

Note on Reproduction of the Striped Sandveld lizard, *Nucras tessellata* (Squamata: Lacertidae) from Southern Africa

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The striped sandveld lizard, *Nucras tessellata* is endemic to the western Little Karoo, Namaqualand to southern Namibia and Botswana where it frequents rocky ground in arid savannah and karroid veld (Branch, 1998). It is a widely foraging lizard (Pianka, 1971). Information on clutch sizes is in Fitzsimons (1943), Pianka (1986), and Branch (1998). The purpose of this note is to provide additional information on the reproductive cycle of *N. tessellata* and to compare it with reproduction in other lacertid lizards from southern Africa. The first information on the testicular cycle is presented. Minimum size for reproductive activity is provided for males and females.

Fifty-eight *N. tessellata* (22 females, mean snout-vent length, SVL = 65.7 mm \pm 7.0 SD, range = 54-83 mm; 28 males, SVL = 65.6 mm \pm 4.4 SD, range = 57-74 mm; 2 neonates, SVL = 29.0 \pm 0.70 SD, range: 28-29 mm and 6 juveniles, SVL = 33.2 mm \pm 0.75 SD, range = 32-34 mm) from southern Africa were examined from the herpetology collection of the Natural History Museum of Los Angeles County, LACM, Los Angeles, California:

Botswana, Kgalagadi District, LACM: 82708, 82710, 82712-82714, 82716, 82720, 82721, 82726, 139050.

Republic of South Africa, Northern Cape Province, LACM: 82639, 82641-82647, 82649-82655, 82657, 82658, 82661, 82663-82669, 82672-82677, 82679, 82684, 82685, 82687-82691, 82693, 82694, 82696-82701, 82703.

Lizards were collected by Eric R. Pianka during 1969-1970 except for LACM 139050 which was collected in 1980. Gonads were dehydrated in ethanol, embedded in paraffin, sectioned at 5 μ m and stained with Harris hematoxylin followed by eosin counterstain. Enlarged ovarian follicles (> 4 mm length) were counted; no histology was done on them. Oviductal eggs were previously removed; their mean value is in Pianka (1986). Male and female mean body sizes (SVL) were compared with an unpaired *t* test using InStat (vers. 3.0b, Graphpad Software, San Diego, CA).

There was no significant size difference between adult males and females (unpaired *t* test, *t* = 0.068, *df* = 48, *P* = 0.95). Data on the testicular cycle is presented in Table 1. Although samples were not available from all months, it is clear that sperm formation (lumina of seminiferous tubules lined by rows of metamorphosing spermatids and sperm) occurred in late spring-summer. The months when spermiogenesis begins and ends is not known. The significance of one male with regressed testis in February (seminiferous tubules are reduced in size and contain spermatogonia and Sertoli cells) or two males in January with testes in recrudescence (renewal of germinal epithelium for next period of sperm formation; primary and secondary spermatocytes predominate) require examination of additional samples. The smallest reproductively active male measured 57 mm SVL and was from February (LACM 82703). The testicular cycle of *Nucras tessellata* is similar to that of the other African lacertids, *Pedioplanis namaquensis*, *Pedioplanis lineoocellata*, and *Meroles cuneirostris* (Goldberg 2006a, 2006b; Goldberg and Robinson 1979) in that sperm formation also occurs in spring-summer. It differs from the testicular cycle of *Pedioplanis burchilli* (Nkosi et al., 2004) in which all testes were involuted (regressed) in February.

Stages in the monthly ovarian cycle of *N. tessellata* are in Table 2. Reproductively active females were present from December to February. The exact duration of female reproduction is not

Table 1. Monthly distribution of reproductive conditions in the seasonal testicular cycle of 28 *Nucras tessellata* from southern Africa. Values are the numbers of males exhibiting each of the three conditions.

Month	<i>n</i>	Regressed	Recrudescence	Spermiogenesis
November	3	0	0	3
December	2	0	0	2
January	11	0	2	9
February	12	1	0	11

Table 2. Monthly distribution of reproductive conditions in seasonal ovarian cycle of 22 *Nucras tessellata* from southern Africa. Values shown are the numbers of females exhibiting each of the three conditions.

Month	<i>n</i>	No yolk deposition	Early yolk deposition	Eggs > 4 mm length
November	1	1	0	0
December	4	2	1	1
January*	8	7	0	0
February	8	4	0	4
March	1	1	0	0

* One January female contained squashed oviductal eggs that could not be counted.

known due to lack of spring and autumn samples. Mean clutch size for five *N. tessellata* clutches (enlarged follicles > 4 mm) was 2.8 ± 0.84 SD, range: 2-4. Fitzsimons (1943) reported *N. tessellata* laid clutches of four eggs; Branch reported 3-4 eggs were laid. Pianka (1986) reported a mean clutch of 3.3 ± 0.66 SD for 8 *N. tessellata* females. Clutch sizes of two eggs (LACM 82639, LACM 82691) from December and February, respectively, are new minimum clutch sizes for *N. tessellata*. The smallest reproductively active female (enlarged follicles > 4 mm) measured 63 mm SVL (LACM 82639) and was from December. The presence of reproductively active *N. tessellata* females from summer may suggest a similar season of reproduction as in other southern African lacertid species including *Meroles cuenirostris* (Goldberg and Robinson, 1979); *Pedioplanis burchelli* (Nkosi et al. 2004); *Pedioplanis namaquensis* (Goldberg, 2006a); *Pedioplanis lineocellata* (Goldberg, 2006b); which were also reproductively active during summer.

Two presumably neonates of *N. tessellata* (SVL 28, 29 mm) were collected in January. The collection of six other *N. tessellata* in the 30-35 mm range in January-February were likely born previously in spring suggesting the reproductive period of *N. tessellata* was underway at that time.

With 37 species of lacertid lizards in southern Africa (Branch 1998), subsequent investigations on other lacertids will be needed to ascertain the variation in reproductive cycles of the lacertid lizards of southern Africa.

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