

TABLE 1. Maternal reproductive and offspring traits for two viviparous semi-fossorial skinks, *Lerista arenicola*.

ID number	Parturition date	Maternal post-partum mass (g)	Offspring number	Offspring mass (g)	Clutch mass (g)
1	9–12 Feb 2007	3.3432	1	0.2826	1.0702
			2	0.2514	
			3	0.2742	
			4	0.2620	
2	5–8 Feb 2007	2.5134	1	0.3054	0.5984
			2	0.2939	

family Scincidae is the largest and most diverse group of lizards globally (Rabosky et al. 2007. Proc. Royal Soc. B 274:2915–2923), and contains both egg-laying (oviparous) and live-bearing (viviparous) species. In Australia, the semi-fossorial scincid genus *Lerista* is the second most diverse lineage of skinks, and ranges from fully limbed semi-fossorial to limbless burrowing species (Skinner et al. 2008. BMC Evol. Biol. 8:310–318). The majority of *Lerista* species are oviparous, with viviparity known only from two southern species: *L. microtis* and two populations of *L. bougainvillii* (Qualls et al. 1995. J. Zool. 237:13–26). However, data on the reproductive mode of other *Lerista* species is insufficient to confirm these as the only cases of viviparity within the genus. Herein, we report the occurrence of viviparity in an additional *Lerista* species from southern mainland Australia.

Two adult female *L. arenicola* were collected from Talia Caves and Venus Bay, South Australia (33.329444°S, 134.800278°E, WGS84; 34 m elev.) on 11 November 2006, and returned alive to the Museum of South Australia. In the museum, both lizards were housed together in a glass aquarium (60L x 35W x 45H cm) with an 8-cm layer of loose sand and dirt with a bark shelter; a 60-watt heat lamp produced a thermal gradient (21–35°C). Lizards were fed small crickets three times weekly, and water was always available. Lizards were checked daily for evidence of eggs or offspring. In early February 2007, each of the two females produced a litter of live offspring. See Table 1 for details on dates of parturition, maternal traits, and offspring traits. While we lack precise data on the duration of embryogenesis in *L. arenicola*, it is clear that both skinks were gravid upon arrival in the lab. The period of gestation within the laboratory was 85 and 81 days for female 1 and 2, respectively. This interval, while a rough indication, is similar for other semi-fossorial *Lerista* species, which ovulate in late summer and produce a single clutch per year (Qualls and Shine 1998. J. Evol. Biol. 11:63–78).

Viviparity in *L. arenicola* supports the “cool climate” hypothesis in occurring more frequently in species from colder climates. Previous work comparing the climate of mainland and island populations of *L. bougainvillii* and populations of *L. microtis*, indicate that these viviparous populations occupy cooler environments than their oviparous relatives, being found predominantly on cool southern islands (Qualls et al. 1995, *op. cit.*). Similar to the other two viviparous species, *L. arenicola* is restricted to leaf-litter microhabitats on pale coastal sands along the Great Australian Bight in southeastern, western, and southwestern South Australia. In the eastern part of its range, *L. arenicola* overlaps with the distribution of *L. microtis*, where it

presumably experiences similar environmental conditions and selective forces.

The molecular phylogeny for *Lerista* indicates that *L. bougainvillii* and *L. microtis* occupy two separate clades, and thus represent independent evolutionary origins of viviparity (Skinner et al. 2008, *op. cit.*). However, as *L. microtis* and *L. arenicola* are sister species, it is probable that viviparity in both species may represent a single evolutionary event. The presence of viviparity in *L. arenicola* and within two distinct populations of *L. bougainvillii* (Fairburn et al. 1998. Mol. Phylo. Evol. 10:95–103), suggests the evolution of viviparity and its maintenance may occur readily within members of the genus *Lerista*.

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PHYMATURUS PALLUMA (High Mountain Lizard). COPROPHAGY. *Phymaturus palluma* is a medium-sized, saxicolous, herbivorous, and viviparous lizard that inhabits the Altoandina phyto-geographic province in the Andes Highlands, Argentina. During the summer 2014 I observed juveniles of *P. palluma* eating small bites of fecal pellets at the Aconcagua Provincial Park, Mendoza, Argentina (32.8453°S, 69.7619°W, WGS84; 2480 m elev.). After recording this behavior, I approached to get a closer view, and I saw that the feces, based on size, were of adult individuals of this species. This is the first record of coprophagy in *Phymaturus* lizards.

This behavior was reported in the herbivorous lizards *Sauromalus obesus* and *Iguana iguana* (Montanucci 1999. Herpetol. Rev. 30[4]:221–222; Troyer 1982. Science 216:540–542), which shows an association of hatchlings with adults of the same species similar to *P. palluma*. It has been demonstrated that coprophagy in *I. iguana* is related to the transfer of anaerobic gut symbiotic microbes that are utilized for effective degradation of plant materials. Possession of more complex microflora was associated with improved growth rate and digestive efficiency (Troyer 1982, *op. cit.*). Symbiotic microbes of *P. palluma* have not been studied. *Phymaturus palluma* shows social behaviors between juveniles and adults (Videla 1982. Bol. Mus. Cienc. Nat. Antropol. 3:57–62), similar to those in other lizards where transfer of microflora occurs; therefore, transfers of symbiotic microflora from parents to offspring via coprophagy might be possible.

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PLESTIODON CALLICEPHALUS (Mountain Skink). REPRODUCTION. *Plestiodon callicephalus* is known from southeastern Arizona and southwestern New Mexico in the United States, and Sonora, Chihuahua, Sinaloa, south to Nayarit and Jalisco in Mexico (Swann et al. 2009. In Jones and Lovich [eds.], Lizards of the American Southwest, pp. 446–448. Rio Nuevo Publ., Tucson, Arizona). Anecdotal information on reproduction exists for this species including clutches of three to six eggs, female guarding of the eggs, and hatchlings measuring 20–25 mm (Swann et al. 2009, *op. cit.*). There is a report that *P. callicephalus* (as *Eumeces*) is viviparous (Taylor 1985. Herpetol. Rev. 16:27). The purpose of this note is to add information on the reproductive cycle of *P. callicephalus*.

A sample of 14 *P. callicephalus* consisting of four males (mean SVL = 57.8 mm ± 8.2 SD, range = 48–68 mm), five females (mean SVL = 64.0 mm ± 5.5 SD, range = 57–68 mm), and five juveniles (mean SVL = 29.4 mm ± 3.8 SD, range = 25–35 mm) were examined