186 SUCCESSFUL INTRAUTERINE INSEMINATION IN ELD'S DEER (CERVUS ELDI THAMIN) USING FROZEN-THAWED SPERMATOZOA.

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Maintenance of genetic diversity is a primary goal of endangered species captive breeding programs. Sperm cryobanking and artificial insemination (AI) have long been considered as potential tools for achieving this goal. However, assisted reproduction has not proven to be consistently useful for producing offspring from any endangered mammalian species. Our objective was to test the utility of AI techniques routinely used in commercial deer farming in the Eld's deer, an endangered species indigenous to Southeast Asia. Semen was collected by electroejaculation from 3 males pre-selected for valuable genotype. Ejaculates were diluted in BF5F extender (8% glycerol), frozen on dry ice in 0.5 ml straws ($55\text{-}120\times10^6$ sperm/straw) and plunged into liquid nitrogen; post-thaw motility ranged from 60-70%. Intravaginal progesterone-releasing devices (CIDR-type G, 7% progesterone) were used to synchronize estrus and ovulation in 20 adult does. After 14d, CIDRs were removed, and 70h later each doe was anesthetized and subjected to transabdominal, intrauterine artificial insemination (AI; 10×10^6 motile sperm/uterine horn) under laparoscopic observation. Ovarian activity pre- and post-AI was monitored by analyzing pregnanediol-3α-glucuronide (PdG) in voided urine collected 3-7/wk. During the CIDR insertion interval, PdG concentrations were consistently elevated at or above normal luteal phase levels. All individual PdG profiles returned to baseline within 24h of CIDR withdrawal and behavioral estrus was detected in 14/20 (70%) does. Based on sustained elevations in urinary PdG after AI, 9/20 (45%) does were diagnosed pregnant by 90d gestation. These same 9 females delivered offspring after a mean (±SEM) gestation of 241.1±1.1 (range, 235-245) days. Ten fawns were produced; 7 singletons (2 females; 5 males) were live-born and survived, and 1 singleton and 1 set of twins were stillborn (3 females). This represents the most pregnancies ever produced in a single AI trial in any endangered mammal. The results demonstrate the potential of using an integrated, multidisciplinary approach (including prospective genetic selection of sires, sperm freezing, laparoscopic AI and urinary hormone monitoring) for producing multiple, genetically valuable offspring of a rare species. This approach could contribute to the management of other small, genetically-isolated populations of endangered cervids. (Funded, by the Scholarly Studies Program of the Smithsonian, NOAHS Center and Friends of the National Zoo.)