

CAPTIVE REPRODUCTION IN AN AUSTRALIAN ELAPID SNAKE *Pseudechis colletti*

Collett's snake (*Pseudechis colletti*) is a large (up to 2.5 m) elapid snake of central Queensland. The restricted distribution and rarity of this species have resulted in a dearth of scientific information; the only data on reproduction are reports of viviparity by Worrell (1963) and Gow (1976). Our observations on three pairs of captive specimens indicate that *P. colletti* is oviparous.

Data are most extensive for one female and two male *P. colletti* collected from blacksoil plains near Nonda, Queensland, in June 1980. The snakes were maintained in separate cages at normal temperatures and photoperiods. Immediately after she had sloughed on 30 September 1981, the female (total length 137 cm) was introduced to the cage of a male (190 cm). Copulation commenced immediately (1700 hrs) and continued until at least 2400 hrs when observations terminated. The snakes had separated when next observed (0800 hrs). The same two snakes were placed together on 9 October 1981, and copulation lasting more than two hours was observed. The female was placed with the second male (160 cm) on 30 October 1981, and again copulated. Bleeding from the female's vent was noticed during the first two matings.

Seven elongate eggs (total mass 250 gm) were laid on 28 December 1981. The female weighed 400 gm after oviposition, indicating a Relative Clutch Mass of 0.63. The eggs were incubated in damp Vermiculite* (50% water by weight) at 27 to 30°C, and hatching commenced after 67 days. Three eggs were slit on 7 March, one on 8 March, and one on 9 March. Dissection of the two remaining eggs on 10 March revealed dead full-term embryos, both of them males. The live young comprised three females and two males. These snakes did not fully emerge from the eggs for 12 to 15 hours after initial slitting of the shells. The neonates averaged 28.3 cm SVL (range 28.0 to 30.0 cm) and 24.0 gm (range 19 to 29 gm). Their first sloughs occurred on 22 to 24 March, approximately 15 days after hatching.

The second breeding pair of *P. colletti* were collected near Nonda in October 1978. The female (137 cm total length) and male (213 cm) were placed together for the first time on 9 August 1979, and were found in copulo 90 minutes later. Mating continued for five hours. After the snakes separated, slight bleeding from the female's cloaca was observed. The female continued to feed while gravid (food offered and accepted on 21 July, 2 August, 19 August, 13 October). The female sloughed on 17 August and 26 October; the posterior part of her body was noticeably swollen for about nine days prior to egg-laying. Oviposition of 14 eggs occurred between 0100 and 0600 hrs on 10 October. One egg spoiled and was discarded, and the other eggs incubated on moist Vermiculite* at approximately 31°C (range 29.5-32.0°C). The eggs were large with a mean length of 5.5 cm (S.E. = 0.1), and width of 3.2 cm (S.E. = 0.04). Three eggs hatched on 5 December, six on 6 December, and four on 7 December. Hence, incubation

comprised 56 to 58 days. After slitting the eggs, most neonates remained inside their shells (with heads protruding) for approximately 45 minutes before emerging completely. Neonates showed coloration similar to, but more vivid than, their parents. The hatchlings averaged 37 cm in total length, and 25 g in weight. Two hatchlings and two eggshells were placed in the Queensland Museum (registration numbers J 37327-37330).

A third pair of snakes (the female from 10 km WSW of Aramac, Qld.) bred successfully on five occasions. Mating was observed in August (1977) and September (1976, 1978). Oviposition occurred on 30 December 1973, 8 December 1976, 30 November 1977, December 1978 (exact date unknown), and 26 November 1979. Hatching was recorded on 5-9 March 1974 (incubation 66-70 days) and 11 February 1977 (65 days). Clutch sizes of 12 eggs (one year) and 13 eggs (three years) were recorded.

These data from the three breeding pairs of *P. colletti* are consistent with respect to oviparity, seasonal timing of mating and oviposition, clutch sizes and incubation periods. Until recently authorities have considered all *Pseudechis* species to be viviparous (McPhee 1959, Worrell 1963, but see Gow 1976). Oviparity has now been established for *P. guttatus* (Charles, Whitaker and Shine 1980), *P. australis* (M. Fitzgerald and C. Pollitt, pers. comm.; R. Shine, unpubl.), and *P. colletti* (this paper). The common blacksnake, *P. porphyriacus*, is the only member of the genus known to be viviparous. The mode of reproduction of *P. papuanus* is unknown.

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