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Growth and Development of Nestling New England Cottontails, *Sylvilagus transitionalis*¹

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Tefft B. C. & Chapman J. A., 1983: Growth and development of nestling New England cottontails, *Sylvilagus transitionalis*. Acta theriol., 28, 20: 317—320 [With 1 Table, 1 Fig. & Plate X]

The growth and development of nestling New England cottontails, *Sylvilagus transitionalis* (Bangs) was studied in an enclosure on Big Savage Mountain, Garrett County, Maryland, U.S.A. Measurements, verbal and pictorial descriptions of the kittens during the first 16 days of life provide a key to age the nestlings.

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Growth and development of young *Sylvilagus transitionalis* were studied in an enclosure constructed on Big Savage Mountain, near Finzel, Garrett County, Maryland. The enclosure was 465 m² (30.5 m × 15.2 m) and naturally occurring trees and ground cover were left in place wherever possible.

Vegetative cover consisted of a variety of ferns, herbs, and woody sprouts arising from the stumps of cleared hardwoods. Seven species of overstory trees and 15 species of grasses and herbs were common in the enclosure (see Tefft & Chapman, in prep. for details). Three brush piles were constructed in the pen to provide additional escape cover for the rabbits. Wooden box shelters were placed two to each brush pile to provide protection from the heavy rains and snows.

Three adults (one female, two males) were live-trapped in the Savage River State Forest, Garrett County, Maryland, and put into the enclosure (these animals are now in the collection of the Appalachian Environmental Laboratory, numbers AEL-1358, AEL-1359 and AEL-1400. Commercial rabbit pellets and clipped oats were placed in two covered poultry feeders to supplement the natural food. No water was provided.

The female produced three litters, totaling 15 neonates, during the 1980 breeding season. The three litters were produced in two nests, both of which were located at the base of large stumps. Birth dates

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were 11 April, 9 May and 6 June. Each nestling was tagged with an ear tag (National Band & Tag Co. No. 41 rabbit ear tag). Body measurements (Crown-rump length, tail length, hind-foot length, and ear length) were recorded for each litter. The litter born 9 May was measured from day 1 to day 16 when the young left the nest. Body weights were not recorded because Buele & Studholme (1942) reported that body weight was not a reliable age criteria for young cottontails, *S. floridanus*.

Measurements, verbal and pictorial descriptions of kittens during the first 16 days of life provided a key to age nestling *S. transitionalis*

Table 1

Mean body measurements (\pm SD) and descriptions correlated with age for New England cottontail nestlings born May 9, 1980). (six kittens; three male, three female).

Days old	Hind Foot (mm \pm SD)	Tail (mm \pm SD)	Ear (mm \pm SD)	Crown Rump Length (mm \pm SD)	Comments
Birth	10.5 ¹	13.5 ¹	9.6 ¹	73.8 ¹	Eyes tightly closed, pre-mature movement.
1	22.3 \pm 1.37	13.5	10.9	77.3 \pm 7.12	Eyes tightly closed, pre-mature movement.
4	27.8 \pm 0.74	14.8 \pm 1.70	14.8 \pm 0.74	81.4 \pm 4.00	Eyes tightly closed, squirming movement only.
7	34.3 \pm 1.0	16.8 \pm 1.50	18.2 \pm 0.74	94.2 \pm 3.80	Eyes begin to open half, some coordination evident, movement weak.
10	39.3 \pm 1.20	21.5 \pm 1.04	21.5 \pm 1.04	105.8 \pm 5.80	Eyes fully open, ability to sit rabbit-like, some hopping, first positive sexing possible.
16	49.7 \pm 1.20	22.7 \pm 2.30	30.7 \pm 0.63	133.2 \pm 5.00	Kittens entirely independent of nest, excellent coordination, ability to run and hop quickly.
Mean growth per day (mm)	1.85/day	.400/day	1.31/day	3.52/day	

¹ Calculated values based on growth rate.

(Fig. 1, Table 1). The measurements (Table 1) for *S. transitionalis* were similar to those reported by Buele (1940), Buele & Studholme (1942), and Rongstad (1969) for *S. floridanus* in Pennsylvania and Wisconsin.

Neonates less than 24 hrs old were able to move very little, only in a feeble nature. Newborns were pinkish, had very little fur and their eyes were tightly closed. During the first 24 hrs, a thin, short layer of natal fur emerged. None of the 15 *S. transitionalis* kittens displayed the white forehead spot (Fig. 2, Plate X) found on 61 percent of the *S. floridanus*, from the same region (Chapman & Morgan, 1973). Chapman *et al.* (1982) reviewed the early pelage stages and development

of *S. floridanus*, but this is the first description of the natal pelage and development of *S. transitionalis*.

The ability of young *S. transitionalis* to move about increased very slowly at first. At four days of age, the body was weak and uncoordinated, although limited crawling occurred. When placed at the entrance to the nest chamber, kittens were able to find their way back inside. The pelage at this time remained short with a very few guard hairs starting to emerge. The eyes remained closed and sex could not be accurately determined.

At seven days of age, body coordination improved considerably. Kittens had the ability to stand on their feet, although they moved very little and frequently fell over uncontrollably. The eyes were half to nearly fully open in all individuals. The pelage remained short, although

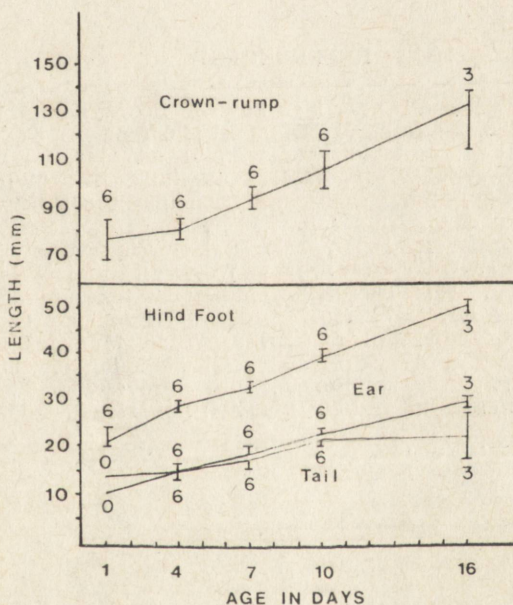


Fig. 1. Mean and 95% confidence interval measurements of nestling New England cottontails at birth, 1, 4, 7, 10 and 16 days of age. Bottom — hind foot, ear and tail lengths. Top — crown-rump lengths. Numbers at curves indicate sample size.

new guard hairs began to fill in and the kittens were approximately half covered with these fine hairs at this stage.

At ten days of age, the kittens attained fairly stable coordination (balance at times was still unsteady) and were quite active when removed from the nest. At this age, measurements were often difficult to obtain. Kittens were able to hop about in rabbit fashion and they frequently assumed adult resting postures. The eyes were fully open on all individuals and the body was covered with short guard hair. Positive sex identification was described by Petrides (1951) and was possible at this point. The kittens had grown to a size where there

was very little room for movement within the nest chamber with all neonates in place.

At 13 days of age, the young *S. transitionalis* had grown to a point where the nest chamber itself was enlarged by their movements. The natal nest cap had been partly removed or destroyed, and the kittens were visible from the surface. The young left the nest quite readily if disturbed by an observer. Young *S. transitionalis* left the nest for evening forages by the 13th or 14th day, however, all three litters used the nest as a resting place during the daylight hours.

At 16 days of age, the kittens left the nest permanently. Sheltering forms were established by the young in the dense cover of the enclosure's brush piles or other dense clumps of vegetation. Two and three young cottontails were frequently observed nesting together in these shelters.

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EXPLANATION OF PLATE X

Fig. 2. Photographs of New England cottontail nestlings.

Upper left — 1-day old; lower left — 7-days old; lower right — 10-days old. See Table 1 for measurements and description.

Upper right — 4 days old;

