MAMMALIAN SPECIES No. 724, pp. 1–5, 3 figs.

Spermophilus franklinii.

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Published 30 July 2003 by the American Society of Mammalogists

Spermophilus franklinii (Sabine, 1822)

Franklin's Ground Squirrel

Arctomys franklinii Sabine, 1822:587. Type locality not specified; restricted to "Carlton House," Saskatchewan, Canada by Preble (1908:165).

Spermophilus franklini: Lesson, 1827:244. First use of current name combination.

Arctomis franklini: Lesson, 1827:244. Misspelling of *Arctomys franklinii* Sabine.

Citellus (*Ictidomys*) *franklini*: Preble, 1908:165. Name combination.

CONTEXT AND CONTENT. Order Rodentia, suborder Sciurognathi, family Sciuridae, subfamily Sciurinae, subgenus *Poliocitellus*. *Spermophilus franklinii* is monotypic.

DIAGNOSIS. *Spermophilus franklinii* (Fig. 1) is a long-bodied ground squirrel similar to Richardson's ground squirrel (*S. richardsonii*) but more slender and with a shorter, less bushy tail (Smith 1993). In comparison the Columbian ground squirrel (*S. columbianus*) has a rusty-colored pelage and a slightly more robust body (Smith 1993). Externally, *S. franklinii* resembles the eastern gray squirrel (*Sciurus carolinensis*—Jackson 1961); however, *S. franklinii* has a shorter, less bushy tail; shorter and rounder ears; longer and straighter claws; and a yellowish tint on its rump (Schwartz and Schwartz 1981). Skull (Fig. 2) of *S. franklinii* is similar to that of *S. carolinensis*; however, *S. franklinii* does not have prominent postorbital processes, and distance between eye orbits is narrower (Schwartz and Schwartz 1981).

GENERAL CHARACTERS. Coat of *S. franklinii* is a brownish gray speckled with pale and dark flecks. Fur on sides of body is pale (Fitzgerald et al. 1994), and thinner fur on ventral side is light yellowish-white (Jones et al. 1983; Kurta 1995). Fur on tail is blackish mixed with pale flecks. Head of *S. franklinii* is typically grayer than rest of body (Fitzgerald et al. 1994). Average measurements (in mm) of adult males in Alberta (Smith 1993) were as follows (*n*, range): total length, 384.8 (6, 372–412); length of tail, 135.5 (6, 113–153); and length of hind foot, 55.0 (6, 53–58). Measurements of females were: total length, 377.2 (12, 359–400); length of tail, 134.1 (12, 120–149); and length of hind foot, 53.5 (12, 50–57). Length of ear for 1 male was 16 mm, and mean for 8 females was 16.3 mm (15–19).

Males typically are 6–25% heavier than females, depending on the season of year. In spring, body masses (in g) of adult females and males, respectively, were (*n*, range): 320 (2, 319–321), 372.5 (4, 360–385) in Manitoba (Iverson and Turner 1972); 360 (5, 340–380), 460 (5, 420–500) in Alberta (Murie 1973); and 368 (12, 308–428), 401.5 (18, 326–477) in North Dakota (Choromanski-Norris and Fritzell 1986). In fall, body mass for adult females ranges from 500 to 760 g and from 590 to 950 g for males (Murie 1973).

Zygomatic arch expands posteriorly. Postorbital processes are directed posteriorly (Smith 1993). Skull measurements (in mm) of *S. franklinii* in Nebraska and South Dakota (Jones et al. 1983), respectively, averaged (*n*, range): greatest length, 56.2 (4, 53.8–58.8), 52.9 (4, 52.2–53.9); and zygomatic breadth, 31.6 (4, 29.8–32.4), 29.6 (4, 29.0–30.0).

DISTRIBUTION. *Spermophilus franklinii* occurs in the central United States, including Kansas, Missouri, northern and central Illinois (Lewis and Rongstad 1992), northwestern Indiana, Nebraska, Iowa, North Dakota, South Dakota, Minnesota (Schwartz and Schwartz 1981), and southern Wisconsin (Lewis and Rongstad 1992). Its distribution extends to the southern Canadian Plains, including Manitoba, Saskatchewan, and central Alberta (Fig. 3).

FOSSIL RECORD. The earliest records of *S. franklinii* are from the late Irvingtonian period. Deposits along Elm Creek of Beaver County, Oklahoma, indicate that *S. franklinii* was part of the local fauna in the late Pleistocene 11,410 years ago (Dalquest and Baskin 1992). Pleistocene records are from Angus, Ben Franklin, Brynjulfson, Cudahy, and Jones (Kurtén and Anderson 1980). Late Pleistocene fossils of *S. franklinii* and *S. richardsonii* might be confused; however, upper molars of *S. franklinii* are broader and more rectangular than those of *S. richardsonii*, whereas lower molars of *S. franklinii* are smaller and relatively broader than *S. richardsonii* (Dalquest and Stangl 1989).

FORM AND FUNCTION. Dental formula is i 1/1, c 0/0, p 2/1, m 3/3, total 22 (Schwartz and Schwartz 1981). Cheek teeth are low crowned. Upper molars share well-developed mesostyles, which are almost always present on M1 and M2 (Dalquest and Baskin 1992).

Spermophilus franklinii has 3 anal glands (9.5 mm in diameter): 1 is positioned above, and the other 2 are on each side of the rectum (Kivett et al. 1976; Sowls 1948). Both males and females possess these glands, which give off a musky scent during the mating season (Sowls 1948). When the animal is excited, the ends of the gland ducts appear as white spots around the rectum as the glands are everted (Sowls 1948).

Oral glands of *Spermophilus* are located on the corner of the mouth and are used to a limited degree during greeting behavior, for individual, group, and mother–offspring recognitions (Steiner 1974) and possibly by young for begging food from the mother (Kivett et al. 1976). Oral glands of *S. franklinii* are only 1 lobed and are typically only half the size of those found in *S. columbianus*, a ground squirrel of similar body mass. Oral glands, dorsal–ventral glands, and anteroposterior glands of *S. franklinii* measured 2.25, 1.51, and 3.24 mm, respectively (Kivett et al. 1976).

Dorsal glands extend from scapular to pelvic regions. Placement of dorsal glands is similar to that of *S. columbianus*, except that dorsal glands of *S. franklinii* do not extend ventrally nor immediately posterior to ears (Kivett et al. 1976). Glands of males are larger than those of females (Kivett et al. 1976). Sinus of *S. franklinii* measures ca. 350.8 μm (Kivett et al. 1976). Dorsal glands may be important for marking the entrances of burrow systems (Kivett et al. 1976; Steiner 1974). Of 6 *Spermophilus* species, number of secretory tubules is much reduced in *S. franklinii* when compared with those in *S. columbianus*, *S. lateralis*, *S. richardsonii*, *S. tridecemlineatus*, and *S. undulatus* (Kivett et al. 1976).

FIG. 1. *Spermophilus franklinii*. Photograph by L. L. Master. Used by permission of L. L. Master and the Mammal Images Library of the American Society of Mammalogists.

FIG. 2. Dorsal, ventral, and lateral views of cranium and lateral view of mandible of *Spermophilus franklinii* (male, Schmidt Museum of Natural History M719). Greatest length of cranium is 48.4 mm.

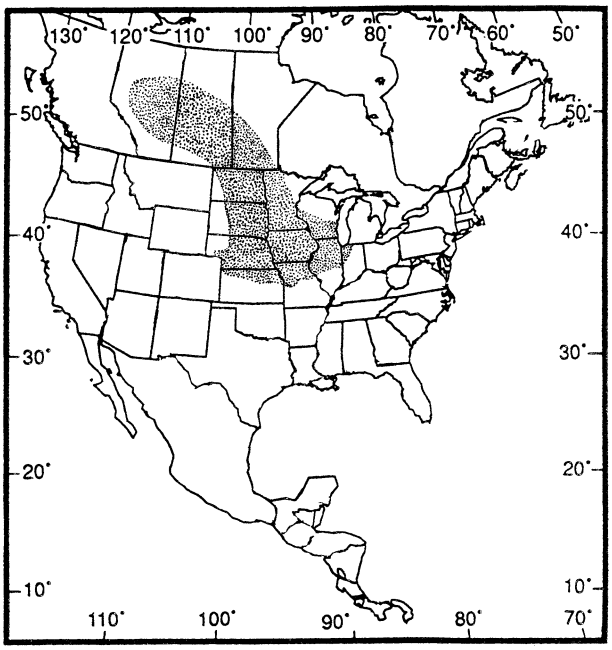

FIG. 3. Distribution of *Spermophilus franklinii* in North America.

Measurements (in mm) of bacula from 3 specimens, collected from Indiana, North Dakota, and South Dakota, averaged 4.6 (3, 4.5–4.8) in length, 1.83 (3, 1.5–2.1) in width at base, and 2.05 (2, 1.9–2.2) in width at distal end (Burt 1960). Basal end of baculum is wide and narrows to a shaft before it expands again into a broad, disk-shaped distal end with 12–15 continuous toothlike projections in a row. On each side of terminal disk, between the projections and the shaft, is a rounded lobelike protuberance (Burt 1960). Os clitoridis is 2.2 mm long (Burt 1960). Females have 5–6 pairs of mammae (Jones et al. 1983).

Spermophilus franklinii undergoes seasonal mass changes (Iverson and Turner 1972; Murie 1973). Adult male and female *S. franklinii* gain little mass from 1 May through late June (Murie 1973). From late June until onset of hibernation, *S. franklinii* builds up a thick layer of fat (Choromanski-Norris and Fritzell 1986). Hibernation lasts for 7–8 months in an underground burrow (Kurta 1995). During 4–5 months of activity, individuals reproduce and gain enough fat to survive winter (Iverson and Turner 1972). Rate of mass gain among adult individuals throughout July and August is highly variable, although it is faster than that during May and June and is not significantly different between males and females in Alberta (Murie 1973). Males typically become inactive sooner than females (Iverson and Turner 1972). Because males do not have the energy expenses of gestation and lactation, their mass does not sharply decline in May, as does that of females (Iverson and Turner 1972). Females have more time to gain mass for hibernation. Juvenile *S. franklinii* gains mass faster than adults and typically weighs enough to enter hibernation by mid September or early October (Iverson and Turner 1972; Murie 1973; Sowls 1948). Mass loss over winter was ca. 44.2% for 5 individuals measured in Alberta (Murie 1973).

Maintenance energy, as estimated by using oxygen consumption and food consumption, for 1 *S. franklinii* on 1 ha of land for 1 day is 123.8 kilocalories (Haberman and Fleharty 1971). Thermoneutral zone is 26.5–31°C, during which oxygen consumption of 5 *S. franklinii* was 0.64 $cm^3\ g^{-1}\ h^{-1}$. Energy for daily maintenance of *S. franklinii* is estimated as 3.08 calories $g^{-1}\ h^{-1}$ (Haberman and Fleharty 1971).

ONTOGENY AND REPRODUCTION. Mating occurs from the time of emergence of females from burrows in spring until early June (Choromanski-Norris and Fritzell 1986; Iverson and Turner 1972). Male testis lengths during May ranged from 18 to 23 mm in Winnipeg (Iverson and Turner 1972). Presence of lengthened testis and sperm in the epididymides reliably indicates reproductive capability (Iverson and Turner 1972). No yearling females reproduce (Iverson and Turner 1972). By late June, after breeding, testis length regresses to 13 mm (Iverson and Turner 1972). Yearling *S. franklinii* has a testis length of ca. 7 mm at this time and has no epididymal sperm. Adult males retain scrotal testes into the 3rd week of July (Iverson and Turner 1972).

Using embryo counts, mean litter size ranged from 7.5 (range, 5–11) across 26 litters (Sowls 1948) to 9.4 (range, 2–13) among 7 litters (Iverson and Turner 1972). Of 9 captive litters from wild-caught pregnant females, average litter size was 7.9 (range, 7–12 young—Turner et al. 1976). Gestation lasts 28 days (Schwartz and Schwartz 1981). Only 50–75% of adult females lactate each year (Murie 1973). Lactation lasted from 20 May to 24 July in Manitoba (Iverson and Turner 1972).

Neonates are naked and blind (Sowls 1948; Turner et al. 1976). Lower incisors erupt after 7 days (Turner et al. 1976), hair becomes visible after 9 days, young are fully furred after 16 days, eyes open after 18–20 days, and weaning occurs after 28–30 days (Sowls 1948; Turner et al. 1976).

ECOLOGY. *Spermophilus franklinii* is a terrestrial ground squirrel that inhabits tall grasslands (Jones et al. 1983) and tends to avoid shorter grass habitats such as prairies that are grazed or

mowed (Hall and Kelson 1959). *S. franklinii* prefers a dense cover of coarse grasses and is often found along forest–prairie borders (Erlien and Tester 1984; Jones et al. 1983) and marsh edges in the central and north-central regions of the Great Plains (Johnson and Choromanski-Norris 1992). *S. franklinii* is also often found in grasses bordering railroads and highways (Kurta 1995), if these areas are not mowed.

Spermophilus franklinii is omnivorous and experiences seasonal changes in its diet. During spring, the diet primarily consists of vegetation. Animal products are mainly consumed during summer. Seeds and fruits are consumed when available in late summer (Jones et al. 1983).

Diet of *S. franklinii* on spring emergence consists of 75% vegetable matter, such as succulent roots, new shoots of herbaceous plants, and grasses (Sowls 1948). *S. franklinii* rarely uses a direct source of water because individuals derive moisture from succulent plants (Sowls 1948). As the growing season proceeds, *S. franklinii* feeds on vegetation such as the leaves, buds, and blossoms of dandelion (*Taraxacum*), sow thistle (*Sonchus*), stinging nettle (*Urtica dioica*), and white clover (*Trifolium repens*). Later in summer, diet may consist of chokecherry (*Prunus virginiana*); cultivated grains; red-berried elder (*Sambucus racemosa*) berries, fruit, and stones; stinging nettle seeds; and wild pea (*Lathyrus*) seeds and pods (Sowls 1948). *S. franklinii* will feed on garden vegetables, such as carrots, garden peas, potatoes, string beans, and tomatoes. When animal material, such as insects, frogs, toads, fish, bird eggs, and young birds, mice, and rabbits, is available, it contributes about 25% to the diet of *S. franklinii* (Fitzgerald et al. 1994; Jones et al. 1983; Kurta 1995; Schwartz and Schwartz 1981). Insects may include ants, caterpillars, crickets, and grasshoppers (Kurta 1995).

In Manitoba, *S. franklinii* will kill and eat grown mallards (*Anas platyrhynchos*), and duckling remains have been found near the burrow entrances (Sowls 1948). Ducklings are taken opportunistically as they stray from the brood (Sowls 1948).

Spermophilus franklinii also feeds on eggs of wild ducks, such as blue-winged teal (*Anas discors*), gadwall (*Anas strepera*), lesser scaup (*Aythya affinis*), mallard, northern pintail (*Anas acuta*), and redhead (*Aythya americana*—Sowls 1948). In North Dakota, *S. franklinii* removed 97% of mallard or blue-winged teal eggs placed in natural settings, 89% of which were preyed on within 2 min of discovery (Sargeant et al. 1987). When *S. franklinii* was presented with simulated nests, predation of eggs started immediately after the nest was discovered and continued until all eggs were taken or until the test was terminated. *S. franklinii* completely depredated a clutch within 5 days (Sargeant et al. 1987). In North Dakota, *S. franklinii* densities and number of duck nests in dense grass and scrub vegetation where *S. franklinii* was located, were not high enough to correlate with predation rates. Franklin's ground squirrels were assumed to reduce the clutch of duck nest eggs but did not completely destroy them (Johnson et al. 1989).

Sex ratios are almost always 1:1 (Erlien and Tester 1984; Iverson and Turner 1972; Murie 1973). In Alberta, survival rates of males and females are similar and ranged from 33% to 42% across 3 years (Murie 1973), whereas in Minnesota, survival rates of females were higher than those of males (Erlien and Tester 1984). Overwinter survival based on mark and recapture trapping methods was 20–60% for adults and juveniles combined in Manitoba (Iverson and Turner 1972). The survival curve of *S. franklinii* has been categorized as a type II curve (Erlien and Tester 1984), which demonstrates that survival is independent of the age of the individual. *S. franklinii* populations appear to be cyclic at 10-year intervals in Minnesota (Erlien and Tester 1984) or with peaks of 4–6 years (Sowls 1948).

Life expectancy of females is 4–5 years compared with 1–2 years for males (Erlien and Tester 1984). When males and females were combined, mean length of life in Minnesota was 0.74 years (Erlien and Tester 1984).

Spermophilus franklinii is uncommon over much of its range but may become abundant locally. Throughout its distribution in the prairie pothole region, *S. franklinii* coexists with *S. tridecemlineatus*, which is more common (Jones et al. 1983). Density of populations of *S. franklinii* was 1.25–2.5 adults/ha in Alberta (Murie 1973) and 1.6–2.0 individuals/ha in Manitoba (Sowls 1948).

In North Dakota, total distance traveled daily was 213 m for males and 153 m for females (Choromanski-Norris et al. 1989). Both males and females reduced daily travel distances 2 weeks before entering burrows for hibernation. In addition, females reduced movement during gestation (Choromanski-Norris et al. 1989). Annual home ranges averaged 24.6 ha for 27 males and 8.7 ha for 22 females in North Dakota. Annual home ranges overlap within and between sexes (Choromanski-Norris et al. 1989).

Badgers (*Taxidea taxus*) are the main predators of *S. franklinii* (Kurta 1995). Other predators include coyote (*Canis latrans*), hawks, long-tailed weasel (*Mustela frenata*), mink (*Mustela vison*), red fox (*Vulpes vulpes*), short-tailed weasel (*Mustela erminea*), snakes, and striped skunks (*Mephitis mephitis*—Haberman and Fleharty 1972; Jones et al. 1983; Kurta 1995).

Ectoparasites of *S. franklinii* include lice, fleas, ticks, and mites. The primary louse parasite of *S. franklinii* in Alberta is *Enderleinellus suturalis* (Hilton and Mahrt 1971a). *Opisocrostis bruneri* (a flea) is also primarily associated with *S. franklinii* (Hilton and Mahrt 1971a; Reichardt and Galloway 1994). Prevalence of *O. bruneri* on *S. franklinii* in Manitoba was 0.73 for males and 0.67 for adult females, and all juveniles were infested (Reichardt and Galloway 1994). Intensity of infestation peaked twice: once in early May, coinciding with time of emergence from the burrow when winter pelage is not yet completely lost, and again in late August and September, when winter pelage is growing thicker. These peaks in infestation intensity coincide with the emergence of new flea generations (Reichardt and Galloway 1994). In Manitoba, other fleas that occur on *S. franklinii* are not usually associated with ground squirrels. They include: *Catallagia borealis*, *Ceratophyllus vison*, *Ctenophthalmus pseudagyrtes pseudagyrtes*, *Epitedia wenmanni wenmanni*, *Megabothris acerbus*, *Megabothris quirini*, *Orchopeas caedens*, *Oropsylla arctomys*, *Peromyscopsylla catatina*, and *Tamiophila grandis* (Galloway and Christie 1990). Two tick species, *Ixodes sculptus* and *Dermacentor variabilis*, which carry Rocky Mountain spotted fever, occur on *S. franklinii*. However, *S. franklinii* was not infested with larvae and nymphs of *D. variabilis* (Burachynsky and Galloway 1985). A mite, *Androlaelaps fahrenholzi*, which is found in ground squirrel burrows, is associated with *S. franklinii* (Hilton and Mahrt 1971a).

Pulmonary adiaspiromycosis due to the fungus *Emmonsia crescens* was diagnosed in 3 *S. franklinii* in Canada for the 1st time in 1971, in Alberta (Tobon and Yuill 1976). Intestinal parasites from fecal samples of 8 individuals in Alberta included oocysts of *Eimeria bilamellata*, *E. callospermophili*, and *E. spermophili* (Hilton and Mahrt 1971b). In Saskatchewan, 46 *S. franklinii* had 4 species of cestodes, 2 species of trematodes, and 4 species of nematodes. *Hymenolepis citelli* was the most common cestode, *Choanotaenia spermophili* and *Taenia mustelae* were found in the liver, and larval *T. taxidiensis* was found in distal muscles in the rear leg. The trematode *Alaria mustelae* was found in lungs of 6 *S. franklinii* and in the spleen of 2 individuals. *Plagiorchis proximus*, also a trematode, was found in the small intestine of 1 individual. The most common mature nematode, *Physaloptera spinicauda*, was found in the stomachs of 13 individuals. *Spirura infundibulifomis* was found in the stomach and esophagus. *Capillaria* cf. *hepatica* was found in the liver, and *Citellinema bifurcatum* occurred in 3 individuals (McGee 1980).

To maintain viable populations of *S. franklinii*, mowing of grasses along railroads and highways should be reduced (Johnson and Choromanski-Norris 1992). These areas can then be used by *S. franklinii* as corridors between established populations, especially in areas where large tracts of grasslands do not exist.

Radiotracking of *S. franklinii* allows accurate recordings of locations and times of activity. Collars are harnessed around the front leg and neck of the ground squirrels (Krohne et al. 1972), or radiotransmitters can be implanted into the peritoneal cavity to facilitate burrowing (Choromanski-Norris et al. 1989; Eagle et al. 1984).

BEHAVIOR. *Spermophilus franklinii* lives in burrows, which have complex tunnels with many branches, ca. 8 cm in diameter (Haberman and Fleharty 1971), that typically extend 0.43 m below ground (Haberman and Fleharty 1972). One branch consists of a nesting area ca. 30 by 25 by 20 cm, padded with dried plant material (Haberman and Fleharty 1972), whereas other tunnel branches may have dead ends and may usually include storage areas for food (Jones et al. 1983) or feces (Schwartz and Schwartz 1981). Burrows are typically built on a steep slope for drainage (Haberman and Fleharty 1972) and typically have 2–3 entrances to allow greater escape prospects from predators (Haberman and Fleharty 1972).

Spermophilus franklinii hibernates from August through April. Several individuals may hibernate together in the same burrow. Adults are the 1st to retreat underground as early as the beginning of July, but might extend the immergence to late August. In Alberta, males entered winter dens from 3 to 29 July (mean, 15 July), whereas females were last captured from 14 July to 22 August (mean, 26 July—Murie 1973). In North Dakota, immergence dates for males were from 30 July to 1 September (mean, 19 August) and for females were from 19 August to 1 September (mean, 27 August—Choromanski-Norris and Fritzell 1986). Young-of-the-year are the last to enter the burrow, usually in September (Reichardt and Galloway 1994) and as late as October (Iverson and Turner 1972). Young need additional time above ground to gain enough fat to survive winter (Kurta 1995).

Soil warmth affects the daily activity of *S. franklinii* (Krohne et al. 1972; Sowls 1948) and with photoperiod may cue emergence from the burrow (Iverson and Turner 1972). Males emerge 1st from hibernation from mid April (Choromanski-Norris and Fritzell 1986) to early May (Reichardt and Galloway 1994), when they establish dominance hierarchies among other males (Kivett et al. 1976). Females emerge 1–2 weeks after males (Choromanski-Norris and Fritzell 1986; Reichardt and Galloway 1994). Juvenile Franklin's ground squirrels were 1st seen above ground in Manitoba the 2nd week of July (Reichardt and Galloway 1994). A mating pair may occupy the same burrow system; however, after mating, the male leaves and becomes solitary (Jones et al. 1983). *S. franklinii* individuals may move to different burrows up to 3 or 4 times between emerging from hibernation to 1 month after mating (Haberman and Fleharty 1972; Reichardt and Galloway 1994).

Spermophilus franklinii is strictly diurnal (Choromanski-Norris et al. 1989; Sowls 1948) and in North Dakota becomes active between 0705 and 0900 h and reenters burrows between 1900 and 2100 h (Choromanski-Norris et al. 1989). *S. franklinii* may climb low shrubs and sometimes trees (Jones et al. 1983). In Nebraska, daily activity peaks occurred 4–7 h after sunrise and 5 h before sunset (Haberman and Fleharty 1972). *S. franklinii* is rarely seen after sunset (Sowls 1948). The latest time an individual was observed reentering the burrow in North Dakota was 2125 h (Choromanski-Norris et al. 1989). Slight monthly variation in daily activity pattern is associated with changing day length (Choromanski-Norris et al. 1989). In Nebraska, *S. franklinii* was active on cool, overcast, or windy days and inactive on rainy days (Haberman and Fleharty 1972), whereas *S. franklinii* movements in Illinois were restricted in all these weather conditions (Krohne et al. 1972).

Spermophilus franklinii lives alone or in pairs (Sowls 1948) and is highly secretive (Jones and Birney 1988). It is the least social of the *Spermophilus* species (Kivett et al. 1976). Individuals tended to avoid each other, and under laboratory conditions, reacted to other squirrels by growling and exhibiting threat displays (Kivett et al. 1976). Although males sniff the anal region of females, occasionally sniff the dorsal region, and display nasal–nasal investigation, level of olfactory investigation by *S. franklinii* was less than 5 other *Spermophilus* species (Kivett et al. 1976).

Spermophilus franklinii uses its incisor teeth when feeding on bird eggs. It grasps the egg under its body and thrusts the egg against the incisor teeth with its hind legs. The hole in the egg is enlarged by biting off small pieces of shell (Sowls 1948). When eggs are depredated by Franklin's ground squirrels, only half or less than half of the shell is broken, small chips of the eggshell are left, and sometimes tooth marks are evident (Sowls 1948). Small shell fragments that are held together by the membrane are often curled inward at the opening when eaten by Franklin's ground squirrels (Sowls 1948).

GENETICS. In Minnesota, diploid chromosome number of *S. franklinii* is 42 (n = 3—Nadler 1966). Karyotype has 10 metacentric, 16 submetacentric, and 14 acrocentric autosomes. X chromosome is medium sized and submetacentric, and the minute Y chromosome is also submetacentric. DNA sequence data from the mitchondrial cytochrome-*b* gene show that *S. franklinii* is more closely related to *S. tridecemlineatus* and *S. spilosoma* than to other *Spermophilus* (P. D. Sudman, pers. comm.).

REMARKS. *Spermophilus franklinii* was named in honor of a British naval officer, Sir John Franklin, who led explorations of the Arctic between 1818 and 1826 in search of the Northwest Passage and collected abundant scientific information (Davis 1987; Jones et al. 1983). Other names for *S. franklinii* include gray gopher, whistling ground squirrel, gray-cheeked squirrel, gray ground squirrel, gray souslik, grey American marmot, line-tailed squirrel, prairie squirrel, scrub gopher, spermophile de Franklin, and bush gopher (Jackson 1961; S. Larivière, pers. comm.; Sowls 1948).

We thank Jan O. Murie and James F. Hare for their helpful comments to improve this account. We also thank Greg Sievert for taking the photographs of the skulls. Skulls were provided by the Schmidt Museum of Natural History. We thank the director, Dwight Moore, for the use of the skulls.

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