

Reproduction biology

Changes in the ejaculate of the male tammar wallaby (*Macropus eugenii*) parallel seasonal reproductive activity in the female.

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The reproductive tract of the male tammar wallaby increases in size and secretory activity when females are in oestrus, perhaps in response to a release of female pheromones (CATLING and SUTHERLAND 1980; INNS 1982; MCCONNELL et al. 1984). This study investigated the effect of changes in male reproductive structures on semen quality throughout the year in this highly promiscuous species. Body size, semen quality and reproductive structures were measured monthly in adult males from January to November. Although there was no significant difference in the weight of males sampled throughout the year, heavier males had heavier testes and epididymides and produced larger ejaculates. The main breeding season in late January, when all females were in synchronous oestrus, coincided with the heaviest testis, epididymis, prostate, Cowper's glands, crus penis and urethral bulb. Sperm motility, semen volume and coagulation of the ejaculate were greatest at this time. In July, during an almost total absence of mating in the wild, all structures regressed, resulting in significantly reduced sperm number and motility in small volumes of semen that did not coagulate. During the subsidiary breeding season in October/November, when only pubertal females undergo their first oestrus, all male reproductive structures, except the prostate, returned to maximum weights and sperm number and motility were high. In contrast, prostate weight, semen volume and coagulation of the ejaculate reached intermediate levels. Semen volume was positively correlated with prostate weight while the proportion of motile sperm was positively correlated with epididymal weight. Sperm concentration was negatively correlated with semen volume, and sperm numbers remained low when coagulation of ejaculates was greatest. These results show that semen quality is influenced by the change of androgen-dependent reproductive structures in the male tammar wallaby. The male reproductive tract is apparently primed to produce high quality semen when females are in oestrus. Semen quality may therefore improve in response to the number of available oestrous females, which may in turn provide an advantage in sperm competition.

CATLING and SUTHERLAND (1980): *Journal of Endocrinology* **86**, 25-34.

INNS (1982): *Journal of Reproduction and Fertility* **66**, 675-680.

MCCONNELL et al. (1984): *Australian Mammalogy Society Bulletin* **8**, 143.

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