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Ammospermophilus interpres.

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Ammospermophilus interpres (Merriam, 1890)

Texas Antelope Squirrel

Tamias interpres Merriam, 1890:21. Type locality "El Paso [El Paso Co.], Texas."

Ammospermophilus interpres: Bailey, 1905:81. First use of current name combination.

CONTEXT AND CONTENT. Order Rodentia, Suborder Sciuromorpha, Family Sciuridae, Tribe Marmotini, Subtribe Ammospermophilina (Hafner, 1984; Hall, 1981). The genus *Ammospermophilus* contains five species; *A. harrisii*, *A. insularis*, *A. interpres*, *A. leucurus*, and *A. nelsoni*. A key to the species is presented in Best et al. (1990). *A. interpres* is monotypic (Hall, 1981).

DIAGNOSIS. The Texas antelope squirrel (Fig. 1) is medium- to large-sized for the genus, and has the longest tail and hind limbs. The skull (Fig. 2) is relatively broad and short, with a robust rostrum and shallow braincase. Compared to *A. leucurus*, *A. interpres* is slightly smaller. The skull is much blockier in outline, with a heavier rostrum and more flattened braincase. Compared to the paler, reddish pelage of *A. leucurus*, that of *A. interpres* is uniformly dark, with no apparent rufous tint. Further, two distinct black bands are visible on the undersurface of the tail of *A. interpres*, in contrast to a single band visible in *A. leucurus*. Compared to *A. harrisii*, which is similar in dorsal coloration, *A. interpres* is most easily distinguished by the tail banding pattern: the undersurface of the tail of *A. harrisii* is gray or has a salt and pepper appearance due to multiple banding of the tail hairs. The skull of *A. harrisii* is slightly larger, with relatively larger auditory bullae (especially due to expansion of the anterior bullar cell), but the tail and hind limbs are proportionally smaller in *A. harrisii*. The baculum of *A. interpres*, compared to that of *A. leucurus* and *A. harrisii*, is wider, more fan-shaped, and has a more pronounced shaft angle (Hafner, 1981).

GENERAL CHARACTERS. *Ammospermophilus interpres* (Fig. 1) has one white stripe bordered with blackish on each side of the body, no distinct head stripes, and hairs on the underside of the tail that are medially white (Anderson, 1972). The dorsum is finely grizzled gray, faintly tinged with vinaceous posteriorly, and suffused with pale fulvous over the nose. The shoulders, hips, and outer surface of fore and hind legs are ochraceous buff. There is a broad stripe of clear white on each eyelid and on each side of the back from shoulder to side of rump. The ventrum is silky whitish. The proximal one-third of the tail is concolor with the back and suffused with pale fulvous dorsally; the distal two-thirds is grayish black with a partly concealed submarginal black band and whitish border. Ventrally, the tail is white, with two complete black bands (the innermost concealed) and a whitish border. The lateral hairs are black basally, so that each hair has three black zones, alternating with three white zones, as in *A. harrisii*. *A. interpres* differs from *A. harrisii* in having the hairs of the underside of the tail whitish instead of marbled black and white, giving the tail a different appearance (Merriam, 1890).

The dental formula is i 1/1, c 0/0, p 2/1, m 3/3, total 22 (Ingles, 1965). There is a trend toward increased size in northern individuals (Hafner, 1981). Average and range of measurements (in mm) of eight males and two females from El Paso, Texas, are: total length, 226 (220–235); length of tail vertebrae, 74.2 (68–84); length of hind foot, 37.8 (36–40); and length of ear (dry), 9.8 (8–11). Cranial measurements (in mm) of eight males and six females from El Paso are: greatest length, 39.3 (37.7–40.5); palatilar length, 17.3 (16–18.2); zygomatic breadth, 22.7 (21.5–23.8); cranial breadth, 18.9 (18–19.6); interorbital breadth, 9.9 (9.4–10.5); postorbital constriction, 14.5 (13.8–15.3); length of nasals, 12.6 (11.8–13.8); and length of maxillary toothrow, 6.6 (6.4–6.9; Howell, 1938). Additional measurements (in mm) of four adult females from near Boquillas, Coahuila, are: length of ear, 14 (14–15); condylobasal length, 39.5 (38.4–40.1); and basilar length, 31.9 (30.8–32.8; Baker, 1956). Measurements (in mm) of two adult females from Guadalupe Mountains National Park include mastoid breadth, 20.7, 19.6 (Genoways et al., 1979). Average and extreme weights of four adult, nonpregnant females from near Boquillas, Coahuila, were 110.2 g (98.7–121.9; Baker, 1956).

DISTRIBUTION. The Texas antelope squirrel occupies the high intermontane Chihuahuan Plateau from Jaral, Coahuila, near Cinco de Mayo, Zacatecas, and Ciudad Lerdo, Durango, northern through western Texas into central New Mexico (Fig. 3; Baker et al., 1980; Hafner, 1984). The species is restricted to rocky associations on and around the low-desert mountain ranges (Hafner, 1981). Stones, boulders, and rocks are essential environmental features for *A. interpres* (Schmidly, 1977*b*). It occurs at 1,800 m in the Chisos Mountains, Texas (Judd, 1967), and it is widely distributed from the river bottom at Big Bend, Texas, up to 1,650 m elevation (Borell and Bryant, 1942). In Trans-Pecos Texas, it occurs from 540 to 1,830 m, but is most common at elevations between 1,050 and 1,650 m (Schmidly, 1977*a*). The escarpment of the Sierra del Carmen–Sierra Madre Oriental acts as a barrier on the eastern side of the range. The southern distributional limit is near latitude 25°N along the southern Coahuila–Rio Nazas filter barrier (Schmidly, 1977*b*).

FOSSIL RECORD. The genus *Ammospermophilus* probably diverged in the Miocene and had already attained nearly modern form by Clarendonian times (James, 1963). Specimens of *A. interpres* have been recovered from prehistoric cave deposits near Cuatro Cienegas, Coahuila (Gilmore, 1947) and Cueva Quebrada,

FIG. 1. *Ammospermophilus interpres* at Aguirre Springs, Organ Mountains, Dona Ana Co., New Mexico. Photograph by T. L. Best.

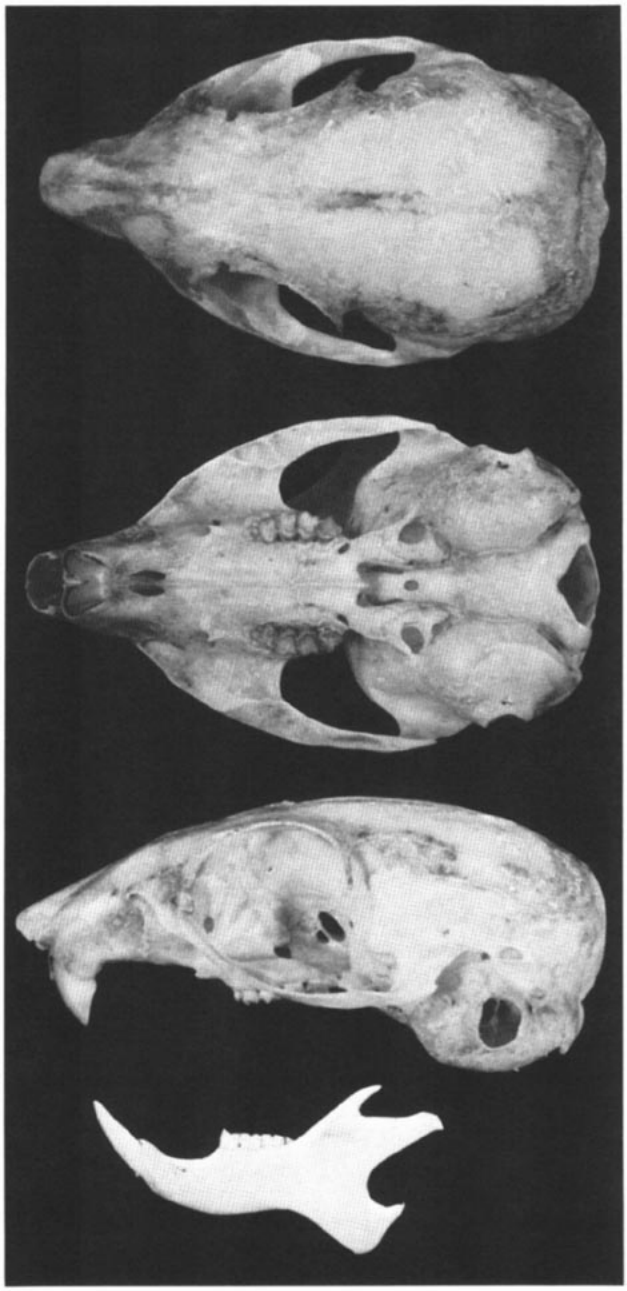

FIG. 2. Dorsal, ventral, and lateral views of cranium and lateral view of mandible of *Ammospermophilus interpres* (female, from near Las Cruces, Dona Ana Co., New Mexico). Greatest length of cranium is 40.6 mm. Photographs by T. L. Best and J. L. Dobie.

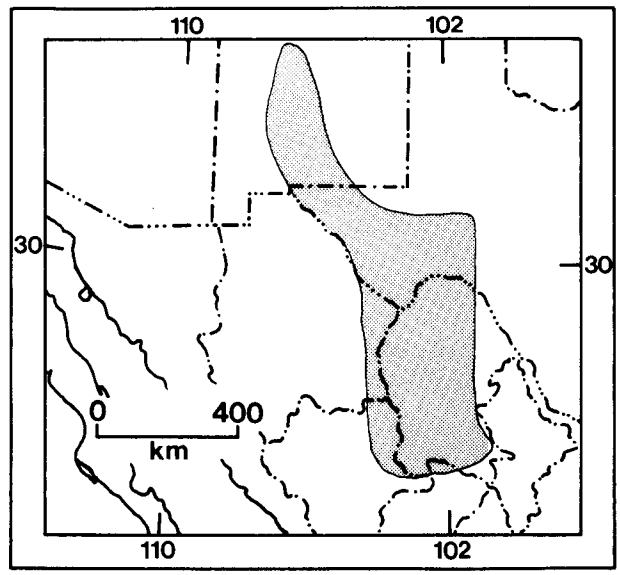

FIG. 3. Distribution of *Ammospermophilus interpres* in the southwestern United States and northern Mexico (Hall, 1981).

Val Verde Co., Texas (Lundelius, 1984). In establishing its present range, this species apparently accompanied expanding desert influences northward into New Mexico, following corridors of low-desert mountain ranges that afforded both rocky areas and juniper (*Juniperus*) woodland (Hafner, 1981).

FORM AND FUNCTION. *Ammospermophilus interpres* has a marked climbing-adapted morphology, even compared to its agile congeners (Hafner, 1981). The cheekpouches are large, extending posteriad to the level of the manubrium sterni. The ears do not project dorsally to the level of the head. Each pinna is rounded and its width is equal to or greater than its height. There is no antitragus or intertragal notch. The ears are short and broad. The length of tail is from 25 to 33% of the total length, and the legs are relatively long. The soles of the feet are heavily haired (Bryant, 1945).

In winter pelage, the upper parts are pale drab or drab gray (the tips of the hairs are white with a subterminal band of fuscous). The nose and front of the face are washed with pinkish cinnamon and the eye ring is white. The front and hind legs and hips are pinkish cinnamon or pale-pinkish cinnamon. The feet are pale-pinkish cinnamon, shaded with buffy white. The tail above is mixed black and white with a patch of pale-pinkish cinnamon at the proximal end. The tail beneath is creamy white, bordered with black and with a black band on the middle portion of some of the hairs. The underparts are white (Howell, 1938).

The winter pelage is dense and soft, and underfur is abundant; the overall color is bright and tawny (Baker, 1956). The mid-dorsal summer pelage is dark (Hafner, 1981), short, harsh, has little underfur, and is pale gray. Specimens in winter pelage have been observed on 2 and 3 March; ones in summer pelage have been seen on 4 May, 10 July, and 13 July (Baker, 1956). In December near El Paso, they possess long and silky winter fur (Bailey, 1905). Those in winter pelage from Coahuila resemble animals in the same pelage in March in Bernalillo County, New Mexico, and in January in Presidio County, Texas, except that the coloring on the sides, flanks, and legs is paler and the upper parts are grayer and paler (Baker, 1956). Those from the black-colored lava beds of southern New Mexico are not noticeably darker in pelage (Benson, 1933).

Spring molt is in May and autumn molt in September (Hafner, 1981). An adult male seen on 30 May in Guadalupe Mountains National Park was molting in a broad band across the nape of the neck and onto the head and shoulders (Genoways et al., 1979). On 23 May, one from Boquillas, Texas, was in badly worn pelage and showed new hair coming in on the head and anterior back (Howell, 1938).

Ratios (in percent) of parts of the skeleton (ratios of measurements are of length, unless otherwise stated) are: cervical vertebrae/vertebral column, 14.6, 14.4; thoracic vertebrae/vertebral column, 39.5, 39.2; lumbar vertebrae/vertebral column, 35.0, 36.0; sacrum/vertebral column, 11.0, 10.6; scapula/vertebral column, 18.3, 18.4; width of scapula/length of scapula, 48.6, 48.9; humerus/vertebral column, 24.7, 24.1; radius/vertebral column, 21.9, 22.0; humerus/humerus + radius, 53.0, 52.3; olecranon/ulna, 14.6, 14.5; os coxae/vertebral column, 30.1, 28.4; femur/vertebral column, 31.0, 30.8; tibia/vertebral column, 32.7, 33.0; femur/femur + tibia, 48.7, 48.3; and sternum/vertebral column, 28.3, 28.0 (Bryant, 1945).

The baculum is fan-shaped, with wide lateral proximal and distal expansions and a pronounced shaft angle. It is <2 mm in length and apparently acts only as a hardened tip to facilitate initial intromission of the penis. The bizarre fan-shape, asymmetry, and variability in number of tooth-like projections of this delicate bone would seem to have no other functional attributes (Hafner, 1981). The mammae of females are arranged in five pairs, which indicate litters of five or more young (Bailey, 1931).

ONTOGENY AND REPRODUCTION. Breeding begins in February (Davis, 1978). Lactating females were present on 2 and 3 March in Coahuila (Baker, 1956). One litter of five to 14 young, based on embryo counts, is reared each year, but there is evidence that a second litter may be reared by some females (Davis, 1978). The mild climate where the Texas antelope squirrel lives may be conducive to having more than one litter each year (Bailey, 1931).

The young remain in the nest until they are about 25% grown, at which time they venture above ground and begin eating solid foods (Davis, 1978). An immature male was seen on 20 April in the Big Bend area of Texas (Borell and Bryant, 1942). Two females seen on 5 June in Guadalupe Mountains National Park were young-of-the-year (Genoways et al., 1979). Near Boquillas, Texas, in May, half-grown young were out of their burrows getting their own food, including various seeds and fruits, and climbing *Acacia* and *Prosopis* bushes to secure ripening pods, which were found scattered in abundance about their burrows (Bailey, 1905).

FIG. 4. Habitat of *Ammospermophilus interpres* along the lower elevations of the Organ Mountains, Dona Ana Co., New Mexico. Photograph by T. L. Best.

ECOLOGY. In the Chihuahuan Desert, *A. interpres* is found in association with creosotebush (*Larrea*), tarbush (*Flourensia*), lechuguilla (*Agave*), and sotol (*Dasylirion*; Packard, 1977), where it is widespread and in desert, grassland, and woodland (*Quercus–Juniperus*) habitats (Findley and Caire, 1977). It does not occur far away from boulders and areas with junipers and large shrubs (Findley et al., 1975). It is most common on hard-surface, gravelly washes or rocky slopes, and is less common or absent on level, sandy terrain (Davis, 1978). Canyons, bare cliffs, and rocks seem to be factors determining the range of the Texas antelope squirrel (Fig. 4; Bailey, 1905). It is common nowhere and spotty in distribution (Baker, 1977).

In New Mexico, *A. interpres* is found only in rocky areas where juniper woodland is nearby. Its restriction to rocky, and possibly rocky pinyon–juniper (*Pinus–Juniperus*) woodland areas, is in marked contrast to the catholic desert-habitat occupied by *A. harrisii*, *A. leucurus*, and *A. nelsoni*. It appears that a long and close association with juniper woodland, especially during glacial maxima, has resulted in a high degree of habitat specificity, as well as increased morphological adaptation to this habitat (Hafner, 1981). *A. interpres* seems to be restricted to canyons and rocky foothills of desert mountains, not extending into the open valleys any great distance from rocky areas (Bailey, 1931). Vegetation of a lava bed occupied by *A. interpres* in south-central New Mexico included *Gutierrezia*, *Yucca*, *Senecio longilobus*, *Parosela formosa*, *Streptanthus valida*, *Opuntia leptocaulis*, *Rhus microphylla*, *Salvia henryi*, *Actinea mearnsii*, *Cryptanthe crassisepala*, *Erigeron*, *Fallugia paradoxa*, *Phacelia caerulea*, *Polanisia*, *Lesquerella*, *Sophia halictorum*, and *Verbena* (Blair, 1943).

In Texas, *A. interpres* occurs on rough rocky areas, but seems to be confined to the middle elevations (Davis and Robertson, 1944). It is found in lower rocky canyons, on creosotebush flats, and in higher canyons among the pinyons, junipers, and oaks (*Quercus*). Although not common in the Big Bend area, it is most frequently in the higher canyons (Borell and Bryant, 1942). *A. interpres* occurs in the middle to lower elevations of Guadalupe Mountains National Park (it does not occur above 1,920 m), and is restricted to rocky areas along the escarpment of the mountains in areas dominated by sotol, lechuguilla, and ocotillo (*Fouquieria*; Genoways et al., 1979). In the Sierra Vieja region of southwestern Texas, *A. interpres* is common in several vegetation associations of the roughland belt and also occurs in the catclaw–cedar (*Acacia–Juniperus*) association on alluvial fans. It is most numerous in the catclaw–grama (*Acacia–Bouteloua*) association, but individuals are seen on sheer bluffs of the canyon walls. It also occurs in the ocotillo–creosotebush (*Fouquieria–Larrea*) association near Porvenir (Blair and Miller, 1949). Near El Paso and in the Big Bend area of Texas, *A. interpres* lives along steep banks of the river or in the narrow side gulches that cut back into the barren mesas. Along the canyon of the Pecos River it is found on the rock shelves of the canyon walls (Bailey, 1905).

In Mexico, habitats are similar to those in New Mexico and Texas. In Coahuila, *A. interpres* occurs on rocky roadside cliffs (Baker et al., 1980), and in rocky situations usually in the driest parts of Chihuahuan Desert shrub vegetation. It occupies low hills covered with lechuguilla and topped by massive rimrock (Baker, 1956). In Durango, it occurs on sides of hills and other rocky areas in arid desert situations with *Agave lechuguilla* and *Euphorbia antisyphilitica* (Baker and Greer, 1962).

Texas antelope squirrels usually live in burrows, but crevices in and between rocks may serve as den sites. They make use of abandoned burrows of other rodents and there usually is no mound of earth to mark the entrance (Davis, 1978). They burrow under the edge of boulders or around the base of bushes or cacti (Bailey, 1905). One burrow was in a roadcut and was excavated in friable soil under a bed of hardpan about 1 m below the top of the ground and 50 cm above the roadbed. The main tunnel was 87 mm in diameter, 3 m in length, and was parallel to and about 30 cm back from the face of the roadcut; access was by three openings. Midway in the tunnel was the nest chamber, 125 mm in width, 175 mm in length, and 100 mm in height. An accessory loop in the back of the nest and two blind pockets at one end of the main tunnel completed the system. The nest was composed of rabbit fur, shredded bark, feathers, dry grasses, and bits of cotton (Davis, 1978). In the Sierra Vieja region of southwestern Texas, dens usually are located beneath massive boulders on relatively level ground (Blair and Miller, 1949).

In Terrell County, Texas, nesting sites usually are between boulders and under rock ledges where burrows go back 1 m or more from the entrance. One Texas antelope squirrel used five burrows in the same area. Most of these squirrels ranged from the bottom of the mesa slopes to 15–18 m up the slopes. Some occurred near mesa tops, but these always were in canyon headers that were relatively shallow. None occurred on the tops of mesas (Hermann, 1950).

The diet consists of a variety of seeds, berries, and insects, including the seeds, fruit, and fleshy parts of many species of cactus. The beans of *Prosopis* and various other legumes are gathered for food, as are the seeds of *Larrea*, *Dasylirion* (Bailey, 1931), *Yucca*, *Juniperus*, salt grass, ripe fruits of *Opuntia* (Davis, 1978), and other seed-bearing plants. In spring and early summer, considerable green vegetation is eaten (Bailey, 1931). On the lava bed near Carrizozo, New Mexico, they feed mainly on juniper berries (Benson, 1933). Foods most commonly found in the vicinity of burrows in the Sierra Vieja region of southwestern Texas include fruits of *Juglans rupestris*, *Sophora secundiflora*, and *Ungnadia speciosa* (Blair and Miller, 1949). In September, the stomach of one from the Castle Mountains of Texas was full of the fruit of *Opuntia engelmanni*, which may have been the squirrel's steady diet for some time, as its flesh was tinted throughout with the purple color of the fruit (Bailey, 1905).

In the Chihuahuan biotic province of Texas, *A. interpres* occurs in association with *Bassariscus astutus*, *Spermophilus variegatus*, *Thomomys bottae*, *Chaetodipus nelsoni*, *Peromyscus boylii*, *P. pectoralis*, *P. eremicus*, *Neotoma albigula*, *N. mexicana*, *Sigmodon ochrognathus*, *Sylvilagus floridanus*, and *Odocoileus hemionus* (Blair, 1950). On the lava beds of the Tularosa Basin, New Mexico, it occurs with *Chaetodipus intermedius*, *Peromyscus nasutus*, *P. truei*, *Pipistrellus hesperus*, *Sylvilagus audubonii*, *Lepus californicus*, *Spilogale putorius*, *Tamias cinereicollis*, *Antrozous pallidus*, and *Lynx rufus* (Blair, 1943); it is present in smaller numbers than are *S. variegatus* and *T. cinereicollis* (Benson, 1933). Other mammals in the same geographic range include *Neotoma micropus*, *Perognathus flavus*, *Dipodomys ordii* (Bradt, 1932), *D.*

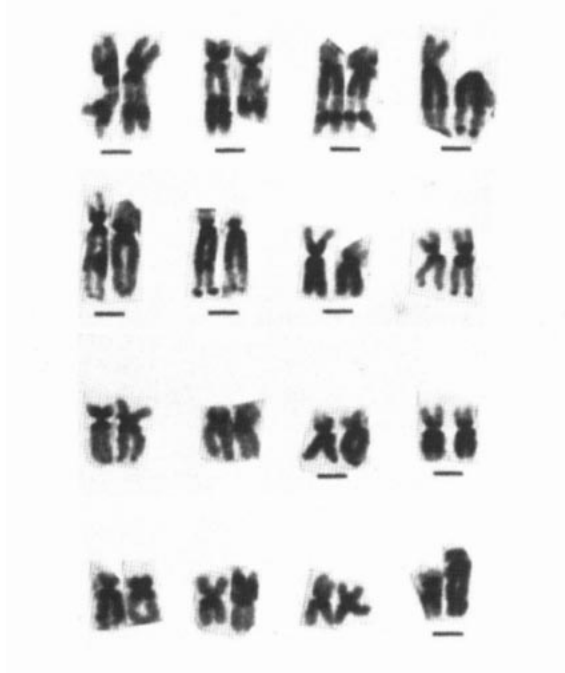

FIG. 5. C-banded karyotype of *Ammospermophilus interpres*. Pairs containing heterochromatic blocks (other than centromeric) are underscored. The X and Y chromosomes are the first and second members, respectively, of the right-most pair in the bottom row (modified from Mascarello and Mazrimas, 1977).

spectabilis, *D. merriami*, *D. phillipsii*, *D. nelsoni*, *Notiosorex crawfordi*, *Spermophilus mexicana*, *Chaetodipus penicillatus*, *Peromyscus eremicus*, *Onychomys torridus*, *Neotoma goldmani*, and *Vulpes macrotis* (Hafner, 1981). In Coahuila, *A. interpres* is an important food source for predators and man because it is numerous and easy to capture (Gilmore, 1947).

The caecum of an *A. interpres* from Durango contained numerous nematodes of the family Oxyuridae (Baker and Greer, 1962). No other parasites are known.

BEHAVIOR. *Ammospermophilus interpres* often sits on prominent boulders and on tops of junipers or large shrubs (Findley et al., 1975). It usually is seen either running from bush to bush, sitting on a point of rock, or running over the rocks with its short, bushy tail curled tight over its rump. Sometimes Texas antelope squirrels climb to the top of a cactus or low bush, apparently in search of food, but at the first alarm they rush for a burrow or the nearest rocks (Bailey, 1905). In the Guadalupe Mountains, Texas, it frequently uses cholla cactus (*Opuntia*) as lookout stations (Davis, 1940).

Texas antelope squirrels are fidgety, nervous, and seldom still for long. They are nimble-footed and can run with surprising speed. Their peculiar habit of carrying the tail arched forward over the back, exposing to view the contrasting-colored undersurface, is a readily usable field characterstic. The nervous flickering of the tail when the animals are excited and the mellow, rolling, trill-like calls further help to identify them (Davis, 1978).

Texas antelope squirrels are wary and secretive (Baker, 1956; Borell and Bryant, 1942). Along the eastern edge of the Guadalupe Mountains, Texas, they are so shy that one scarcely sees a flick of white before they are gone (Davis and Robertson, 1944); they move rapidly when disturbed (Hermann, 1950). In Durango, they are extremely wary and difficult to see among rocks and in the sparse ground cover of cacti and other low, thorny vegetation (Baker and Greer, 1962).

Their activities are restricted to daylight hours (Hermann, 1950). They are most active during the hottest parts of the day (Baker et al., 1980; Blair and Miller, 1949). Early afternoon seems to be the time of greatest activity, but they are out and active as early as 0700 and as late as 1900 (Hermann, 1950).

Texas antelope squirrels probably do not hibernate (Davis, 1978), or not to any great extent (Bailey, 1931), but they do become fat in autumn (Bailey, 1905). The quantity of fat they accumulate for winter would make it possible for them to sleep through a winter storm of considerable duration (Bailey, 1931). If they hibernate in the Big Bend area, it is only during the coldest periods of the year; they have been observed 12–15 November and 1 December (Borell and Bryant, 1942). Apparently, every warm day brings them out for a fresh supply of food (Bailey, 1931). In December at El Paso, Texas, they were out on warm days, although lazy and sluggish. They were feeding on various seeds, including those of *Larrea*. In February, along the east base of the Franklin Mountains, they were running about in a drizzling rain when the temperature was close to freezing (Bailey, 1905). They have been seen on 4 January in the Guadalupe Mountains, Texas (Davis, 1940), on 10 January near Presidio, Texas, and on 17 February in Bernalillo County, New Mexico (Baker, 1956). In the Sandia Mountains, New Mexico, they have been observed in the snow in midwinter (Findley et al., 1975).

As in other *Ammospermophilus*, the alarm call is a trill; ontogeny, sex, temperature, or season do not affect call characters. Duration of call, band of frequencies emitted at onset, frequency of the fundamental, and lowest frequency are highly correlated with measures of the rostrum (Bolles, 1981). The short, harsh, low-pitched trill of *A. interpres* appears to be adapted to closed (rocky) habitats, and its call has a longer pulse duration than those of other species of *Ammospermophilus*. Means of characters of alarm calls are: length of call from first sound emitted to end of call, 1.07 s (range, 0.92–1.20); frequency band around trill at onset of call, 6.43 kHz (5.50–7.00); mean pulse duration, 0.063 s (0.060–0.070); frequency of main sound energy of the trill one-half way in its duration, 1.90 kHz (1.20–3.00); cascade ratio, 1.07 kHz (1.00–1.20); lowest frequency emitted, 0.57 kHz (0.00–1.00); frequency of the fundamental, 1.13 kHz (0.90–1.50); frequency of trill at beginning, 2.00 (1.20–3.00); frequency of first harmonic above main sound energy, 3.10 kHz (2.20–4.80); and length of trill from first clearly configured pulse to end of call, 1.07 s (0.92–1.20; Bolles, 1988).

Ammospermophilus interpres shows greater variation in most characters of its alarm call than do other species of *Ammospermophilus*. Individual calls of *A. interpres* are intermediate in form between calls of *A. harrisii* and *A. leucurus*, which are at one extreme, and those of *A. insularis* and *A. nelsoni* at the other extreme (Bolles, 1988).

GENETICS. The C-banded karyotype of *A. interpres* (Fig. 5) has a diploid number of 32 chromosomes as in other members of the genus. Three pairs of chromosomes bear interstitial blocks of heterochromatin. In some cells, one of these pairs appears to have heterochromatin extending from the centromeres to about one-third of the way down the long arms. There are two pairs of submetacentric chromosomes with heterochromatin extending from their centromeres to one-half way down their long arms. There also are one medium and two small pairs of submetacentrics that are heterochromatic over all or most of their long arms (Mascarello and Mazrimas, 1977). Asynaptic regions occur in 21% of pachytene cells (Mascarello, 1980).

Electrophoretic data indicate relatively low levels of genetic divergence among species of *Ammospermophilus*, with a mean Nei genetic distance measure of D = 0.05. *A. interpres* is the most distinct (D = 0.086; Bolles, 1981). Cesium-chloride buoyant-density gradients suggest that the DNA exhibits two prominent satellite peaks with densities of approximately 1.708 and 1.717 g/ml (Mascarello and Mazrimas, 1977).

REMARKS. Lack of continuous rocky habitat may explain why *A. interpres* has not extended its range westward over the Deming Plain of New Mexico to approach that of *A. harrisii*. *A. interpres* also may find the grasslands of the Continental Divide an insuperable barrier. Historically, one may suppose that no part of New Mexico was occupied by *Ammospermophilus* during the height of Pleistocene pluvial intervals. The present distribution pattern seems likely to have arisen as a result of invasions of antelope ground squirrels from the northwest (*A. leucurus*), from the southeast (*A. interpres*), and from the southwest (*A. harrisii*). Presumably, by the time this immigration took place the Rio Grande system of riparian-gallery forests was integrated, blocking penetration of *A. leucurus* to the east (Findley et al., 1975).

Bailey (1931) postulated that during a time of unusual abundance both *A. harrisii* and *A. leucurus cinnamomeus* extended their range to the desert valleys east of the Rio Grande, and then as populations receded to normal abundance the stranded individuals

hybridized to form *A. interpres*. He believed that the characters of *A. harrisii* predominated in *A. interpres*.

Analyses of allelic frequencies at 23 loci indicate that *A. interpres* was the first of the five extant species to diverge (Hafner, 1981). Based upon phenetic clustering of cranial and postcranial skeleton morphology, *A. interpres* is more similar to *A. nelsoni* and *A. leucurus* than it is to *A. harrisii* (Hafner, 1984).

Ammospermophilus is derived from *ammos* referring to sand, *spermatos* alluding to seed, and *philos* meaning loving or desiring affinity. The specific epithet *interpres* refers to an explainer, translator, or go-between (Jaeger, 1955); another common name is "trader spermophile" (Elliot, 1905).

B. Owen prepared Fig. 3. We thank S. Anderson, R. H. Baker, M. C. Belk, F. S. Dobson, D. J. Hafner, R. E. Mirarchi, and H. D. Smith for reviewing early drafts of the manuscript. E. L. McPherson assisted in obtaining the photograph in Fig. 1. This is journal article no. 15-902461P of the Alabama Agricultural Experiment Station.

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