

Mating Strategies and Reproductive Successes of Male Sumatran Orangutans

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Abstract: The orangutan has an extremely loose type of fission-fusion society and a complex social structure, characterized by extreme sexual dimorphism. A pronounced bimaturism in the males is also remarkable. Whereas some adult males develop full secondary sexual characteristics, such as cheek flanges, other may stay in an arrested unflanged condition for up to 20 years. This organization with its strong male bimaturism has been explained as the result of the strong male-male competition, with only a minimal role for female choice (Rodman and Mitani, 1987). Schürmann and van Hooff (1986) and van Hooff (1995) proposed a variant of this model that emphasizes the pivotal role of female choice (cf. van Schaik and van Hooff, 1996). We investigated male mating strategies and reproductive success in a six-year field study of the Ketambe population in the Gn. Leuser National Park, Sumatra, Indonesia. Faecal samples were collected and analyzed for 30 individuals, some of which have been behaviorally monitored for more than 25 years. Based on the analysis of a set of five polymorphic microsatellites, genealogical relationships were analysed. Thus the paternity of 11 offspring born over a period of 15 years and the reproductive success of flanged and unflanged males could be established. These results were related to behavioral data on male-male sexual competition and female reproductive status. The behavioral data showed that female preference operates to enhance the reproductive success of flanged males, possibly explaining their relative tolerance of arrested unflanged males, while the genealogical data found that unflanged males fathered about half of the offspring, suggesting that frequency-dependent selection explains the coexistence of the two male morphs.

Orangutan Hepadnavirus: A Novel Hepadnavirus Naturally Infecting Orangutans

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Abstract: Orangutans that test positive to hepatitis B virus (HBV) surface antigen have for many years caused problems for reintroduction centres involved with their conservation. A serological survey to determine the prevalence of viral infections in 195 confiscated orangutans in an Orangutan Reintroduction Centre in East Kalimantan, Indonesia, showed that 42.6% cross-reacted with human HBV antigens and/or antibodies. Due to the high prevalence of HBV in humans in Southeast Asia and the close contact between humans and captive orangutans, it had been generally assumed in the past that orangutans are infected with human HBV. However, two wild orangutans tested positive to HBV surface antibody, indicating that HBV or related viruses may be occurring naturally in orangutan populations. The research reported here aimed to characterise and determine the origin of this hepatitis virus in orangutans. Sequence analyses of seven isolates revealed that the orangutans were infected with a novel hepadnavirus, which was clearly divergent from the six known human HBV genotypes and those of other nonhuman hepadnaviruses reported. Phylogenetic analyses revealed geographic clustering with Southeast Asian genotype C viruses and gibbon HBV. This implies a common origin of infection within this geographic region, with cross-species transmission of hepadnaviruses among hominoids. The determination that this virus is an indigenous virus in wild orangutan populations has important implications for quarantine policy at orangutan reintroduction centres.

Caring for Orangutan Orphans in Indonesia

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Abstract: Destruction of habitat guarantees that the 21st century will deal with orangutan orphans, many of whom will have been held as pets. How can an orphanage setting meet the physical, emotional, and social needs of these orphans? One such location in Pasir Panjang, Indonesia, struggles with these issues, as well as the issue of using volunteer caregivers. Real-life experiences of one such volunteer are presented and the realities of managing ex-captive orangutans in the third world are addressed.

Creative Gorilla Group Management: Breeding a Young Female While Keeping Her in Her Natal Group

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Abstract: Woodland Park Zoo gorilla keepers initiated a management plan designed to allow impregnation of a female gorilla by an unrelated male from an adjacent group. Alafia, a nulliparous nine-year-old gorilla female, was living in her natal group consisting of her father and two related females. Vip, a 20-year-old silverback, was housed with two adult females and his two offspring. Prior to being introduced, Alafia and Vip showed interest in each other from their respective exhibits; however, group compositions and dynamics dictated that we keep Alafia in her natal group rather than transferring her to Vip's group or to another zoo. We allowed Alafia and Vip to choose, each day, to come inside together, away from their respective groups. These monitored introductions took place daily between August 1999 and April 2000. Our management plan consisted of a series of distinct steps, starting with training Alafia to urinate on cue and ending with a gradual reduction in time spent together between the now pregnant female and the sire. A crucial element of the project was predicting a time three days in advance of Alafia's ovulation so that we could separate her from her father at the time of ovulation. This was accomplished with the use of OvuQuick brand test kits (Quidel Corporation, San Diego, CA). By exhibiting and housing two gorilla groups in close proximity to each other, we have the flexibility to creatively manage the groups and maximize reproductive potential.

Mitochondrial DNA Variability of Nigerian Gorillas

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Abstract: The gorillas of the Nigeria-Cameroon border area are among the least studied gorilla populations. This population (the "Cross River gorilla") is not only isolated from other gorilla populations, it is also fragmented into several subpopulations. Recent morphological research has suggested that the Cross River population should be regarded as a subspecies (*Gorilla gorilla diehli*) distinct from other populations in western Africa (*Gorilla gorilla gorilla*). We have sequenced a portion of the mitochondrial DNA control region (d-loop) from the Cross River gorilla population to examine its variability relative to that of other western gorillas. Preliminary analysis suggests the presence of several deeply divergent mitochondrial DNA clades within western gorillas as a whole. Our limited sample suggests that Cross River gorillas contain at least two of these divergent haplotypes. The implications of these findings for conservation are discussed.

Matters of the Heart: Managing Cardiomyopathy in a Male Gorilla

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Abstract: Dilated cardiomyopathy is a heart muscle disease of unknown cause that may result in enlargement of one or more chambers of the heart and weakening the heart's ability to pump blood. This weakening leads to heart failure, symptoms of which include shortness of breath, coughing, and general weakness, particularly after exertion. In advanced stages, cardiomyopathy can be life threatening. Several individuals in the managed male population of gorillas (*Gorilla gorilla gorilla*) have been diagnosed with this disease. There is limited information on how many individuals have been affected by this disease. There is a confirmed case of an 18-year-old silverback gorilla with dilated cardiomyopathy at Disney's Animal Kingdom. Due to thorough physical examinations throughout this gorilla's life, he was diagnosed with the onset of this condition at the age of 15. A management strategy was designed to combine medical technology with day-to-day management and includes the veterinary team in the training program. This gorilla participates in a daily positive reinforcement training program. Body part presentations during training allows staff to collect visual data that help provide important information to the medical team. The priority goals of the training program are the collection of blood samples via a finger stick, voluntary cardiac ultrasounds, and injections for immobilization through wire mesh. Additional veterinary treatment consists of daily medications and annual re-checks through immobilizations. In the past, most of the information about this disease has been acquired from anesthetized animals. Through this management strategy, it is hoped that more accurate information can be collected and that better techniques can be developed to diagnose and manage this disease.