(casual) respectively (Hubbard, 1978). The owls were first observed in 1976, when a pair was found nesting in a hole made by Acorn Woodpeckers (*Melanerpes formicivorus*) in a dead cottonwood in riparian habitat at 2100 m. Single breeding pairs were found at the same location during 1977, 1979, and 1981. Although we obtained responses to playbacks of Elf Owl vocalizations in other parts of the canyon during 1981, we could definitely confirm only one nesting pair. The regular occurrence of Elf Owls in this area considerably extends the known breeding range of this species in New Mexico; it is unknown, however, whether their presence there reflects a recent range expansion.

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A NEW RECORD OF *CAECIDOTEA STEEVESI* (ISOPODA: ASELLIDAE) FROM ARKANSAS.—Fleming (Proc. Biol. Soc. Washington, 88:489-500, 1972) reported *Caecidotea steevesi* from Carrico Cave, Dade Co., Missouri (type locality); seeps, Cherokee Co., Kansas; and Three Forks Cave, Adair Co., Oklahoma. No other localities for this species have been recorded.

Specimens of *C. steevesi* were collected from War Eagle Cave, Madison Co., Arkansas, ca. 6.9 km N of Huntsville, on 6 Aug. 1978 (1 male, 2 females, 2 immature) and 21 Jun. 1981 (2 males). These collections represent the southeasternmost locality for this species and the first record for Arkansas. This species appears to be restricted to the southwestern portion of the Springfield Plateau. Collections are in the possession of the author.

Specimens were taken from the underside of rocks in 1 to 3 cm of moderately flowing water, approximately 30 m within the cave. Plant debris and bat guano made up most of the organic matter present. Other fauna present include an unidentified trichopteran, Philopotamidae (troglophile); *Eurycea longicauda* and *E. lucifuga*, Plethodontidae (troglophiles); *Typhlotriton spelaeus*, Plethodontidae (troglobite); *Lycosa* sp., Lycosidae (trogloxene); *C. ancyla*, Asellidae (troglobite); *Stygobromus ozarkensis*, Crangonyctidae (troglobite); *Pipistrellus subflavus*, Vespertilionidae (trogloxene).

I would like to express my appreciation to Dr. Thomas E. Bowman of the United States National Museum, for confirmation of asellid identifications, and to Dr. John R. Holsinger, Old Dominion University, for amphipod identifications.—MARK D. SCHRAM, *Dept. of Zoology, Univ. of Arkansas, Fayetteville, AR 72701.*

NOTES ON BURROWING OWL (*ATHENE CUNICULARIA*) FOOD HABITS IN OKLAHOMA.—The burrowing owl (*Athene cunicularia*) is a small, long-legged bird of open grasslands with the unusual habit of appropriating inactive prairie dog burrows for refuge and nesting. Between 22 Jun. 1966 and 13 May 1967, while studying the distribution of the black-tailed prairie dog (*Cynomys ludovicianus*) in Oklahoma (Tyler, Distribution and vertebrate associates of the black-tailed prairie dog in Oklahoma, Ph.D. Diss., Univ. Oklahoma, Norman, 1968), I collected 263 burrowing owl pellets from eleven counties in the western half of the state. Remains of larger vertebrate prey found at the entrances to active owl burrows also were collected.

Pellet contents were identified using a 10-20x dissecting microscope. Prey species were counted and frequency of occurrence was calculated. Borrer and Delong (*An introduction to the study of insects*, Rinehart and Co., N.Y., 1960) and a reference collection facilitated insect identification. Hair and bony remains were compared directly with specimens in the Cameron University Museum of Zoology when possible. Keys compiled by Glass (*A key to the skulls of North American Mammals*, Oklahoma State Univ., Stillwater, 1965) were used to identify mammal skulls. Seasons were considered as follows: summer, June through August; fall, September through November; winter, December through February; and spring, March through May.

Throughout most of its range in western North America, the burrowing owl is known to feed on small mammals and arthropods when they are available (see Bent, Bull. U.S. Natl. Mus. 170: 389-90, 1938; Fisher, U.S. Dept. Agric., Div. Ornith. and Mamm., Bull. No. 3, Washington, D.C., 1893; Ross and Smith, Texas J. Sci. 21:479-80, 1970; and Longhurst, Condor 44:281-82, 1942). Preferred invertebrate prey includes insects, particularly ground-dwelling beetles (Carabidae, Scarabeidae, Silphidae and Tenebrionidae) and orthopterans (Acrididae and Gryllidae). Favorite mammalian prey such as mice (*Peromyscus, Reithrodontomys, Perognathus*), rats (*Sigmodon, Dipodomys*), and ground squirrels (*Spermophilus*) are usually predominant in the winter diet,

TABLE 1.—*Frequency of occurrence of prey by season in 263 burrowing owl pellets from western Oklahoma, 1966-67 (N = the total number of pellets collected during a given season).*

	Summer (N = 45)	Fall (N =94)	Winter (N =38)	Spring (N = 86)	Total (N = 263)
Class Insecta					
Order Orthoptera					
Family Acrididae	0.40	0.81	0.37	0.12	45.0
Family Gryllidae	0.02	0	0	0	0.4
Order Coleoptera					
Family Carabidae	0.40	0.40	0.18	0.30	38.0
Family Silphidae	0	0	0	0.02	0.8
Family Elateridae	0	0	0	0.01	0.4
Family Tenebroinoidae	0	0.02	0.03	0.01	1.5
Family Scarabaeidae					
Canthon laevis	0.36	0.03	0.03	0.03	9.0
Phanaeus carnifex	0.24	0.04	0	0.03	11.0
Other	0.22	0.05	0.05	0.13	11.0
Family Chrysomelidae	0	0.02	0	0	0.8
Family Curculionidae	0	0	0.03	0.01	0.8
Order Hymenoptera					
Family Formicidae	0.16	0	0.05	0	3.4
Class Arachnida					
Order Araneida	0	0.06	0.12	0.03	5.0
Order Scorpionida	0	0.01	0.03	0	0.8
Class Amphibia					
Ambystoma tigrinum	0	0	0	0.01	0.4
Scaphiopus couchi	0	0	0	0.01	0.4
Scaphiopus bombifrons	0	0	0	0.02	0.8
Rana pipiens	0	0	0	0.03	1.0
Class Reptilia					
Phrynosoma cornutum	0.18	0	0	0.01	3.0
Pituophis melanoleucus	0	0.02	0	0	0.8
Class Aves					
Eremophila alpestris	0	0.01	0	0.02	1.0
Chondestes grammacus	0	0	0	0.01	0.4
Other	0.02	0.04	0.08	0.01	3.0
Class Mammalia					
Notiosorex crawfordi	0	0.02	0	0.01	1.0
Geomys bursarius	0.02	0	0	0.01	0.8
Dipodomys ordii	0	0	0	0.10	3.0
Perognathus sp.	0	0.05	0.21	0.19	11.0
Peromyscus sp.	0	0.09	0.32	0.12	11.0
Reithrodontomys sp.	0	0.07	0.34	0.10	11.0
Sigmodon hispidus	0.04	0.01	0.03	0.01	2.0
Onychomys leucogaster	0	0.01	0	0.06	2.0
Seeds	0.02	0.04	0.12	0.10	7.0
Debris (plant fibers, etc.)	0.18	0.12	0.18	0.29	23.0

when arthropods are inactive. Except during winter, arthropods are normally the most important prey taken based on frequency and numbers, but mammals generally contribute greater biomass. Ground birds, reptiles, amphibians—even such unlikely foods as fish, crayfish, and carrion—are eaten when the opportunity arises.

Two classes, 5 orders and 10 families of invertebrates were represented in 245 (93%) of the 263 pellets (Table 1). Insects were the most important invertebrate prey; families with largest percent occurrence on a nonseasonal basis were Acrididae (45%), Carabidae (38%) and Scarabaeidae (31%).

Invertebrate prey predominated in summer and fall, whereas vertebrates were the most important prey taken in winter and spring.

Vertebrate remains appeared in 214 (81%) of the 263 pellets (Table 1); 4 classes, 6 orders and 11 families were represented. Except for the desert shrew (*Notiosorex crawfordi*), an insectivore, all mammalian remains were of small rodents, primarily those in the genera *Perognathus*, *Peromyscus*, and *Reithrodontomys*, each of which occurred in 11% of the pellets.

Vertebrates occurred less frequently in summer, when only eight horned lizards (*Phrynosoma cornutum*), one small bird, a gopher (*Geomys bursarius*) and two hispid cotton rats (*Sigmodon hispidus*) were found.

Fall vertebrate food consisted of several species of mice and a few small birds. Remains of two *Notiosorex* and two bullsnakes (*Pituophis melanoleucus*) also were picked up at burrow entrances.

During spring, when they were most active and available to the owls, a few amphibians were eaten. Reptiles seemed to play a minor role in the diet of burrowing owls as I found remains of only 11 individuals of two species.

Remains of birds, particularly ground-dwellers such as Horned Larks (*Eremophila alpestris*) and frigillids were found during all seasons.

In general, my findings (Table 1) agree with other regional studies such as those of Ross and Smith (1970) in northwestern Texas, Best (Habitat, annual cycle, and food of burrowing owls in south-central New Mexico, M.S. thesis, New Mexico State Univ., Las Cruces, 1969) in south-central New Mexico, Longhurst (1942) in south-central Colorado and Butts (Life history and habitat requirements of burrowing owls in western Oklahoma, M.S. thesis, Oklahoma State Univ., Stillwater, 1973) in the Oklahoma panhandle, except that most earlier reports did not categorize prey by season. As is evident from the foregoing, seasonal availability and opportunism are primary forces determining the prey species eaten by burrowing owls from year-to-year.—Jack D. Tyler, *Dept. of Biology, Cameron Univ., Lawton, OK 73505.*

ADDITIONS TO THE TEXAS MARINE ICHTHYOFAUNA, WITH NOTES ON THE RIO GRANDE ESTUARY.—Our recent investigations of the estuarine ichthyofauna of southern Texas have resulted in the discovery of two species previously unknown from the northwestern Gulf of Mexico and four species not commonly reported in this region. Included with the following accounts of these records are some observations on several collections from the Rio Grande estuary, the most tropical and least known estuary of the state.

Specimens are deposited in the following museums: the Texas Natural History Collection of The Texas Memorial Museum (TNHC); the University of New Orleans Vertebrate Collection (UNO); and the Texas Cooperative Wildlife Collection, Texas A & M University (TCWC).

NEW ADDITIONS

Syngnathidae.—*Oostethus brachyurus lineatus*.—2 specimens, 79 and 80 mm SL (TNHC uncat.), Rio Grande at Palmito Hill, off Hwy. 4, 15.2 km E Hwy. 4-Hwy. 511 jcn., Cameron Co., Texas, 30 August 1980. Salinity < 1 ppt; substrate packed silty clay. The pipefishes were caught on the edge of a shelf formed by the submerged portion of the river's natural levee. Two additional specimens, 94 and 97 mm SL (TNHC uncat.), Rio Grande ca. 150 m upstream from mouth at Boca Chica, Cameron Co., Texas, 2 May 1981. Water brackish; substrate hard packed sand and clay. These pipefishes were collected near scattered aquatic macrophytes and sedges. All specimens are spinulose and their meristic character values fall within the ranges given for this subspecies by Dawson (Bull. Mar. Sci. 29:465, 1979).

In his revision of the genus, Dawson (1979) assigned all nominal species to one circumtropical species with four allopatric subspecies. The western Atlantic form, *O. b. lineatus*, has breeding populations as far north as the Atlantic coast of Florida (Gilmore, Copeia 1977:781, 1977) and the Gulf coast of Mexico, probably at least to the vicinity of Tampico (Jordan and Dickerson, Proc. U.S. Nat. Mus. 34: 11, 1908). Dawson (Copeia 1970:772, 1970) noted the existence of a population in Mississippi that presumably does not overwinter, but is maintained by summer recruitment due to currents from the south and favorable local summer conditions. Hastings and Bortone (Florida Sci. 39:122, 1976) collected a 72 mm SL specimen drifting with sargassum at Destin on the northwestern Florida coast in May 1975.

There is no information on the population status of this species in the Rio Grande estuary. Currents from the south during summer months could transport juveniles accociated with sargassum or even pelagic young. Observations on breeding populations in Florida (Gilmore, 1977) and Costa Rica (Gilbert and Kelso, Bull. Fla. St. Mus., Biol. Sci. 16:54 pp, 1971) suggest that breeding occurs in the fresher waters of the upper estuaries and that the early ontogeny of the species occurs