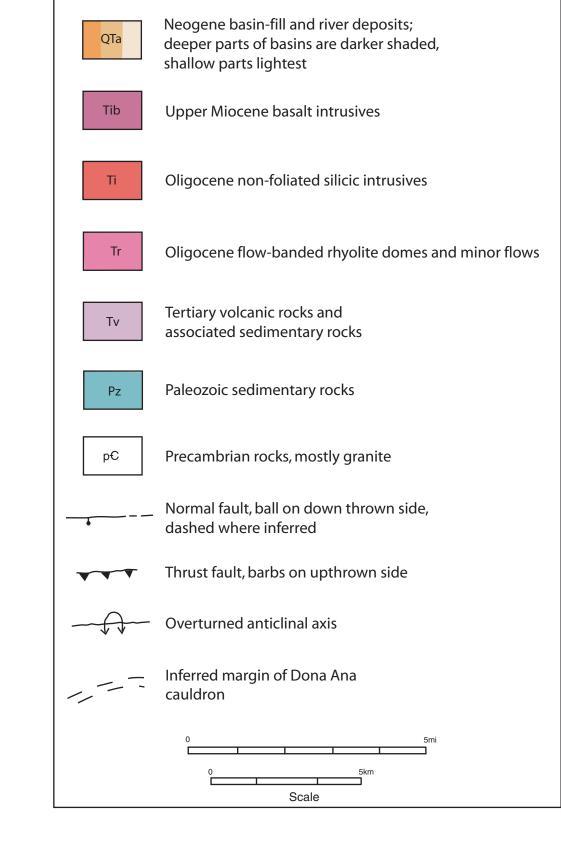
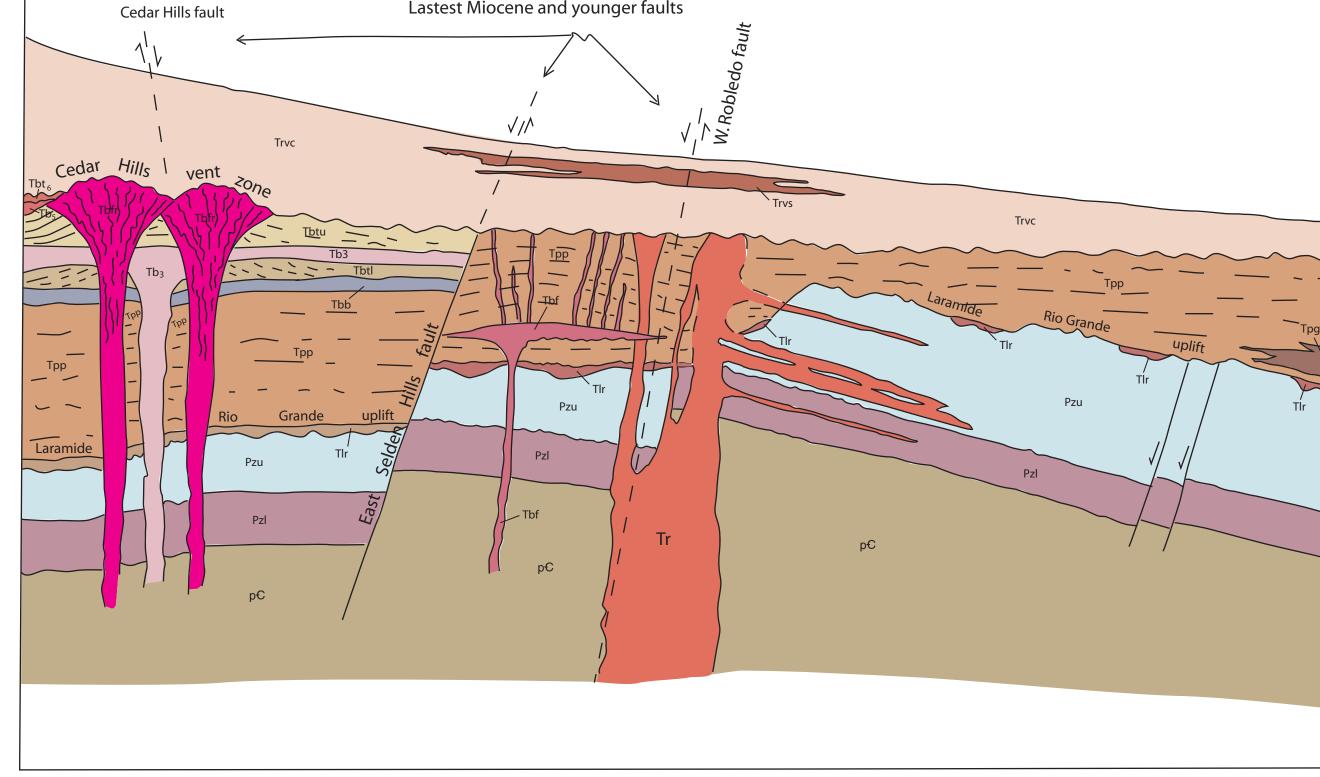


Tectonic Map of the Robledo Mountains and Vicinity





Bell Top Fm. Lower tuff mem. Bell Top Fm. Basalt mem. Palm Park Fm. Palm Park Fm. Gypsum-redbed mem. Love Ranch Fm. Upper Paleozoic strata Lower Paleozoic strata Precambrian rocks Latest Miocene and

Diagrammatic section showing stratigraphic and structural relationships between Eocene-Miocene rocks in the Robledo Mountains area. Effects of latest Miocene and younger faulting is removed.

- Beebe, M.S., 1986, Conodont biofacies and microfacies analysis of Desmoinesian limestone (middle Pennsylvanian) of the Robledo Mountains, Doña Ana County, New Mexico: Unpublished M.S. thesis, New Mexico State University (Las Cruces), 113 pp.
- Clemons, R.E., 1979, Geology of Good Sight Mountains and Uvas Valley, southwest New Mexico: New Mexico Bureau of Mines and Mineral Resources, Circular 169, 32 pp.
- Clemons, R.E., 1982, Geology of Massacre Peak quadrangle, Luna County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Geologic Map 51, scale 1:24,000
- ile, L.H., Peterson, F.F. and Grossman, R.B., 1966, Morphological and genetic sequences of carbonate accumulation in desert soils: Soil Science, v. 101, n. 5, pp. 347-360. Gile, L.H., Hawley, J.W., and Grossman, R.B., 1981, Soils and geomorphology in the Basin and
- Range area of southern New Mexico--Guidebook to the Desert Project: New Mexico Bureau of Mines and Mineral Resources, Memoir 39, 222 pp. Gile, L.H., Hawley, J.W., Grossman, R.B., Monger, H.C., Montoya, C.E., and Mack, G.H., 1995,
- Supplement to the Desert Project Guidebook, with emphasis on soil micromorphology: New Mexico Bureau of Mines and Mineral Resources, Bulletin 142, 96 pp. Hawley, J.W., and Kennedy, J.F., in press, Creation of a digital hydrogeologic framework model of
- the Mesilla Basin and southern Jornada del Muerto Basin: N.M. Water Resources Research Institute, NMSU; prepared for Lower Rio Grande Water Users Organization; Technical Completion Report -- Account No. 01-4-23987b, variously paged.
- Goerger, L.L., 1993, Carbonate petrography of the Panther Seep and lower Hueco Formations in the Dona Ana and Robledo Mountains, Doña Ana County, New Mexico: Unpublished M.S. thesis, New Mexico State University (Las Cruces), 111 pp.

- Hunt, A.P., Lucas, S.G., Haubold, H., and Lockley, M.G., 1995, Early Permian (late Wolfcampian) tetrapod tracks from the Robledo Mountains, south-central New Mexico, in Lucas, S.G. and Heckert, A.B. ((eds.), Early Permian footprints and facies: New Mexico Museum of Natural History and Science, Bulletin 6, pp. 167-180.
- Kazur, H.W. and LeMone, D.V., 1995, The Shalam Colony section of the Abo and upper Hueco members of the Hueco Formation of the Robledo Mountains, Doña Ana County, New Mexico: Stratigraphy and new conodont age determinations, in Lucas, S.G. and Heckert, A.B. (eds.), Early Permian footprints and facies: New Mexico Museum of Natural History and Science, Bulletin 6, pp. 39-56.
- King, W.E., Hawley, J.W., Taylor, A.M., and Wilson, R.P., 1971, Geology and groundwater resources of central and western Doña Ana County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Hydrologic Report 1,64 pp.
- Kortemier, C.P., 1982, Occurence of Bishop ash near Grama, New Mexico: New Mexico Geology, v. 4, pp. 22-24. Kottlowski, F.E., Weber, R.H., and Willard, M.E., 1969, Tertiary intrusive-volcanic mineralization episodes in the New Mexico region: Geological Society of America, Abstracts with Programs for Annual Meeting, v. 1, pt. 7, pp. 278-280.
- Loring, A.K. and Loring R.B., 1980, K/Ar ages of middle Tertiary igneous rocks from southern New Mexico: Isochron/West, no. 28, pp. 17-19.
- Lucas, S.G., Heckert, A.B., Estep, J.W., and Cook, C.W., 1998, Stratigraphy of the Lower Permian Hueco Group in the Robledo Mountains, Doña Ana County, New Mexico, in Lucas, S.G., Estep, J.W., and Hoffer, J.M. (eds.), Permian stratigraphy and paleontology of the Robledo Mountains, New Mexico: New Mexico Museum of Natural History and Science, Bulletin 12, pp. 29-42.
- Machette, M.N., 1985, Calcic soils of the southwestern United States, in Weide, D.L., ed., Quaternary soils and geomorphology of the American Southwest: Geological Society of America, Special Paper 203,

- Mack, G.H. and James, W.C., 1986, Cyclic sedimentation in the mixed siliciclasitc-carbonate Abo-Hueco transitional zone (Lower Permian), southwestern New Mexico: Journal of Sedimentary Petrology, v. 56,
- Mack, G.H. and James, W.C. and Monger, H.C., 1993, Classification of paleosols, Geological Society of America, Bulletin, v. 105, n. 2, pp. 129-136.
- Mack, G.H., James, W.C., and Seager, W.R., 1988, Wolfcampian (Lower Permian) stratigraphy and depositional environments in the Doña Ana and Robledo Mountains, south-central New Mexico, in Robichaud, S.R. and Gallick, C.M. (eds.) Basin to shelf facies transition of the Wolfcampian stratigraphy of the Orogrande Basin, Annual Field Seminar Guidebook: Society of Economic Paleontologists and Mineralogists, Permian Basin Section, Publication 88-28, pp. 97-106.
- Mack, G.H., Leeder, M., Perez-Arlucea, M., and Bailey, B., 2003, Sedimentology, paleontology and sequence stratigraphy of early Permian estuarine deposits, south-central New Mexico, USA: Palaios, v. 18, pp. 402-419
- Mack, G.H., Salyards, S.L., and James, W.C., 1993, Magnetostratigraphy of the Plio-Pleistocene Camp Rice and Palomas Formations in the Rio Grande rift of southern New Mexico: American Journal of Science, v. 293, pp. 49-77.
- Mack, G.H., Salyards, S.L., McIntosh, W.C., and Leeder, M., 1998, Reversal magnetostratigraphy and radioisotopic geochronology of the Plio-Pleistocene Camp Rice and Palomas Formations, southern Rio Grande rift; in Mack, G.H., Austin, G.S., and Barker, J.M (eds.), Las Cruces Country 2: New Mexico Geological Society, Guidebook 49,
- Mack, G.H., Seager, W.R., and Kieling, J., 1994, Late Oligocene and Miocene faulting and sedimentation, and evolution of the southern Rio Grande rift, New Mexico, USA: Sedimentary Geology, v. 92, pp. 79-96.
- McIntosh, W.C., Kedzie, L.L., and Sutter, J.F., 1991, Paleomagnetism and 40Ar/39Ar ages of ignimbrites, Mogollon-Datil volcanic field, southwestern New Mexico: New Mexico Bureau of Mines and Mineral Resources, Bulletin 135,

Palmer, A.R. and Geissman, J., Geologic time scale: Geologic Society of America.

Geological Society of America, Bulletin, v. 109, pp. 1389-1401.

Geological Society, Guidebook 53, pp. 141-157.

- Perez-Arlucea, M., Mack, G., and Leeder, M., 2000, Reconstructing the ancestral (Plio-Pleistocene) Rio Grande in its active tectonic setting, southern Rio Grande rift, New Mexico, USA: Sedimentology, v. 47, pp. 701-720. Raatz, W.S., 2002, A stratigraphic history of the Tularosa basin area, south-central New Mexico, in Lueth, V.W., Giles
- Roepke, T.J., 1984, Stratigraphy and microfacies analysis of the Pennsylvanian System, Robledo Mountains, Doña Ana County, New Mexico: Unpublished M.S. thesis, University of Texas (El Paso), 142 pp.

K.A., Lucas, S.G., Kues, B.S., Myers, R. and Ulmer-Scholle, D.S., (eds.), Geology of White Sands: New Mexico

- Seager, W.R. and Clemons, R.E., 1975, Middle to late Tertiary geology of Cedar Hills-Selden Hills area, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Circular 163, 24 pp.
- Seager, W.R. and Mack, G.H., 1986, Laramide paleotectonics of southern New Mexico: American Association of Petroleum Geologists, Memoir 41, pp. 660-685.
- Seager, W.R., Clemons, R.E., and Hawley, J.W., 1975, Geology of Sierra Alta quadrangle, Doña Ana County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Bulletin 102, 38 pp.
- Seager, W.R., Kottlowski, F.E., and Hawley, J.W., 1976, Geology of Doña Ana Mountains, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Circular 147, 36 pp.
- Seager, W.R., Mack, G.H., and Lawton, T.F., 1997, Structural kinematics and despositional history of a Laramide uplift-basin pair in southern New Mexico: Implications for development of intraforeland basins:
- Seager, W.R., Mack, G.H., Raimonde, M.S., and Ryan, R.G., 1986, Laramide basement-cored uplift and basins in south-central New Mexico; in Clemons, R. E., King, W.E., Mack, G.H., and Zidek, J. (eds.), Guidebook of the Truth or Consequences region: New Mexico Geological Society, Guidebook 37, pp. 213-130.
- Seager, W.R., Shafiqullah, M., Hawley, J.W., and Marvin, R.F., 1984, New K/Ar dates from basalts and the evolution of the southern Rio Grande rift: Geological Society of America, Bulletin, v. 95, pp. 87-99. Thompson, M.L., 1942, Pennsylvanian System in New Mexico: New Mexico State Bureau of Mines and Mineral
- Resources, Bulletin 17, 92 pp. Thompson, M.L., 1948, Early Pennsylvanian fusulinids of New Mexico and western Texas: University of Kansas Paleontological Contributions 14, Protozoa, Article 5, 226 pp.
- Thompson, M.L., 1954, American Wolfcampian fusulinids; University of Kansas Paleontologic Contributions, Protozoa, no. 4, Article 5, 225 pp.
- Thompson, S. III, 1982, Oil and gas exploration wells in southwestern New Mexico, in Powers, R.B., Geologic studies of the Cordilleran thrust belt: Rocky Mountain Association of Geologists, pp. 521-536.
- Wahlman, G.P. and King, W.E., 2002, Latest Pennsylvanian and earliest Permian fusulinid biostratigraphy, Robledo Mountains and adjacent ranges, south-central New Mexico: New Mexico Bureau of Geology and Mineral resources, Circular 208, 26 pp.
- Wilson, J.L., and Jordan, C.F., Jr., 1988, Late Paleozoic-Early Mesozoic rifting in southern New Mexico and northern New Mexico: Controls on subsequent platform development, in Robichaud, S.R., and Gallick, C.M. (eds.), Basin to shelf facies transition of the Wolfcampian stratigraphy of the Orogrande Basin: Society of Economic Paleontologists and Mineralogists, Permian Basin Section, Publication 88-28, pp. 79-98.

Cross Sections, Tectonic Map, Diagrammatic Section, and References Robledo Mountains and Vicinity Doña Ana County, New Mexico

W.R. Seager, F.E. Kottowski, J.W. Hawley Digital conversion by Marquita Ortiz May 2004