MATING BALLS IN THE COMMON TOAD, *BUFO BUFO*

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In the common toad, *Bufo bufo,* the breeding season may be as short as two or three weeks in duration, and on any one night, males may outnumber females by as many as five to one (Davies & Halliday, 1979). Males obtain females by searching and by wrestling for partners already engaged in amplexus. Depending on the density of the population, larger males may enjoy disproportionate mating succes and/or there may be a positive correlation between the body sizes of males and females in amplexus (Davies & Halliday, 1977, 1978; Arak, 1983).

We observed mating behaviour in a population of common toads breeding in a culvert connected to Willen Lake, Milton Keynes on 9 and 10 April 1985. Mating activity was very conspicuous at this site, mainly because as many as 14 males were found struggling for the possession of a single amplectant female. As shown in Table 1, we observed eight such 'mating balls' during our two-day observation period. Removing the males from mating balls revealed that three of the eight females (37.5%) were dead, perhaps drowned.

On 10 April, we attempted to count the total number of toads present in the culvert. Only three females were found, all at the centre of mating balls. Thirty males were counted in mating balls, and at least 30 single males were found. We thus estimate the operational sex ratio on this day as at least 20 males per female. We believe that no more than 10 strings of spawn were deposited in the culvert in 1985.

Several interesting points emerge from our observations. First, large mating balls can form around living females. Secondly, females may drown as a consequence of being at the centre of mating balls. Tim Halliday (pers. comm.) has also observed mating balls in common toads, and has stressed that it is often impossible to determine whether balls kill females or balls form around females which are already dead. We suggest that the former may be the case. Finally, it seems that mating balls occur in populations with highly male-biased sex ratios. We are tempted to suggest that the mortality inflicted on females may drive such populations to extinction.

Table 1. Details of the composition of mating balls.

Date:	Number of males/ball	Female:
9 April	10	Dead
	8	Alive
	8	Alive
	6	Alive
	5	Alive
10 April	14	Alive
	10	Dead
	6	Dead

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