

Second-generation captive birth of an an orang-utan

Pongo pygmaeus

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On 14 December 1977 a pair of orang-utans *Pongo pygmaeus* at the National Zoological Park, Washington, produced a ♂ infant 'Azy', apparently the first surviving full second-generation captive birth for the species (M.L. Jones, pers. comm.). In all known instances where a captive-born orang-utan has reproduced successfully, the other parent has been wild caught (Perry & Horsemen, 1972; Jones, 1976). But now that so many captive-bred animals are approaching sexual maturity, the prospects for further second-generation breeding are hopeful, particularly if zoos can collaborate in seeking to establish suitable pairs.

The birth of Azy was the outcome of such co-operation between the National Zoological Park and the Yerkes Primate Research Center, Atlanta, in pairing the NZP's ♂ 'Atjeh' (born 2 April 1966) and Yerkes' ♀ 'Pensi' (born 18 October 1967). In their remarkably similar backgrounds, both animals had been mother reared and, in addition, had had a degree of contact with their fathers and also with con-

specifics of their own age. That these 'socialising' factors may have contributed to their breeding success (Maples, pers. comm.) is a supposition that warrants further study.

Pensi arrived at NZP in September 1973 and was introduced to Atjeh soon after. Sexual activity began almost immediately (W. C. Tucker, pers. comm.). Perhaps the ♂'s previous sexual experience, both in observing his parents mating and his own coital experience with his mother (W. C. Tucker, pers. comm.) accounts for the rapid onset of this activity. Urine samples were taken periodically and tested (see Table 1) using the Subhuman Primate Pregnancy Test Kit (Hodgen *et al.*, 1977). Pensi's first pregnancy resulted in a live birth in July 1976. The infant, a ♀, survived only three-and-a-half days, despite Pensi's adequate maternal behaviour. Post-mortem examination indicated cerebral meningitis, probably originating from an umbilical infection. Other possible factors contributing to its death were its small size (c. 1200 g) and the mother's primiparous state.

INTRODUCTION/ SEPARATION	COPULATION	URINE TESTS
I 14 Sep 73	14, 19 Sep 73 28 Mar 74 23, 24 Apr	— 23 Jul 74
	15 Aug 6 Sep 1 Oct 20 Nov	
S 7 Jan 75		— 12 Mar 75
I 16 Mar	28, 30 Mar 75 6, 30 Apr 15 May	— 23 Apr — 4 Nov
	7 Dec	
S 19 Jan 76		+ 14, 19 Jan 76 + 29 Jan + 29 Mar + 8, 26 Apr + 3 May + 7, 11, 21 Jun
	7 Jul 76 birth (lived 3½ days)	— 7 Jul — 4, 9, 16, 23, 30 Aug — 9, 13, 20 Sep
I 4 Nov 76	4, 8, 10, 11, 22, 25, 26 Nov 76 8, 12, 15, 24, 27 Dec	— 15 Dec
S 4 Jan 77	18 Feb 77	
I 18 Feb 77	1, 13, 14, 16, 21, 22, 23, 24 Mar 8 Apr	
S Apr 77	(threatened miscarriage) 14 Dec 77 birth	+ 13, 24 Jun 77 + 1 Jul

Table 1. Reproductive data preceding the live birth of a ♂ second-generation orang-utan *Pongo pygmaeus* at the National Zoological Park, Washington; urine tests were conducted using the Subhuman Primate Pregnancy Test Kit (Hodgen *et al.*, 1977).

After several months of recuperative isolation, Pensi and Atjeh were reintroduced, resulting, as before, in almost immediate copulatory activity. After confirmation of her second pregnancy, again using the Subhuman Primate Pregnancy Test Kit (Table 1), Pensi was separated from her boisterous mate to prevent any mishap during gestation and birth.

During June 1977 Pensi suffered a prolonged constipation and appeared to have abdominal spasms or contractions, accompanied by a bloody

vaginal discharge and vulval swelling. Fearing imminent miscarriage, Delalutin (a progesterone preparation to quieten the uterus) was administered once, by injection. Indocin (indomethocin, a prostaglandin) was administered orally, three times daily, over three days. Bleeding stopped within 48 hours; the constipation, however, continued until the administration of several doses of mild laxative preparations, Dulcolax and Metamucil.

Pregnancy continued without further complication, culminating in the live birth of a ♂ infant, weighing 2200 g, during the early hours of 14 December. According to plan, Pensi was successfully immobilised with CI-744 (tiletamine) and the infant removed. His umbilicus was tied and treated topically (Betadine - povidone iodine solution), and he was also given an injection of Flocillin (a long-acting penicillin preparation) as prophylactic against infection. While immobilised, the ♀ received injections of Pitocin (oxytocin) to control post-partum bleeding and assist in milk let-down; iron dextran (because orang-utans tend to have low haematocrits); and Flocillin. After two hours she was conscious and taking an active interest in her infant, which was maintained in an incubator within her sight. A keeper placed the infant in an adjoining, hay-filled case, while Pensi watched through a small hole in the connecting door. When this door was opened, she immediately retrieved the infant and, after examining him carefully, continued her solicitous behaviour. Extended watches ensured that all was well and, except for difficulty in observing nursing activity, no unusual occurrence was noted.

On 26 December several white patches were observed on the infant's lower lip and gum. These seemed to trouble Pensi, as she would frequently open the infant's mouth to touch these areas with her lips or fingers, and soon she began nibbling on them. Because the infant appeared to be having difficulty in nursing, he was again removed for examination, as already described. A tentative diagnosis of thrush (*Candida* sp) was made, and the infant was removed to the Zoo's hospital facility for treatment.

Thorough physical examination revealed complications of a secondary bacterial infection. Although the mouth infection responded well to antibiotic therapy, the infant continued to run

elevated temperatures, at one point as high as 40.5°C. As his temperature rose, the right elbow and left hip began to swell, and several surgical procedures to drain these sites were performed. A pure *Staphylococcus* culture was obtained from swabs taken during these procedures, and antibiotic therapy was modified after sensitivity testing. (Hoopes *et al.*, in press).

Treatment was discontinued on 3 February 1978. Because it was at this stage impossible to reintroduce mother and infant (the duration of treatment was such that Pensi had ceased lactating), the infant was sent to Albuquerque Zoo, New Mexico, to be raised with another orang-utan of approximately the same age. In our present limited knowledge of the critical periods of infant orang-utan development, we could only extrapolate from information available on other primate species that peer contact, although not as desirable as maternal contact, is still preferable to isolation from conspecifics and the attendant risk of imprinting on the human foster parent.

CONCLUSION

It is to be hoped that these results might encourage other zoological institutions to attempt to pair captive-born orang-utans, preferably those that have been mother reared. On the basis of our experience, reintroduction of mother and infant after short-term separation for examination and/or treatment of either animal is a feasible consideration, especially as CI-744 has thus far proved a safe and effective means of immobilisation. If hand-rearing is mandatory, it may be beneficial to rear a group of similarly aged orang-utans together, so as to maximise the opportunities for acquiring social experience.

In summary, it may be useful to define some of the questions that still need answering before this endangered species can be provided with optimum conditions for captive propagation: (1) What are the critical periods of infant development; when, for example, does the young orang-utan first become aware of its mother; at what stage does it begin to interact with siblings or peers? (2) What constitutes an 'appropriate' maternal behaviour (important in

determining whether or not to separate an infant for hand-rearing)? (3) How critical are mother-rearing, peer exposure, and/or paternal exposure to the individual's future reproductive success?

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PRODUCTS MENTIONED IN THE TEXT

Betadine: povidone iodine solution manufactured by Purdue Frederick Company, Norwalk, Connecticut 06856, USA.

CI-744: tiletamine-zoleazepam hydrochloride manufactured by Parke-Davis & Co., Hounslow, Middlesex, Great Britain.

Delalutin: progesterone manufactured by E. Squibb & Sons, POB 4000, Princeton, New Jersey 08540, USA.

Dulcolax-bisacodyl: laxative manufactured by Boehringer Ingelheim Ltd, Elmsford, New York 10523, USA.

Flocillin: long-acting penicillin manufactured by the Veterinary Products Division of Bristol Laboratories, Division of Bristol-Myers Corp., Syracuse, New York 13201, USA.

Inferon: iron dextran manufactured by Merrell National Lab, Division of Richardson Merrell Inc., Cincinnati, Ohio 45215, USA.

Indocin: indomethacin manufactured by Merck, Sharp & Dohme, West Point, Pennsylvania 19486, USA.

Metamucil: psyllium hydrophilic mucilloid, laxative manufactured by Searle Consumer Products, Division of G.D. Searle & Co., POB 5110, Chicago, Illinois 60680, USA.

Pitocin: oxytocin manufactured by Parke-Davis & Co., Detroit, Michigan 48232, USA.

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