effective influencers of purchasing behaviour when it comes to matching their public exposure, attributes, and lifestyle with the type of product or service they are promoting[6].

This is accomplished by attempting to match endorsers' public exposure, attributes, and lifestyle with the type of product or service being promoted. Corporate spokespersons who are famous for their work tend to get more money, and celebrity endorsements have been a commonplace component of marketing campaigns in recent years. By 1997, the usage of celebrities in advertising had reached a high of 25% in the United States and 70% in Japan, according to Nielsen.

1.2 Celebrities News Dissemination:

Beyond their economic impact, celebrities have the ability to affect major social problems as well as the spread of news and the formulation of public policy. Celebrities are a magnet for the news media as well as for opportunistic paparazzi looking to break a major story when the opportunity arises. People who report on celebrity news have been produced by newspapers, magazines, and news entertainment television shows, as described by Shenk, who names them ‘‘celebrity-journalists." In addition to reporting on celebrities, many of the major cable news networks such as CNN, FOX, and MSNBC devote a significant amount of news time to doing so; major newspapers have experienced what is known as "tabloidization" by reporting as hard news stories what was traditionally found in the tabloid press. Both print and electronic media outlets are now devoted to reporting on celebrities[7].

There have been hundreds of news diffusion studies done since 1940, but relatively few have looked at how news articles about celebrities spread since they first appeared in the media. It is very difficult to keep up with the latest news when celebrities are at the center of it. For example, when Magic Johnson held a special news conference to announce that he was HIV positive, or when O.J. Simpson was evading arrest on Los Angeles freeways, or when John F. Kennedy Jr. was killed when his plane crashed off the coast of Martha's Vineyard, the news spreads quickly. For any given news item, the more significant and globally recognized a celebrity who is at the heart of it, the more quickly that news will spread. According to experts, the media frenzy following Princess Diana's death is an example of what they term "the frenzy of fame." As a result, the news coverage becomes a part of the news narrative in such circumstances[8].

1.3 Celebrity as A Fictitious Hero:

Researchers was one of the first academics to identify the emergence of celebrities in popular culture and to anticipate their strong social impact. He was also one of the first scholars to predict the rise of fame in popular culture. When academics published his groundbreaking study 48 years ago, the extraordinary growth of multinational media companies that has made rock musicians, recording artists, television and film stars, and sports globally famous had just begun. When it comes to the transition from traditional heroes to celebrities, researchers believe that the hero is a person who is distinguished by achievement and who has created his or her own persona, whereas the celebrity is an image or persona created by the media and distinguished by his or her trademark, according to the researchers. He made the observation that "the hero was a large guy, and the celebrity had a big name." The heroic qualities associated with traditional heroes include tremendous deeds of

bravery or remarkable achievements requiring exceptional skill and fortitude. They are often pushed into the public limelight without their will, and they may not consider themselves to be heroes. Flags of our Fathers, a critically acclaimed film directed by Clint Eastwood, depicts this inner struggle in the lives of the heroes of Iwo Jima who hoisted the American flag atop Mt. Sarabachi on the Pacific island of Okinawa[9].

2. DISCUSSION

In this study, we presented a BRB for the Iberian lynx that was developed by our group during the years 2003-2006. In order to promote reproduction and worldwide conservation, this supplementary conservation approach is being developed as a supporting tool that may be used both in situ and ex situ. In addition, we discovered that the preservation of the whole existing genetic and biological variety of the population should be a top goal in the establishment of a biological reserve. In order to do this, as many people as feasible have collected all of the banked samples in a safe manner (germinal and somatic cells, as well as the rest of the biomaterials). For this conservation technique, we used a diverse range of sample forms obtained from necropsies or living animals, the latter of which was often used for various reasons as a result of animal manipulation. Key goals were to avoid permanent loss of biodiversity from each dying organism while still achieving complete representation of biodiversity from the population as a whole.

Personalities, behaviour types, and behavioral phenotypes are terms used to describe inter-individual behavioral variations within animal populations that are stable over time and across situations. These differences are also referred to as behavioral phenotypes. Aggression (the tendency for agonistic behaviour towards conspecifics), exploration avoidance (how individuals respond to a novel situation), activity (the tendency towards movement), shyness–boldness (responses to perceived risk), and sociability are all examples of behavioral traits that are commonly measured as components of animal personality (non-agonistic behaviour towards conspecifics). Behavioral characteristics that make up a person's personality are often linked, and groups of correlated characteristics are referred to as behavioral syndromes. Early in the twentieth century, psychological literature introduced the notion that inter-individual behavioral differences are more than random fluctuations within populations. In the last 15–20 years, behavioral ecologists and evolutionary biologists have given this concept a great deal of attention.

Over a wide range of species, consistent inter-individual behavioral variations and associated behavioral characteristics have been observed. As a result, they are widely accepted as being frequent. Evidence also indicates that behavioral characteristics and related disorders are affected by the environment and may change in response to different circumstances. Experimental evidence or hypotheses suggest that animal personalities influence a variety of population processes, including space use, habitat selection and response to novel environments, dispersal, species interactions and host-parasite interactions, disease transmission, and other key processes important for wildlife conservation and management. Furthermore, it has been demonstrated that behavioral traits and syndromes are linked to fitness, such that individuals will perform better in some circumstances and not others, thereby maintaining behavioral differences within a population and influencing demographic parameters, both of which are important considerations for wildlife management practices[10].

3. CONCLUSION

The Iberian Lynx Biological Resource Bank, which is described in this article, is a useful tool for preventing the irreversible loss of biodiversity from each deceased individual and ensuring that the population's biodiversity is fully represented. For the aim of establishing a model that might be used to establish comparable repositories for other endangered species, the authors identified the critical factors that must be considered in order for the bank to be implemented successfully. The processing and cryopreservation of germinal and somatic cells and tissues, obtained solely via non-invasive procedures from deceased animals and biopsies, has been done with the purpose of providing possible reproductive possibilities throughout the whole range of practical approaches. The reserve of somatic cells constitutes a statistically significant proportion of the population's biodiversity, allowing the results of any research to be generalized to the rest of the population as a whole. For the purpose of isolating cells with stem-cell-like characteristics, we have developed a novel non-destructive procedure. These cells were cryopreserved in order to be utilized in the Somatic Cell Nuclear Transfer procedure if it becomes necessary in the future. They were chosen because they were a potentially better cell source than fully differentiated somatic cells. In order to improve the survival of the Iberian lynx in its natural environment,

samples of whole blood and derivatives, pulled fur, urine, and faeces were regularly processed in order to provide any analysis at any time, as well as samples of whole blood and derivatives. As of right now, we are continuing to work on the Iberian Lynx Biological Resource Bank in accordance with the same conservation objectives and methods that were outlined in this research.

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