BREEDING HISTORIES of ADULT FEMALE GILBERT's POTOROOS

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May 19th, 1997.

INTRODUCTION

Since establishing the colony in Dec 1994, 5 infants have been conceived and born in the colony. The first 3 infants were conceived in the colony in November 1995, and subsequent young have been conceived in August 1996 and March 1997. Concern has been expressed that one of the reasons for the relatively poor breeding success during the 1996/1997 summer may have been the implementation of more regular handling. The following document summarises the history of conception of the five young so far born with respect to housing arrangements, pairings and handling frequencies. This information is presented to enable easier discussion of the issue of handling frequency at the upcoming recovery team meeting.

HISTORIES

Note: The "days" mentioned in brackets in the events column refers to number of days since last handling.

FEMALE #1

DATE	EVENT
11.10.95	Placed with male #6 in cage 2
28.11.95	Moved with male from cage 2 to cage 6 - weighed etc (48 days)
9.1.96	Pouch young first seen (about 2.5 cm crown-rump). Moved to cage 5. (42 days)
11.5.96	Door to cage 6 opened - placed with male #3
20.5.96	Routine handling (9 days)
19.7.96	Routine handling (60 days)
14.8.96	Routine handling (26 days)
20.9.96	Door closed - no access to male
10.12.96	Male #6 placed in cage 6
31.12.96	Routine handling (21 days)
16.1.97	Routine handling (16 days)
31.1.97	Routine handling (15 days)
13.2.97	Routine handling (13 days)
26.2.97	Routine handling (13 days)
27.3.97	Routine handling (29 days) Door to cage 5 opened, male #6 moved to cage 5/6. Now sharing with daughter #18 and male #7
19.4.97	Routine handling (23 days)
2.5.97	Routine handling (13 days)

Notes

Female #1 has only produced one young in captivity (Female #18) sired by #6. The young was apparently conceived in mid-November 1995 after the pair had been together for about a month. After #18 was at heel, Male #3 was introduced into a double cage with both mother and daughter. The group were housed together for 4.5 months, during which time they were handled only 3 times and including at least a month during which another female conceived

(this observation is only of importance if breeding is seasonal). This pairing never seemed particularly "happy". Although there was not obvious aggression or injury to the female she appeared very nervous in the presence of the male (for example around feeding bowls) and hissing etc was often heard from the cage. The female was then "rested" for a few weeks in case she was pregnant (so that paternity would not be in doubt) and then on 10th December was placed again with #6 in a single cage. Animals were handled every 2-4 weeks but by end of March no young had been produced. Male #6 was moved to cages 3/4 and the door to cage 5 opened so that both #1and her daughter #18 now have access to male #7 in a double cage.

FEMALE #10

DATE	EVENT
12.10.95	Male #3 introduced into cage (Cage 3)
30.11.95	Routine handling (39 days)
8.1.96	Pouch young first seen (about 2.5 cm crown-rump). Moved to cage 4 (42 days)
20.4.96	YAH measured, 2nd pouch young first seen (about 2.5 cm crown-rump) (94 days)
14.8.96	Door to cage 3 opened. Placed with male #6
20.9.96	Routine handling (37 days)
31.10.96	Routine handling (41 days)
14.11.96	Routine handling. Door to cage 3 closed. No access to male
30.1.97	Male #3 introduced into cage 4.
13.2.97	Routine handling (14 days)
26.2.97	Routine handling (13 days)
27.3.97	Male #3 moved to cage 7 with female #27. Door to Cage 3 opened, Male #6 introduced with daughter female #19 (29 days)
19.4.97	Routine handling (23 days)
2.5.97	Pouch young first seen (about 1.5 cm crown-rump) (13 days)

Notes
Female #10 is the colony's most prolific breeder having produced 3 young in captivity and reared another one that was at heel when she was captured. Of the three young, the first two (#19 and #28) are the result of a matings that occurred during November 1995, #28 being held in diapause until #19 had exited the pouch. Male #3 was introduced into the cage with #10 in mid-October 1995 and the young were conceived in mid-November. The male was removed in January. Male #6 was introduced on 14th August 1996 into Cages 3 and 4 with the female and both her young. He was removed on 14th November and the female was "rested" until 30th January. Part of the reason for leaving the female without a male for so long was the problem of her young. Her daughter #19 was potentially adult so only Male #6 or #7 could be paired with them, the pairing with #6 had not been successful in the three months that they were trialed together, and #7 was housed with Female #18. Also, her young male was becoming adolescent and thus could not be housed with an

adult male for fear of aggression. There was at that stage nowhere else he could be housed, so he had to remain with his mother.

On January 30th Male #3 was moved in with #10 and her two offspring were moved together into the adjacent cage (Cage 3). These two animals were known to be compatible, and while it was not ideal to produce another animal with that particular pair of parents, it was considered preferable to not producing any young at all. On March 27th it was decided to move the young female back with her mother, and pair them both with male #6 to see if the young female could produce young (see Health Report for an explanation of the reasoning behind this move). On May 2nd, Female #10 was found to be carrying a 1.5 cm pouch young and was again isolated in Cage 4. While it is just possible that this young was sired by Male #6, it would require the female to have become pregnant the first day the two were paired, and for the gestation period to be about four rather than 6 weeks as it is in *P. tridactylus*. It seems more likely that the young is that of #3 and was conceived in mid March after the pair had been together about 6 weeks.

FEMALE #17

DATE	EVENT
14.8.96	Door opened between cage 7 & 8 to allow access to male
20.9.96	Routine handling, door shut (37 days)
31.10.96	Pouch young first sighted (about 2.5cm crown rump) (41 days)

Notes
The door was opened to cage 7 on 14.8.96 with the intention of pairing #17 and #7. However, #11 was accidentally returned to Cage 7 (where he had been housed up until then) rather than being moved to Cage 1. This mistake was discovered during the routine handling on 20.9.96 and access to the female immediately stopped (the only reason why this access was undesirable was because #11 is part of the overrepresented lineage in the colony and therefore is not an ideal breeding male). The young had however, already been conceived during that 6 week period and was born around mid-October.

SUMMARY
- All young conceived so far have been conceived within 6 weeks - 2months of their parents being housed together regardless of time of year or handling frequencies.
- Handling frequencies at the time of conception for Female #17 were about the same (handling about every 40 days) as those for both Female #1 and #10 when they conceived their young in November 1995. However, both Female #1 and #10 were also housed with males at the time that #17 conceived and neither produced young.
- Because of space problems (and "adolescent male" problems), #10 was not housed with a male at all for the period mid-November to late-January. When she was paired again with Male #3 (the sire of her other two young) she again conceived within 6 weeks-2 months, despite the increased handling frequency.
- The only anomaly is Female #1 who did not conceive with her previous mate #6 despite being paired with him for four months during December-March. While handling frequency may be an issue in this case, it is interesting to note that #1 did not conceive in her post-partum oestrus after the birth of #18

despite being housed with #6 throughout that period. It is possible, therefore that this particular pairing is not particularly fertile, or that the female is losing young soon after birth (ie before they are discovered).

- Mate preferences have been found to be an issue in the management of Long-footed Potoroos at Healesville, requiring frequent rearranging of pairings to obtain young. The fact that #10 conceives so quickly with #3 and yet does not when paired with #6 (even though he is known to be fertile) suggests that compatibility may also be an issue in this species. Except for the recent case of #1 and #6 failing to produce a young, it appears that if animals are compatible they will produce a young within a couple of months of being housed together, regardless of either handling frequency, or housing arrangements.