

- STANGL, F. B., AND W. W. DALQUEST. 1990. Status of the javelina, *Tayassu tajacu*, in north-central Texas and southern Oklahoma. *Texas Journal of Science* 42:305–306.
- STANGL, F. B., W. W. DALQUEST, AND S. KUHN. 1993. Mammals from the Beach Mountains of Culberson County, Trans-Pecos Texas. *Texas Journal of Science* 45:87–96.
- THEIMER, T. C., AND P. KEIM. 1994. Geographic patterns of mitochondrial-DNA variation in collared peccaries. *Journal of Mammalogy* 75:121–128.
- ZERVANOS, S. M. 2002. Renal structure adaptations among three species of peccary. *Southwestern Naturalist* 47:527–531.

Submitted 15 May 2003. Accepted 30 January 2004.
Associate Editor was Cody W. Edwards.

APPENDIX I—Localities and catalog numbers of additional voucher specimens in the Museum of Southwestern Biology (MSB) and the New Mexico Museum of Natural History (NMMNH) shown in Fig. 1.

CATRON COUNTY: S. U. Canyon, 5 mi S, 3 mi W Reserve (MSB 25146); Blue Range Wilderness Area, Apache National Forest, junction W Fork Pueblo Creek and Pueblo Creek, W. S. Mountain Trail 43 (MSB 89025). CIBOLA COUNTY: El Malpais National Conservation Area, 200 yards N entrance La Ventana Natural Arch, Highway 117, mile marker 39 (NMMNH 3859). EDDY COUNTY: 6.2 mi S Hope (MSB 86326); Carlsbad Caverns National Park, 0.33 mi W, 0.32 mi N Whites City (MSB 66727); 2 mi S El Paso Gap (NMMNH 4006). GRANT COUNTY: Gila River at mouth of Nichols Canyon (MSB 89185). HIDALGO COUNTY: Animas Mountains, Indian Creek Mill, T33S R18W Sec. 8 (MSB 46381); Animas Mountains, Joyce Mill, T33S R18W Sec. 22, 5,025 feet elevation (MSB 49695); NM 338, 7 mi S Interstate Highway 10 (MSB 71340); Gray Ranch, 31°38.71'N, 108°50.95'W (MSB 85584); 5.6 miles S Animas on NM 338, 4,500 feet elevation (MSB 85585). MCKINLEY COUNTY: Zuni Indian Reservation, T10N R18W Sec. 12, 1,951 feet elevation (MSB 124035).

VERTEBRATE INVENTORY OF RICHLAND CREEK WILDLIFE MANAGEMENT AREA IN EASTERN TEXAS

WADE A. RYBERG, LEE A. FITZGERALD, RODNEY L. HONEYCUTT, JAMES C. CATHEY,* AND
TOBY J. HIBBITTS

*Department of Wildlife and Fisheries Sciences, Texas A&M University, 2258 TAMUS,
College Station, TX 77843-2258 (WAR, LAF, RLH, TJH)
Texas Agricultural Experiment Station-Uvalde, 1619 Garner Field Road, Uvalde, TX 78801 (JCC)
Present address of WAR: Department of Biology, Washington University in St. Louis, Campus Box 1137,
One Brookings Drive, St. Louis, MO 63130-489
Present address of TJH: Communication and Behaviour Research Group, School of Animal, Plant, and
Environmental Sciences, University of Witwatersrand, Private Bag 3, WITS 2050, South Africa
Correspondent: jccathey@tamu.edu

ABSTRACT—Terrestrial habitats of Richland Creek Wildlife Management Area, Texas, were surveyed for vertebrate diversity in 1998 and 1999. During the 2-year sampling period, 10 species of amphibians, 20 species of reptiles, and 23 species of mammals were collected or observed. These actions represent an effort of Texas Parks and Wildlife to inventory the fauna of state-owned property. This information will begin to form a baseline to assess future management decisions.

RESUMEN—Llevamos a cabo un inventario de los vertebrados en hábitats terrestres del Richland Creek Wildlife Management Area, Texas, durante 1998 y 1999. Durante los dos años del periodo de muestreo, observamos o colectamos 10 especies de anfibios, 20 especies de reptiles, y 23 especies de mamíferos. Estas acciones representan un esfuerzo de Texas Parks and Wildlife para hacer un inventario de la fauna en las propiedades del estado. Esta información será la base para evaluar futuras decisiones de manejo de recursos naturales.

The ecological, economic, and esthetic values of biodiversity are recognized widely (Wilson, 1992; Meffe and Carroll, 1997), and managing for biological diversity is a priority for state and federal natural resource and wildlife agencies. One key threat to regional biodiversity relates to trends in land-use practices that can result in fragmented habitat, thus increasing the probability that some components of biodiversity will experience local extirpation in these habitat patches. Although national parks, national wildlife refuges, and state and local management units represent important means of protecting biodiversity, such areas are effectively "land-bridge islands" subject to increased rates of local extinction relative to the area of the reserve and degree of isolation (Newmark, 1995). For large mammals in many national parks in the western United States, there is an apparent increase in extinction that fits the expectations of "land-bridge islands" (Newmark, 1995). Like many western states, Texas is experiencing increased fragmentation of natural areas as land-use trends change, and the rate at which wildlife habitat fragmentation is occurring relates to changes in land ownership resulting in more people owning smaller properties (Wilkins et al., 2003). Unlike many western states, land ownership in Texas is primarily under private control, with considerably less acreage managed by local, state, and federal agencies.

As a result of private land ownership, one of the most effective means for offsetting the negative effects of fragmentation and the resulting loss of biodiversity in Texas is the retention and protection of the network of Wildlife Management Areas (WMAs) created by Texas Parks and Wildlife (TPW). Conceptually, these WMAs are maintained for research and for outdoor activities including hunting, fishing, and non-consumptive uses. In recent years, TPW has emphasized the management of all biodiversity, both game and nongame species. As a result of both this new mission and the ever-increasing rate at which wildlife habitat and biodiversity is being lost, it is imperative that all WMAs be inventoried for their components of biodiversity. Such baseline information is absolutely essential for long-term monitoring of changes in biodiversity in response to trends in land use and development. The purpose of this study was to gather base-

line information on fishes (Gelwick et al., 2000), amphibians, reptiles, and mammals at Richland Creek WMA and to establish a foundation for future management decisions allowing for long-term monitoring of biodiversity.

Established in 1987, Richland Creek WMA (ca. 5,583 ha) is located 58 km southeast of Corsicana, Texas, between Richland-Chambers Reservoir and the Trinity River in Freestone and Navarro counties. This property, comprised of 2 management units separated by U.S. Highway 287, is situated in an ecotone separating the Post Oak Savannah and Blackland Prairie ecological regions, and a large portion of the area lies within the Trinity River and Richland Creek floodplains (Gelwick et al., 2000). The combined average rainfall for Freestone and Navarro counties is about 97 cm/y. The average low temperature is 2°C in January, while the average high temperature is 35°C in July (Department of the Army, Corps of Engineers, 1982). Soils on Richland Creek WMA consist of periodically flooded Trinity and Kaufman clays, with occasional lenses of Lamar Clay Loam or Silawa Fine Sandy Loam (Department of the Army, Corps of Engineers, 1982). The property varies from fairly well drained uplands and transition zones to large bottomland areas subject to periodic and prolonged flooding.

Virtually all woodlands on Richland Creek WMA are bottomland forests characterized by regrowth cedar elm (*Ulmus crassifolia*), sugarberry (*Celtis laevigata*), green ash (*Fraxinus pennsylvanica*), boxelder (*Acer negundo*), and black willow (*Salix nigra*). Occasional pockets of bur oak (*Quercus macrocarpa*), Shumard oak (*Q. shumardii*), overcup oak (*Q. lyrata*), water oak (*Q. nigra*), willow oak (*Q. phellos*), post oak (*Q. stellata*), and native pecan (*Carya illinoensis*) occur on the area. Understory vegetation is diverse, including hawthorn (*Crataegus*), honey locust (*Gleditsia tricanthos*), soapberry (*Sapindus saponaria*), cat briar (*Smilax bona-nox*), swamp privet (*Forrestiera acuminata*), and dense vines of poison ivy (*Rhus toxocodendron*), rattan (*Berchemia scanders*), Virginia creeper (*Parthenocissus quinquefolia*), and trumpet creeper (*Bignonia radicans*).

We conducted surveys for terrestrial vertebrates on both management units from March 1998 to August 1999, following procedures outlined by TPW (Simpson et al., 1996) and

adapted for specific habitats in the Richland Creek WMA. Amphibians and reptiles were sampled primarily from May through August using time-constrained searches (0900 to 1200 h and 1600 to 1900 h), timed nocturnal road searches (2000 to 2400 h), baited hoop nets, minnow traps, and Y-shaped drift-fence arrays. Time-constrained searches consisting of groups of 4 to 12 observers actively searching for amphibians and reptiles (herps) were conducted daily during sampling periods of 3 to 4 d throughout the months listed in Table 1. Data were grouped by month (some months containing multiple sampling periods) and expressed as number of herp captures per person-minute to standardize information on numbers of individuals of different species found within a site. We conducted timed nocturnal road searches by automobile 1 to 2 times per sampling period at approximately the same time each night along the same route. Road driving data were expressed as the number of herps observed per minute. We used hoop nets baited with carp (*Cyprinella carpio*) to trap aquatic turtles in ponds and reservoirs during 1 sampling period in June 1998. Watersnakes (*Nerodia*), cottonmouths (*Aghistrodon piscivorus*), and Graham's crayfish snakes (*Regina grahamii*) were trapped using Gee Minnow Traps (Forestry Suppliers, Inc., Jackson, Mississippi) placed along shorelines of flooded pastures during 1 sampling period in June 1998 and another in August 1999. Nine Y-shaped drift-fence arrays were constructed with a single pitfall trap in the center and funnel traps at the ends of the fences. This design, modified from that of Heyer et al. (1994), allowed us to avoid the problems associated with flooding of buckets in lowland habitats. Sites along habitat edges were selected for drift fence construction to maximize species richness in our sampling effort. Drift-fence arrays were run 2 to 3 nights per sampling period. We expressed turtle trap, minnow trap, and pitfall array capture data as captures per trap-night.

Small mammals were captured using Sherman live traps. Seven transects consisted of lines with 50 traps spaced at 6.1-m intervals baited with birdseed and peanut butter. We did not use peanut butter during times of intense activity of imported red fire ants (*Solenopsis invicta*). Medium-sized mammals were trapped

on 1 permanent transect of 10 Tomahawk live traps spaced 30 m apart and baited with canned cat food. Additional carnivore traps were set opportunistically where carnivore activity was judged to be high. Incidental observations of mammals were noted, especially during nocturnal road searches.

Voucher specimens, morphological data, supporting genetic materials, and associated ecological and locality data were deposited in the Texas Cooperative Wildlife Collection, Department of Wildlife and Fisheries Sciences, at Texas A&M University.

All combined methods of sampling amphibians and reptiles resulted in 533 captures of 10 species of amphibians and 20 species of reptiles (Table 1; Crother et al., 2003). Based on published distributional information and county records, at least 33 additional amphibian and reptile species are expected to occur on the property (Dixon, 2000). Time-constrained searches and night driving together accounted for 465 (87.3%) of the total captures. Time-constrained searches and incidental captures yielded the most species-rich samples, with 20 and 18 species sampled, respectively (Table 2). The timber rattlesnake (*Crotalus horridus*), the only Federal Category 2 and state-threatened species verified on Richland Creek WMA, was collected using both of these methods.

For amphibians and reptiles, nocturnal road searches provided the highest capture rate (1 capture per 3.5 min) among the active sampling methods, and hoop nets provided the highest capture rate (1 capture per 1.1 trap nights) among passive sampling methods (Table 2). Thirty-four animals representing 18 species were observed incidentally (Table 2); 3 of these species were not found with the standardized methods outlined by Simpson et al. (1996).

Although 30 species of amphibians and reptiles were captured, 77% of the specimens represented only 5 species (Table 1). The northern cricket frog (*Acris crepitans*), green treefrog (*Hyla cinerea*), and southern leopard frog (*Rana sphenoccephala*) exhibited the highest relative abundance, followed by the diamond-backed watersnake (*N. rhombifer*) and the cottonmouth (*A. piscivorus*). The false map turtle (*Graptemys pseudogeographica*), snapping turtle (*Chelydra serpentina*), eastern box turtle (*Terra-*

TABLE 1—Amphibian and reptile species captured by month for Richland Creek Wildlife Management Area, Texas, during 1998 and 1999.

Species	1998					1999				Total	%	
	March	May	June	August	September	April	June	July	August			
Amphibia												
Caudata												
<i>Ambystoma texanum</i>							1				1	0.2
Anura												
<i>Acris crepitans</i>			12			8	11	49	43		123	23.1
<i>Bufo nebulifer</i>							3				3	0.6
<i>Bufo woodhousii</i>			2		4	1	3		3		13	2.4
<i>Gastrophryne carolinensis</i>							13				13	2.4
<i>Hyla cinerea</i>		6	10		8		15	28	33		100	18.7
<i>Hyla versicolor</i>					7		11				18	3.4
<i>Pseudacris clarkii</i>	1										1	0.2
<i>Rana catesbeiana</i>			2								2	0.4
<i>Rana sphenoccephala</i>		7	5		8		8	27	20		75	14.1
Reptilia												
Testudines												
<i>Apalone spinifera</i>			3								3	0.6
<i>Chelydra serpentina</i>			1								1	0.2
<i>Graptemys pseudogeographica</i>			1								1	0.2
<i>Terrapene carolina</i>							1				1	0.2
<i>Trachemys scripta</i>			6					1	4		11	4.7
Squamata (lizards)												
<i>Anolis carolinensis</i>			3								3	0.6
<i>Eumeces fasciatus</i>				2	5	1	1	2	4		15	2.8
<i>Scincella lateralis</i>			1		2		1				4	0.8
Squamata (snakes)												
<i>Agkistrodon contortrix</i>					1			2	1		4	0.8
<i>Agkistrodon piscivorus</i>		5	3	3	4		4	8	17		44	8.3
<i>Coluber constrictor</i>				1							1	0.2
<i>Crotalus horridus</i>					1	1					2	0.4
<i>Elaphe obsoleta</i>		2	1			1		1			5	0.9
<i>Masticophis flagellum</i>						1			1		2	0.4
<i>Nerodia erythrogaster</i>			1	1		1	1	2	2		8	1.5
<i>Nerodia fasciata</i>					1	1	1				3	0.6
<i>Nerodia rhombifer</i>		6	17		1		2	2	40		68	12.8
<i>Regina grahamii</i>		1	1								2	0.4
<i>Storeria dekayi</i>					1	1					2	0.4
<i>Thamnophis proximus</i>				1	1	1		1			4	0.8
Total	1	27	69	8	44	17	76	123	168		533	
%	0.2	5.1	12.9	1.5	8.3	3.2	14.3	23.1	31.5			

TABLE 2.—Summary of vertebrate sampling success for Richland Creek Wildlife Management Area, Texas, during 1998 and 1999.

Taxa	Sampling method	Duration	Individuals captured	Individual capture rate	Species richness
Amphibians and reptiles	Time-constrained searches ($n = 12$)	64.5 hours	141	1/27.5 minutes	20
	Nocturnal road searches ($n = 17$)	18.8 hours	324	1/3.5 minutes	11
	Hoop nets ($n = 6$)	12 trap nights	11	1/1.1 trap nights	4
	Minnow traps ($n = 15$)	60 trap nights	8	1/7.5 trap nights	4
	Arrays ($n = 9$)	207 trap nights	15	1/13.8 trap nights	9
Mammals	Incidental capture/viewing	—	34	—	18
	Small-mammal transects ($n = 7$)	3,908 trap nights	188	1/20.8 trap nights	7
	Carnivore transect ($n = 1$)	60 trap nights	8	1/7.5 trap nights	3

pene carolina), eastern racer (*Coluber constrictor*), small-mouthed salamander (*Ambystoma texanum*), and spotted chorus frog (*Pseudacris clarkii*) were observed only once during the survey. The single small-mouthed salamander was collected after heavy rains, and the only spotted chorus frog was found calling in early spring. Spotted chorus frogs breed in early spring, so it was not surprising that the species went largely undetected during primarily summer surveys. Because this type of seasonal variation often influences amphibian and reptile capture, long-term biodiversity surveys during spring, summer, and fall are necessary to determine total species richness.

Using standardized methods, 11 species of mammals were collected (Table 3; Baker et al., 2003), and 12 additional species were observed during nocturnal road surveys. Based on published distributional information, at least 30 additional species are expected to occur on the property (Schmidly, 1983; Davis and Schmidly, 1994). Small-mammal and carnivore sampling yielded capture rates of 1 individual per 20.8 trap nights and 1 individual per 7.5 trap nights, respectively (Table 2). Nocturnal road surveys revealed the presence of the northern raccoon (*Procyon lotor*), eastern cottontail (*Sylvilagus floridanus*), swamp rabbit (*S. aquaticus*), white-tailed deer (*Odocoileus virginianus*), and feral pig (*Sus scrofa*). Other mammals observed were the nine-banded armadillo (*Dasyus novemcinctus*), eastern gray squirrel (*Sciurus carolinensis*), eastern fox squirrel (*S. niger*), American beaver (*Castor canadensis*), nutria (*Myocastor coypus*), northern river otter (*Lontra canadensis*), coyote (*Canis latrans*), and evening bat (*Nycticeius humeralis*). Roberts et al. (1997) collected specimens on Richland Creek WMA that represented county records for the nine-banded armadillo, eastern red bat (*Lasiurus borealis*), evening bat, marsh rice rat (*Oryzomys palustris*), and fulvous harvest mouse (*Reithrodontomys fulvescens*). Of these, the eastern red bat was not detected in our investigation.

Rodent diversity varied little across seasons, whereas rodent abundance varied tremendously among species and to a lesser extent among seasons (Table 3). Of the 188 rodents collected, 141 (75%) represented 3 species: hispid cotton rat (*Sigmodon hispidus*), fulvous harvest mouse, and deer mouse (*Peromyscus maniculatus*). The marsh rice rat, white-footed mouse

TABLE 3—Mammal species captured by month for Richland Creek Wildlife Management Area, Texas, during 1998 and 1999.

Taxa	1998				1999			Total	%
	March	April	June	Septem-ber	Febru-ary	June	August		
Insectivora									
<i>Cryptotis parva</i>				1				1	0.5
Rodentia									
<i>Baiomys taylori</i>	2	5		6				13	6.6
<i>Neotoma floridana</i>			1					1	0.5
<i>Oryzomys palustris</i>		3	8		2	2	4	19	9.6
<i>Peromyscus leucopus</i>	2	2	1	4	1	2	2	14	7.1
<i>P. maniculatus</i>		5	2	3	12	1	4	27	13.7
<i>Reithrodontomys fulvescens</i>	7	20	2	3	4	1	3	40	20.3
<i>Sigmodon hispidus</i>	6	11	9	24	2	7	15	74	37.6
Carnivora									
<i>Mephitis mephitis</i>					1			1	0.5
<i>Procyon lotor</i>					1			1	0.5
Marsupialia									
<i>Didelphis virginiana</i>				3	3			6	3.0
Total	17	46	23	44	26	13	28	197	
%	8.6	23.4	11.7	22.3	13.2	6.6	14.2		

(*Peromyscus leucopus*), and northern pygmy mouse (*Baiomys taylori*) were less abundant, and the eastern woodrat (*Neotoma floridana*) was collected only once. The slight variation in rodent abundance across seasons might be related to regular flooding or mowing in areas surrounding the small-mammal transects.

Land-use practices have drastically altered the landscape in eastern Texas, and the WMAs established by TPW provide islands of protected habitat surrounded by land modified for commercial, agricultural, and residential use. The baseline information on existing vertebrate biodiversity, the documentation of habitat types and voucher specimens, and the establishment of permanent monitoring sites will allow continued assessment of changes in biodiversity in response to management and land-use practices. This checklist and on-going monitoring systems will enhance future management plans devised to conserve regional biodiversity.

We thank J. Anderson, K. Banks, C. Collins, M. Goldstein, J. Hamilton, T. L. Hibbitts, R. Hibbitts, D. Jepsen, E. Malonsen, A. Moreno, and other undergraduate and graduate student volunteers, too nu-

merous to name, for unflagging help with fieldwork. We are grateful to J. Thorne and J. Gunnels for providing logistical support, and Texas Parks and Wildlife for providing funding and collecting permits for this study. We thank M. Mieres for translating the abstract and D. Foley, H. Haucke, and T. J. LaDuc for providing constructive criticism of this manuscript.

LITERATURE CITED

- BAKER, R. J., L. C. BRADLEY, R. D. BRADLEY, J. W. DRAGOO, M. D. ENGSTROM, R. S. HOFFMAN, C. A. JONES, F. REID, D. W. RICE, AND C. JONES. 2003. Revised checklist of North American mammals north of Mexico, 2003. Occasional Papers, Museum of Texas Tech University 229:1–23.
- CROTHER, B. I., J. BOUNDY, J. A. CAMPBELL, K. DE QUIEROZ, D. FROST, D. M. GREEN, R. HIGHTON, J. B. IVERSON, R. W. MCDIARMID, P. A. MEYLAN, T. W. REEDER, M. E. SEIDEL, J. W. SITES, JR., S. G. TILLEY, AND D. B. WAKE. 2003. Scientific and standard English names of amphibians and reptiles of North America north of Mexico: update. Herpetological Review 34:196–203.
- DAVIS, W. B., AND D. J. SCHMIDLY. 1994. The mammals of Texas. Texas Parks and Wildlife Press, Austin.
- DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS.

1982. Richland Creek Reservoir: a final environmental impact statement. Department of the Army, Corps of Engineers, Austin, Texas.
- DIXON, J. R. 2000. Amphibians and reptiles of Texas. Texas A&M University Press, College Station.
- GELWICK, F. P., B. D. HEALY, N. J. DICTSON, AND J. C. CATHEY. 2000. Fishes of the Richland Creek Wildlife Management Area of east Texas. *Texas Journal of Science* 52:313–318.
- HEYER, W. R., M. A. DONNELLY, R. W. MCDIARMID, L. A. HAYEK, AND M. S. FOSTER. 1994. Measuring and monitoring biological diversity: standard methods for amphibians. Smithsonian Institution Press, Washington, D.C.
- MEFFE, G. K., AND C. R. CARROLL. 1997. Principles of conservation biology, second edition. Sinauer Associates Inc., Sunderland, Massachusetts.
- NEWMARK, W. D. 1995. Extinction of mammal populations in western North American national parks. *Conservation Biology* 9:512–526.
- ROBERTS, H. R., T. W. JOLLEY, L. L. PEPPERS, J. C. CATHEY, R. MARTINEZ, J. A. PEPPERS, A. L. BATES, AND R. D. BRADLEY. 1997. Noteworthy records of small mammals in Texas. *Occasional Papers, Museum of Texas Tech University* 172:1–7.
- SCHMIDLY, D. J. 1983. Texas mammals east of the Balcones Fault zone. Texas A&M University Press, College Station.
- SIMPSON, B., D. FRELS, T. LAWYER, T. MERENDINO, E. MEYERS, D. RUTHVEN, S. SOROLA, AND M. WAGNER. 1996. Baseline inventory and monitoring procedures on Texas Parks and Wildlife Department lands. Texas Parks and Wildlife Press, Austin.
- WILKINS, N., A. HAYS, D. KUBENKA, D. STEINBACH, W. GRANT, E. GONZALEZ, M. KJELLAND, AND J. SHACKELFORD. 2003. Texas rural lands: trends and conservation implications for the 21st century. Texas Cooperative Extension, Texas A&M University, Technical Report B-6134:1–26.
- WILSON, E. O. 1992. *The diversity of life*. Belknap Press of Harvard University Press, Cambridge, Massachusetts.

*Submitted 27 May 2003. Accepted 15 March 2004.
Associate Editor was Cheri A. Jones.*

ADDITIONS TO THE ARCHAEOLOGICAL FAUNA OF THE FORMER CHINATOWN SECTION OF EL PASO, TEXAS

ARTHUR H. HARRIS*

Laboratory for Environmental Biology, Centennial Museum, University of Texas at El Paso, El Paso, TX 79968

**Correspondent: aharris@utep.edu*

ABSTRACT—Additions to the archaeological fauna recovered from the former Chinatown section in El Paso, Texas (late 1800s), include lizard, ringtail, dog, killdeer, domestic goose, badger, domestic cat, jackrabbit, and cottontail. The latter 5 species likely were used for food. Two species of turtles used as food also are discussed.

RESUMEN—Las adiciones a la fauna arqueológica recuperadas en la anterior sección de Chinatown en El Paso, Texas (a finales de 1800), incluyen la lagartija, el cacomixtle, el perro, el tildío, el ganso doméstico, el tejón, el gato doméstico, la liebre, y el conejito. Las últimas cinco especies probablemente fueron usadas como alimento. También se discuten dos especies de tortugas usadas como alimento.

The Southern Pacific Railroad reached El Paso, Texas, early in 1881, and in 1883, with completion of railroad-connected employment, Chinese laborers were laid off and stranded in El Paso. This initiated the formation of a Chinatown section. For some years, there apparently was little contact with other

Chinese settlements. Eventually, however, the El Paso colony made contact with Pacific Coast centers for traditional supplies and established traditional social relationships within the community. By about 1915, Chinatown as a distinct entity was gone (Staski, 1985).

In the early 1980s, the Cultural Resources

TABLE 1—Distribution of selected taxa within the Cortez archaeological site, El Paso, Texas. Numbers refer to the number of identified specimens, with the minimum number of individuals given in parentheses (calculated per level). Only levels pertinent to this study are shown.

Taxon	Trench 2	Trench 10	Feature 15 (7 levels)							
			3	4	5	6	9	14	16	
<i>Chrysemys/Trachemys</i>	2		13 (2)	33 (3)	17 (2)					
<i>Trionyx spiniferus</i>		14 (1)	4 (1)		14 (2)	31 (1)			5 (1)	
Sauria					2 (1)	1 (1)				
Goose (? <i>Anser</i>)	2 (1)				3 (1)					
<i>Charadrius vociferus</i>	2 (1)									
<i>Canis familiaris</i>							1 (1)			
<i>Bassariscus astutus</i>										14 (1)
<i>Taxidea taxus</i>									1 (1)	
<i>Felis domesticus</i>				1 (1)				2 (1)		
<i>Lepus</i> cf. <i>californicus</i>									2 (1)	
<i>Sylvilagus audubonii</i>								5 (2)		
cf. <i>Sylvilagus</i>									2 (1)	

Management Division of New Mexico State University, under contract with the city of El Paso, conducted archaeological excavations at the Cortez Parking Lot Site. The location in downtown El Paso lies within the northeastern part of the old Chinatown area (Staski, 1985). The recovered archaeological material is deposited in the Centennial Museum collections at the University of Texas at El Paso.

The faunal remains from portions of a single, huge trash pit (Feature 3-3/14-14) were analyzed by McEwan (1985) and, until the current study, represented the only bioarchaeological information available. She reported a total of some 22 taxa, ranging from a cricetine rodent to turtles to bear (*Ursus*); the primary food base, as determined by estimated biomass, consisted of pork (25.3%), beef (70.7%), fish (8.6%; many of them marine and apparently shipped from the Pacific Coast), and domestic birds: chicken (2.4%), duck (0.6%), and turkey (0.1%).

Much of the faunal material that was excavated in 1984 and 1985 remains unstudied. In 2000, a small proportion of the unstudied faunal remains was identified by students as part of the requirements for a University of Texas at El Paso course in bioarchaeology. Several of the taxa identified were not reported by McEwan (1985). The purpose of this note is to record and comment on those taxa and to expand on the few comments by McEwan (1985) regarding the turtle remains. The bulk of the

material is of domestic forms and is similar to that noted by McEwan; it is not addressed further here.

Most of the faunal sample examined by the students came from Feature 15 (Table 1). The lower parts of this feature represented a privy filled with trash. The uppermost levels were concentrations of trash above the privy fill and thought to be overflow from the same deposit; however, portions might be a continuation of Feature 3-3/14-14 (Staski, 1985). Dates likely are from late in the 1800s rather than representing earliest inhabitation (Staski, 1985).

The remainder of the faunal material (77 of 1,060 items) was recovered from the uppermost level of test trenches 2 and 10. These trenches were excavated by heavy equipment in 1984 to aid in the research design for the 1985 excavations. Artifacts and faunal remains were recovered when seen and by a random, one-shovel-full, screened sample from each approximately 12 cubic feet of fill. The material from test trench 2 (29 elements) likely is from an extension of the feature investigated by McEwan (1985).

Preliminary identifications were made by class members and were later checked by the author. Items were identified by direct comparison with faunal materials in the Laboratory for Environmental Biology (LEB) collections at the University of Texas at El Paso. The identified faunal materials are deposited under 711 catalogue numbers in the LEB Paleobiology



FIG. 1—Dorsal (bottom) and ventral views of the domestic cat scapula from archaeological sample, El Paso, Texas. Cuts shaping the recovered piece are clearly visible, as are cuts on the ventral surface.

collection under site number 278, cross-referenced to Centennial Museum numbers.

Two groups of turtles were well represented, and a number of elements of both showed butchering cuts. The Emydidae is represented by individuals within the *Chrysemys/Trachemys* complex, most likely *Chrysemys picta* (painted turtle), *Trachemys gaigeae* (Big Bend slider), or both. The rear margin of the carapace, said to allow differentiation between these 2 species (Degenhardt et al., 1996), is not represented in the material. The Trionychidae is represented by numerous elements of *Trionyx spiniferus*, the spiny softshell turtle. Although McEwan (1985) reported the presence of *Chrysemys/Pseudemys* and *Trionyx*, numbers of remains in the present sample differ strongly from those within her sample of 6,704 items: 72 emyids in this study compared to 28, and 136 *Trionyx* compared to 20.

An unidentified medium-sized lizard is represented by a humerus, femur, and innominate. Recovered from 2 adjacent levels, likely 1 individual is represented.

Although the Anseriformes (waterfowl) was well represented by ducks of the genus *Anas* in the sample reported by McEwan (1985), she did not record geese. I identified 5 goose elements, tentatively assigned to *Anser*; 3 display butchering marks. The proximal half of a right humerus and the distal quarter of a left humerus were identified as killdeer (*Charadrius vociferus*). Neither shows signs of human usage.

One astragalus of a domestic dog was identified. The nature of preservation suggests it had been scavenged and passed through the digestive tract of another animal. Thirteen elements of a ringtail (*Bassariscus astutus*) are present in the sample. Although epiphyses are missing, M1 and M2 are erupted, suggesting near-adult status. There is no indication of human or carnivore usage. The proximal end of the ulna of a badger (*Taxidea taxus*) has the tip of the olecranon process severed and a medial cut into the bone at the semi-lunar notch; the bone is broken off at the level of this cut. The domestic cat is represented by a skull and lower jaws, part of a cervical vertebra, and the anteroventral portion of a butchered right scapula (Fig. 1).

Distal ends of 2 left femora are from a large lagomorph, presumably the black-tailed jack-rabbit (*Lepus californicus*). One femur has the

joint end cut away; in the other, the distal end was severed from the shaft by a slanting cut. Seven elements were identified as cottontail rabbit and presumably represent the only local species, the desert cottontail (*Sylvilagus audubonii*). The proximal and distal ends of a right tibiofibula had been severed, and a proximal left tibiofibula had been cut from the diaphysis. The left radius and ulna from the same individual had the distal ends cut away by a single action.

Although remains of the larger animals recovered, such as pigs, often display saw-marks or suggest utilization of a cleaver-like utensil or hatchet, observed butchering marks on the taxa treated here are primarily suggestive of knife use.

Utilization of the domestic forms reported is not surprising and would be expected among Chinese and non-Chinese alike. Likewise, lagomorphs, easily obtained locally, might well have been used by both. A few *Trionyx* fragments have been recovered from the nearby, post-railroad Kohlberg Parking Lot archaeological site, indicating use by other ethnic groups (McEwan, 1984). However, use of badger and domestic cat as food items suggests either cultural differences or desperation.

Turtles could have been collected from relatively nearby. The Rio Grande is less than 1.7 miles distant from the site (Staski, 1985), and an acequia approached to about one-quarter mile or closer (Staski, 1984). Differences in numbers from the McEwan (1985) sample most likely are accidents of deposition. Most remains from the current study are from upper portions of Feature 15—parts that likely are contemporaneous with 3-3/14-14 and might be an extension of those deposits (Staski, 1985).

The recovery of a number of ringtail bones from a single individual, with both body and head elements represented, suggests a burial or discard of an entire individual as a unit rather than utilization for food. Likewise, there is no evidence to suggest skinning for the pelt. Its presence suggests activity ranging into the Franklin Mountains north of the site, because the location of the site on the Rio Grande floodplain is not ringtail habitat. Possession as a pet, such as occasionally occurs today, is a possibility for its presence.

Badgers are wide ranging in the area,

though presumably not apt to wander into urban situations. Butchering marks indicate use for food, because neither cut would be necessary for skinning. Cats presumably ranged freely within the town and were there for the taking.

LITERATURE CITED

- DENGENHARDT, W. G., C. W. PAINTER, AND A. H. PRICE. 1996. Amphibians and reptiles of New Mexico. University of New Mexico Press, Albuquerque.
- MCEWAN, B. G. 1984. Appendix C: faunal analysis. In: Staski, E. Beneath the border city: urban archaeology in downtown El Paso. New Mexico State University, University Museum Occasional Papers, Number 12:271–301.
- MCEWAN, B. G. 1985. Appendix B: faunal analysis. In: Staski, E. Beneath the border city, volume 2: the overseas Chinese in El Paso. New Mexico State University, University Museum Occasional Papers, Number 13:262–283.
- STASKI, E. 1984. Beneath the border city: urban archaeology in downtown El Paso. New Mexico State University, University Museum Occasional Papers, Number 12:i–xiii, 1–355.
- STASKI, E. 1985. Beneath the border city, volume 2: the overseas Chinese in El Paso. New Mexico State University, University Museum Occasional Papers, Number 13:i–xii, 1–302.
- Submitted 1 November 2002. Accepted 28 February 2004. Associate Editor was Cheri A. Jones.*