BIOTIC RESOURCES

OF

INDIO MOUNTAINS RESEARCH STATION

Southeastern Hudspeth County, Texas

A HANDBOOK FOR STUDENTS AND RESEARCHERS

Compiled by:

Richard D. Worthington
Carl Lieb
Wynn Anderson

Pp. 1 - 85

El Paso, Texas
Fall, 2004

(Continually Reviewed and Updated)
by
Jerry D. Johnson

(Last Update)
16 September 2010

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INTRODUCTION

It is our pleasure to welcome students and visitors to the Indio Mountains Research Station (IMRS). A key mission of this facility is to provide a research and learning experience in the Chihuahuan Desert. We hope that this manual will assist you in planning your research and learning activities. You will probably be given a short lecture by the station Director upon entering the station. Please pay attention as IMRS is not without potential hazards and some long-term research projects are underway that could be disturbed if one is careless.

Indio Mountains Research Station came into being as a result of the generosity of a benefactor and the far-sighted vision of former UTEP President Haskell Monroe. Upon his death in 1907, the will of Boston industrialist Frank B. Cotton placed his estate, including land holdings in Hudspeth and Culberson Counties, into a trust for the education of Boston women. Never able to meet such lofty expectations, the executor of the estate transferred the Texas property to UTEP (then Texas College of Mines) in 1937 for back taxes owed on the land. In 1984, most of the scattered parcels of land in Hudspeth and Culberson Counties were part of a land exchange with an adjacent owner to form a consolidated, contiguous tract of 38,238 acres. In 1987, at the urging of Biology Department Chairman Jack Bristol and Assistant to the President Wynn Anderson, former President Haskell Monroe proposed that the lands be managed with an emphasis on "research and instruction for the biological and geological sciences" at UTEP. In 1991 current UTEP President Diana Natalicio reaffirmed and broadened that educational purpose and approved a basic mission organization and goals statement for IMRS. In 1992, UTEP gained management responsibilities for the land from the UT System; IMRS then became a stable educational extension of the UTEP campus. An additional gift of two adjacent sections from Allar Corporation in 1992 added an additional 1280 acres to IMRS, which brought total holdings to 39,518 acres. Recent funding from National Science Foundation grants and other sources provided new facilities to IMRS, which enhanced its educational mission and field research activities in not only the Biological and Geological Sciences, but in Archeology/Anthropology and Environmental Sciences as well. IMRS website, which contains additional information, can be accessed through http://research.utep.edu/indio.

The Indio Mountains Research Station and UTEP are members of the Chihuahuan Desert Biosphere Reserve. Other members are the Biosphere Reserves of Mapimi in Mexico, Big Bend National Park and the Jornada Experimental Range (near Las Cruces, New Mexico).

For information on Indio Mountains Research Station and use opportunities, contact the Director, Dr. Jerry D. Johnson, Department of Biological Sciences, The University of Texas at El Paso, El Paso, Texas 79968; (915) 747-6984; jjohnson@utep.edu

COLLECTING IMRS RESOURCES

The collection and preservation of biological materials is an integral part of the learning experience and is permitted on the Indio Mountains Research Station properties within the context of approved research projects and educational activities. One should understand that many species are protected by state and federal laws and would require a hunting license or permit to take them. Furthermore, some research would be jeopardized if marked individuals under current study are removed from the population. The station Director can review proposed studies and alert or advise individuals to what can and cannot be taken. No collecting of resources found on IMRS is permitted without permission of the Director

Biological materials that are taken should receive proper preservation and have adequate locality data. Some thought should be given to the proper disposition of such specimens. The collections in The Laboratory for Environmental Biology, Centennial Museum, UTEP, is one proper depository and will willingly receive and curate specimens for long-term storage. Visitors may wish to take specimens back to their own institution or museum, which is permitted. A requirement in that case is to submit, within reasonable time, a list of what was taken, especially identified material that is not on the inventory lists in this report, so our knowledge of the biota of IMRS will continue to grow. **We do not permit the taking of biological specimens for personal use (i.e., for pets, gardens, souvenirs, or for commercial purposes).**

We discourage the taking of fossils, especially for souvenirs. If one is interested in removing fossil material from IMRS, the following criteria must be met:

1. The collector must know the formation from which the fossils are taken.
2. The collector must obtain GPS coordinates for the sample locality.
3. The fossils are to be deposited in a research collection (at UTEP or elsewhere).
4. A list of specimens removed from IMRS is to be filed with the Director.

Cultural artifacts are scattered over IMRS from past activities of indigenous humans and from more recent ranching and mining ventures. All artifacts are to be left in place. **Archeological materials are not to be disturbed or removed from IMRS.** We request that anyone finding evidence of prehistoric human occupation, such as pottery fragments, scatters of lithic materials, or actual sites of habitation, obtain GPS coordinates for the find and fill out a simple report form (available at the station) to be left with the station Director.

POLICIES FOR THE PROTECTION OF RESOURCES

1. **Research projects are to be approved by the station Director.** We require approval of all research projects. This is necessary to reduce impacts on the physical and biological resources and reduce conflicts with educational programs and other ongoing research projects.

2. **Any indiscriminant collecting of plant, animal, mineral, fossil and cultural material is prohibited except within the context of approved projects.**
3. **Off-road vehicle activities are prohibited.** Parties must access sites using existing roads. Off-road sites must be reached by foot.
4. **When collecting by turning rocks, downed wood, sotol and yucca logs, or other natural objects, they are to be returned to their original position (see Pike et al., 2010).**
5. **When one uses temporary pit-fall traps, they are all to be removed when the project is completed. Flagging should also be removed.** We have found small pit traps that have continued to trap and kill organisms long after the project was completed. Personnel involved with long-term pit-fall trapping projects should close traps when they are off IMRS for more than one day.
6. **Use of enduring markers such as spray paint, digging large holes to recover plants and animal material, and prying apart boulders is not permitted.**
7. **Open campfires are not permitted except in firepit at the station HQ; firewood must be brought in, as the use of native fuels on the property is not permitted.**
8. **Trash must be packed out.**
9. **Hunting is not permitted at IMRS unless a hunting lease is obtained through The University of Texas Lands Office.**
10. **State and federal permits are required to work with certain organisms and the appropriate laws are to be followed.**
11. **Camping within 500 feet of the limited watering holes for wildlife (e.g. Squaw Spring and earthen tanks) is prohibited.**

Exceptions to the above rules. One may petition to "bend" some of the above rules. The case for doing that must be presented to the station Director for approval.

The following sections on physical and biotic resources found on IMRS include a listing of literature cited in those sections and also relevant references that can be used by students and researches using the station.

PHYSICAL SETTING

Indio Mountains Research Station (headquarters) is in the southeast tip of Hudspeth County about 40 km southwest of Van Horn, Texas. The station consists of about 40,000 acres. It contains most of the Indio Mountains, a lower southern spur of the Eagle Mountains located to the north. Elevations range from 900 to 1600 meters.

Indio Mountains Research Station is within the Basin and Range Physiographic Province of North America. The topography is mostly the result of block-faulting. Tilted beds of mostly Cretaceous limestone can be seen in several directions from the ranch headquarters. Volcanic activity has further shaped the terrain and will be briefly discussed below. Block-faulting, folding, volcanic activity, contraction and extensional events in the earth's crust have shaped the present mountainous terrain (see below).

CHIHUAHUAN DESERT

Indio Mountains Research Station is situated within the Chihuahuan Desert of the United States and Mexico. Many interpretations of the exact delineation of the Desert have been proposed (see Schmidt, 1979, for a review). The description we will follow is the climatic delineation proposed by Schmidt (1979).

Schmidt (1979) gathered climatic data from several hundred stations in Mexico and the southwestern United States to establish a delineation of the Chihuahuan Desert. He used the Martonne Index of Aridity in his evaluation. Values <5 are considered to be true desert and those at >10 are grassland. He found that what he considered Chihuahuan Desert sites had an average Martonne Index of Aridity of 7.9 (4.7-10.0 range). He found that the climate of the Chihuahuan Desert was surprisingly uniform. Average precipitation is 235 mm with a narrow range of variation (67% range is 225-275 mm). The average annual temperature is 18.6 C. The reason the uniformity of climate in part is due to base elevation of about 1200 m throughout much of the extent of the desert; similar orographic effects due to large mountain masses to the east and west; being nearly equidistant between the Pacific Ocean (and Gulf of California) and Gulf of Mexico; having few through flowing rivers to form erosional lowlands; and being low latitude such that frontal activity is minimal (i.e., most rainfall is from summer monsoon season).

The Chihuahuan Desert extends from the Rio Grande Valley south of Albuquerque, New Mexico, southwest New Mexico, and an isolated pocket around Pecos, Texas, south through much of the eastern half of Chihuahua, western two-thirds of Coahuila to extreme eastern Durango and southern Coahuila at the transverse extension of the Sierra Madre Oriental. The Chihuahuan Desert as thus defined has an area of 355,000 km². About 75% of the area is in Mexico and makes up 13% of the area of that country. Somewhat controversial is inclusion into the Chihuahuan Desert an arid area south of the transverse extension of the Sierra Madre Oriental, mostly within the states of Zacatecas and San Luis Potosi (Henrickson and Johnston, 1997). That area, called the Saladan, is higher than the Chihuahuan Desert to the north and has a richer flora.

CLIMATE

Indio Mountains Research Station established a weather station in 2006 to collect data. That data is available from the Director and will soon be available on the IMRS web site. Schmidt (1995) has described the climate of Trans-Pecos, Texas, so we have drawn mostly upon information in that source for the account below.

Precipitation over the Trans-Pecos region of Texas is scant because of subtropical high pressure, orographic barriers, and continentality. Precipitation in El Paso (1230 m elev.) annually averages 230 mm, that of Marathon (1230 m) is 375 mm, and the average for the entire Trans-Pecos is about 300 mm. The average rainfall for sites throughout the Chihuahuan Desert is 235 mm, with a 67% range of sites receiving 235-275 mm annually (Schmidt, 1979). More than 70% of the rainfall occurs during the warmest months (June-September). More than half of the moisture yielding precipitation in the Chihuahuan

Desert is derived from tropical storms that lift moisture into the troposphere passing over orographic barriers.

Insolation in the Trans-Pecos is very high, with El Paso (the "Sun City") averaging 84% of all possible sunshine (highest locality in the U.S.). The average annual temperature in the Trans-Pecos is 18° C. The Trans-Pecos is characterized by the highest average maximum temperatures in the winter and the lowest average maximum temperatures in the summer compared to other sites in Texas. El Paso is characterized by having 18 days with the maximum temperature >38° C and 50 days with the lowest temperature below freezing. Just down the Rio Grande at Presidio, 121 days during an average year are greater than 38° C. The coolest months in the Trans-Pecos average 7-12° C. Cool fronts can drop the average temperature 6° C. The growing season in the Trans-Pecos is 220-240 days. The last frost is generally in the 3rd week of March and the end of the growing season is usually in the 2nd week of November.

Over about two-thirds of the year winds in the Trans-Pecos are generally westerly. In July and August the westerly flow is interrupted by easterly flowing winds that bring in moisture, thereby increasing humidity. Easterly air flow fades out in September and is gone by October.

Thornthwaite (1931) places the area within the E.B.'d (aird mesothermal with no surplus water) (Johnson II et al., 1977). The Precipitation/Evaporation index is less than 16 and the moisture deficiency is between 40 and 60 percent (Thornthwaite, 1948; Johnson II et al., 1977). Using the Koeppen Climatic Classification, the climate of the area is "BWK" (dry; desert; mean annual temperature less than 64.4 F) (Underwood, 1963). A more detailed Koeppen Classification (Russell, 1945) places the area in "BWSCw" (mesothermal desert steppe with winter dry season).

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GEOLOGY

Formation of the Indio Mountains. In the Cretaceous, in the area of what is now the Indio Mountains was a shallow sea filling what is now known as the Chihuahuan Trough. At the eastern edge of the Chihuahuan Trough sediments were deposited that eventually gave rise to the 10,700 foot section of Cretaceous rocks exposed in the mountains today (Underwood, 1963; Wallace, 1972; Price et al., 1985). The sediments were derived from nearby land and thus many of the beds have a sand and pebble composition that reflect that erosional source while other beds are of more typical marine origin and are limestones. During the Laramide Orogeny from the Late Cretaceous into the Early Tertiary the area was deformed primarily by thrust faulting, folding and some strike-slip faulting (Wallace, 1972; Price et al. 1985). The next event to shape the area was volcanic activity during the Oligocene. Although calderas were located no closer than seven miles north of the central Indio Mountains, their eruptions deposited ash on the area to form tuffs and trachytes (welded tuffs) (Price et al., 1985). The rimrock of Flat Top Mountain that is visible south of IMRS headquarters is made of trachyte (Wallace, 1972). In the Middle and Late Tertiary the extensional block-faulting that gave rise to the Basin and Range Physiographic Province put the finishing touches on the present shape of the Indio Mountains except for normal erosional processes (Price et al., 1985; Rohrbaugh, 2001). Of note is the "Indio Fault" that divides the range into an eastern block and a western block (Wallace, 1972). The vertical slippage along that fault was over 7000 feet.

Stratigraphy. The stratigraphy of the Indio Mountains consists of a 10,700 foot Cretaceous section, four layers of Oligocene volcanic tuffs and trachytes and Tertiary to Recent alluvial sediments (Underwood, 1963; Wallace, 1972). Underwood (1963) divided the Cretaceous section into eight formations. Some of the beds are carbonate (limestone) and others are siliclastic (sandstones and conglomerates). The youngest formation is the Buda Limestone. The oldest formation is the Yucca Formation of siliclastic conglomerate that one can observe in the bottom of Echo Canyon and just east of the ranch house.

The Yucca Formation is the oldest formation in the Indio Mountains (Underwood, 1963). This formation is 2070 ft. thick (Price et al., 1985). It is siliclastic and without fossils. It has four mapable members as follows (Price et al., 1985):

Y1 Basal conglomerate
Y2 Conglomerate with interbedded small amounts of sandstone
Y3 Sandstone interbedded with small amounts of conglomerate
Y4 Sandstone and sandy siltstone that include clay drapes, ripple marks and burrows.

At the upper contact of the Yucca Formation with the younger Bluff Formation is a 200 ft. fossiliferous section of limestone and shale that is not assigned to either formation and is referred to as a "transition zone."

The Bluff Formation is 796 ft. thick in the Indio Mountains (Wallace, 1972). The lower part is described as being light gray oolitic limestone with sparry calcite cement.

The middle of the Bluff Formation is of alternating layers of fossiliferous limestone and quartz sandstone. The upper part of the Bluff Formation is mostly fossiliferous micritic limestone (Underwood, 1962, 1963; Wallace, 1972).

Above the Bluff Formation is the Cox Sandstone. It caps the central ridge of the Indio Mountains and is 1267 feet thick (Underwood, 1962, 1963; Wallace, 1972). It is described as being light but variable in color and a quartz sandstone with thin beds of limestone and conglomerate (Wallace, 1972). Above the Cox Sandstone are remaining formations consisting of Finlay Sandstone (401 ft.), Benavides Formation (121 ft.), Espy Limestone (1094 ft.), Eagle Mountains Sandstone (78 ft.) and Buda Limestone (youngest; 218 ft.). Underwood (1962, 1963) describes those formations in detail.

Mining. Sporadic exploration has occurred in the area since the early 1900's. In the late 1940's Walter Rossman of Kerrville, Texas prospected at the Black Diamond Mine and the Rossman prospect, sinking a vertical shaft to a depth of 100 ft. (Wallace, 1972). Cecil Geslin and Walter Mayfield of Van Horn, Texas examined the Carpenter Prospect and the Purple Sage Mine. In the 1950's the Carpenter Exploration Company sank the Purple Sage shaft to a depth of 175 feet (Wallace, 1972). Wallace learned from Geaslin that two rail cars of ore were shipped for processing (Wallace, 1972). The Carpenter Prospect ore was about 2.5% copper and that from the Purple Sage Mine contain insufficient amounts to offset the shipping costs from Scott Crossing.

In 1970 the Duval Corporation conducted a geochemical survey and drilled a 2250 ft. hole near the Rossman Prospect in an attempt to check for mineralization and intercept Permian limestone. They did find limestone of unknown age at 1880 ft., but no significant mineralization was found (Wallace, 1972).

Paleontology. At the top of the Yucca Formation is a fossiliferous bed of limestone and shale that contains: *Actinastrea sp., Microsolena texana* Wells, *Unio sp., Cardium sp., Arctica sp., Ostrea sp., Exogyrra quitmanensis* Cragin, *Corbula sp., Toucasia sp., Turritella sp., Trigonia sp.,* and *Lima sp.* (Wallace, 1972). Within the upper part of the Bluff Formation is a fossiliferous micritic limestone layer that contains: *Orbitolina sp.*, miliolid foraminifera, *Pectin sp., Cyprimeria sp., Hemiaster sp., Enallaster sp. Holectypus sp.,* ostracods (Wallace, 1972). In a zone of limestone near the top of the Cox Sandstone *Exogyra texana* Roemer, *Gryphaea washitaensis* Hill and *Toucasia sp.* occur (Wallace, 1972). Underwood (1962, 1963) lists fossils in the upper Cretaceous strata for which an abbreviated summary is available in Table 1. It should be noted that some beds in the Cretaceous sequence were of terrestrial origin as evidence by the finding of a fossil cycad strobilus or cone. Ager, et al. (1963) described a new species of Cretaceous brachiopod from IMRS, *Lamellaerhynchia indi*, in the Yucca and Bluff formations.

Elsewhere on IMRS, the volcanic tuffs have preserved an Oligocene soil surface where *Mesohippus sp.*, oreodont remains and the land snail *Humboldtiana sp.* have been found (Wallace, 1972; Underwood and Wilson, 1974). At the south end of the station near the Rio Grande as many as three Cenozoic alluvial terraces are present and eroded that should contain fossils.

TABLE 1: Partial inventory of the Upper Cretaceous fauna by formation.

Taxon	Upper Cretaceous Formations							
	Yucca	Bluff	Cox	Finlay	Benavides	Espey	Eagle	Buda
Foraminiefera:								
Dictyoconus walnutensis				X				
Haplostiche texana							X	
Orbitolena sp.		X						
Coelenterate: Anthozoans								
Isoastrea whitneyi	X							
Microsolena taxana	X							
Polytremacias cf. hancockensis	X							
Brachiopoda								
Kingena wacoensis						X		
Lamellaerhynchia indi	X	X						
Mollusca: Cephalopoda								
Acathohoplites sp.	X							
Budaiceras sp.								X
Engonoceras sp.			X	X				
Eopachydiscus sp.						X		
Eradiolites davidsoni				X				
Goodhallites cf. aquilerae						X		
Metengonoceras sp.							X	
Mortoniceras sp.						X		
Oxytropidoceras autocarinatum					X			
Oxytropidoceras belknapi					X			
Oxytropidoceras bravoense					X			
Oxytropidoceras cf. chihuahuanensis				X				
Oxytropidoceras geniculatum					X			
Oxytropidoceras cf. trinitense					X			
Pervinqieria equidistans						X		
Pervinquieria sp.				X				
Mollusca: Gastropods								
Actaeonella texana			X					
Alipes sp.						X		
Aptyxiella sp.	X							
Cerithium cf. bosquense					X			
Lunatia sp.				X				
Natica sp.	X							
Nerinea sp.	X		X	X				
Turritella sp.	X					X		X
Tylostoma harrisi								X
Tylostoma sp.	X	X	X	X	X	X		
Mollusca: Pelecypods								
Alectryonia carinata				X				X
Anatina sp.	X	X						
Anchura sp.								X
Arctica roemeri		X						
Arctica sp.	X							

Astarte cf. roemeri		**X**						
Cardium sp.	**X**							
Corbula sp.	**X**							
Crassaltelites sp.	**X**							
Cyprimeria sp.	**X**	**X**						
Exogyra cartledgei							**X**	
Exogyra plexa					**X**			
Exogyra quitmanensis	**X**	**X**						
Exogyra texana		**X**	**X**	**X**	**X**			
Gryphaea corrugate					**X**			
Gryphaea graysonana							**X**	
Gryphaea mucronata			**X**					
Gryphaea navia					**X**			
Gryphaea washitaensis			**X**			**X**		
Homomya sp.	**X**	**X**						
Lima scumardi								**X**
Lima sp.	**X**							
Monopleura sp.		**X**						
Ostrea sp.	**X**	**X**	**X**					
Pectin georgetowensis						**X**		
Pectin irregularis			**X**					
Pectin cf. subalpina					**X**			
Pectin texanus						**X**		
Pectin sp.	**X**	**X**			**X**			**X**
Pholadomaya sancti-sabae						**X**		
Pholadomya shattacki								**X**
Protocardia sp.	**X**	**X**	**X**					
Requinea sp.				**X**				
Sphaera sp.					**X**			
Tapes sp.		**X**						
Toucasia cf. patagata				**X**				
Toucasia cf. texana				**X**				
Toucasia sp.	**X**		**X**					
Trigonia mearnsi	**X**							
Trigonia stolleyi	**X**					**X**		
Trigonia sp.	**X**	**X**						**X**
Unio sp.	**X**							
Echinodermata: Echinoids								
Actinastrea whitneyi	**X**							
Actinastrea sp. **A**	**X**							
Actinastrea sp. **B**	**X**							
Actinastrea sp. **C**	**X**							
Enallaster cf. texanus								**X**
Enallaster sp.		**X**				**X**		
Epiaster cf. elegans						**X**		
Hemiaster cf. elegans						**X**		
Hemiaster sp.		**X**						**X**
Holaster simplex						**X**		
Holectypus cf. planatus						**X**		
Holectypus sp.		**X**				**X**		
Pedinopsis sp.						**X**		
Salenia sp.						**X**		
Tetragramma sp.						**X**		

SOILS

The only soil survey report we are aware of for the IMRS area is an early survey of Trans-Pecos soils by Carter et al. (1928). The soils of the area are mapped as either "mostly limestone" (essentially bedrock areas) or "Reeves very gravelly loam." The latter is composed almost entirely of rounded gravel with a small fine-earth content. It is a common type of soil found on ancient terraces bordering the Rio Grande.

Johnson II et al. (1977) reviewed some soil maps produced by the Department of Agriculture and the Texas Agricultural Experiment Station, Texas A&M University, and discuss the Harkey-Glendale Association found along the flood-plain of the Rio Grande. This is a deep, nearly level, calcareous, loamy soil found near the Rio Grande.

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CULTURAL RESOURCES

The cultural resources on the station span a considerable time period, from perhaps the Paleo-American or Paleo-Indian stage (ca. 10,000-6,000 B.C.) to the modern activities of ranching and mining. About sixty-two Native American sites have been documented on the station (Carmichael and Unsinn, 2000). Most of the Native American sites consist of small ring middens and large sheet middens of fire-cracked rock known to be associated with the pit baking of succulents. Lithic and ceramic scatters have also been reported (Carmichael and Unsinn, 2000)

An introduction to the archeological resources of this part of Trans-Pecos Texas can be found in the papers by Greer, 1965, Johnson II et al. (1977), Hedrick (1988) and Carmichael and Unsinn (2000). The latter cover sites documented on IMRS.

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PLANT COMMUNITIES

The plant communities of the Indio Mountains Research Station have not been studied or mapped. This section has been written to alert students and visitors to some information sources and to what we think is represented on IMRS.

Henrickson and Johnston (1983) would classify the vegetation on the ranch as Chihuahuan Desert Scrub. Some classification units that appear to be represented on IMRS following their scheme are:

Larrea scrub (dominant around the ranch house).
Mixed desert scrub.
Canyon scrub.
Lechuguilla scrub (in areas of limestone outcrops).
Prosopis-Atriplex scrub (in flat areas with deep soil).
Riparian Woodlands (something near to that at Squaw Spring).

The Texas Natural Heritage Program series level plant communities list (Anonymous, 1993) indicates that the following should appear to occur on IMRS:

Apache plume series (in arroyos).
Creosote-mariols series (on well-drained slopes with limestone substrate).
Creosote series (*Larrea, Atriplex, Flourensia, Acacia, Parthenium*)
(something similar occurs around HQ, but it is not a perfect match).
Lechuguilla-sotol series (occurs on thin soils on limestone).
Mesquite-saltbush series (occurs in areas of deep soil).
Viscid acacia series (occurs on some gravel benches).

The Association for Biodiversity Information's (2001) international classification of ecological communities, for the Chihuahuan Desert region, offers the following:

Larrea tridentata shrubland alliance
Atriplex canescens shrubland alliance
Fallugia paradoxa intermittently flooded shrubland alliance
Acacia neovernicosa shrubland alliance
Prosopis glandulosa shrubland alliance
Chilopsis linearis shrubland alliance

These are described in some detail on the WEB along with others that may occur on IMRS. Some grassland may occur on IMRS property, but must be limited because it has not been observed by us for determining dominant species, so it is not considered here.

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SUMMARY OF THE BIOTA

Note: Localities listed with records of taxa are identified in the Indio Ranch Gazetteer section.

LICHENS

Compiled by Richard Worthington

Collections referenced below are deposited at UTEP and COLO. Determinations on many of the lichens were made by W. A. Weber, M. Schulz and C. M. Wetmore, to whom we extend our thanks. Collector and field numbers are in brackets.

ACAROSPORACEAE

Acarospora fuscata (Schrader) Arnold
[McGoldrick 90].
Note: Substrate: volcanic rock.

Acarospora schleicheri (Ach.) A. Massal.
[McGoldrick 89, 101, 115].
Note: Substrate: volcanic rock, sandstone and conglomerate.
Also known as *A. contigua* H. Magn.

Sarcogyne regularis Korber
[Worthington 21652, 31913].
Note: Substrate: limestone flakes on pavement.

BIATORACEAE

Toninia squalida (Ach.) A. Massal.
[McGoldrick 80].

CANDELARIACEAE

Candelina submexicana (C. de Lesd.) Poelt
[McGoldrick 91; Worthington 21671].
Substrate: igneous rock.

COLLEMATACEAE

Collema tenax (Sw.) Ach.
[Worthington 31908].
Substrate: Dirt on limestone outcrop.
Collema texanum Tuck.
[Worthington 21676, 21678, 21702].
Substrate: Limestone.

HEPPIACEAE

Heppia lutosa (Ach.) Nyl.
[McGoldrick 111; Worthington 21680].
Substrate: On dirt in cracks in limestone.

HYMENELIACEAE

Aspicilia contorta (Hoffm.) Kremp.
[McGoldrick 118 (COLO?)].
Lobothallia alphoplaca (Wahlenb.) Hafellner
Aspicilia alphoplaca (Wahlenb.) Poelt & Leuckert
[Worthington 21666].
Substrate: Rock.

LECANORACEAE

Lecanora bipruinosa Fink
[McGoldrick 93].
Substrate: Sandstone.
Lichieilla nigritella (Lettau) Moreno & Egea
Gonohymenia nigritella (Lettau) Henssen
[Worthington 21699, 21700]
Substrate: limestone
Pleopsidium chlorophanum (Wahlenb.) Zopf
Acarospora texana H. Magn.; *Acarospora chlorophana* (Wahlenb.) A. Massal.

LICHENACEAE

Lichinella granulosa M. Schultz
[Schultz, 2005].
[Schultz 16292c].
Note: Substrate: Calcareous sandstone.
Lichinella minnesotensis (Fink) Essl. In Essl. & Egan
[Schultz, 2005, mapped].
Lichinella sinaica (Martin & Galun) P. Moreno & Egea
[Schultz, 2005].
[Schultz 16306].
Note: Substrate: Limestone.
Lichinella stipulate Nyl.
[Schultz, 2005, mapped].
Peccania arizonica (Tuck.) Herre
[McGoldrick 106].
Note: Substrate: Limestone.

Phloeopeccania major Henssen & Weber [*nomen in edit*]
[McGoldrick 97, 107]
Note: Substrate: Limestone.
Pterygiopsis atra Vanio
[Schultz, 2006].
[Worthington 31911; Schultz 16311a & Worthington (Hb. M. Schultz)].
Note: Substrate: Limestone.
Pterygiopsis canariensis Henssen
[Schultz, 2006].
[Schultz 16317d & Worthington (Hb. M. Schultz)].
Thyrea confuse Henssen
[*Thyrea pulvinata* of American authors].
[Worthington 31910].
Note: Substrate: Limestone.
Thyrea pachyphylla (Mull. Arg.) Henssen
[Worthington 31909].
Note: Substrate: Limestone.

PARMELIACEAE

Xanthoparmelia novomexicana (Gyelnik) Hale
[Worthington 21684].
Xanthoparmelia psoromifera (Kurok) Hale
[Worthington 21682, 21682B; McGoldrick 83].
Xanthoparmelia subdecipiens (Vainio) Hale
[Lieb 1000, McGoldrick 121, Worthington 21682A].

PELTULACEAE

Peltula sp.
[McGoldrick 98].
Note: Substrate: Sandstone.

PHYSCIACEAE

Amandenia punctata (Hoffm.) Coppins & Schreid.
[*Buellia punctata* (Hoffm.) Massal].
[Worthington 21698].
Note: Substrate: Limestone.
Buellia retrovertens Tuck.
[McGoldrick 103; Worthington 21670].
Note: Substrate: Igneous rock.
Physcia biziana (Massal.) Zahlbr.
[Lieb 1058].
Note: Substrate: Bark of shrub.

PLACYNTHIACEAE

Placynthium nigrum (Hudson) Gray
[Worthington 31907].
Note: Substrate: Limestone.

PSORACEAE

Psora crenata (Taylor) Reinke
[McGoldrick 112].
Note: Substrate: Dirt in limestone cracks.
Psora pseudorusselii Timdal
[Worthington 21669, 21701, 31904].
Note: Substrate: Limestone.

TELOSCHISTACEAE

Caloplaca galactophylla (Tuck.) Zahlbr.
[Worthington 31905].
Note: Substrate: Limestone.

Caloplaca microphyllina (Tuck.) Hasse
[Worthington 21677].
Note: Substrate: On wood.
Caloplaca rubelliana (Ach.) Lojka
[McGoldrick 95].
Note: Substrate: Sandstone
Caloplaca squamosa (B. de Lesd.) Zahlbr.
[Worthington 21672].
Note: Substrate: Igneous rock.
Published voucher: [Wetmore, 2003, Bryologist 106:147-156].

VERRUCARIACEAE

Dermatocarpon miniatum (L.) W. Mann
[Worthington 21667].
Note: Substrate: Rock.
Endocarpon pusillum Hedwig
[Worthington 31906; McGoldrick 96].
Note: Substrate: On dirt in limestone cracks.
Placidium sp.
[Worthington 21673, 21674].
Note: several collections originally identified as *Catapyrenium lachneum* need review.
Staurothele drummondii (Tuck.) Tuck.
[Worthington 21668].
Note: Substrate: Limestone.

NONVASCULAR PLANTS

Compiled by Richard Worthington

We thank William A. Weber for the determinations on our moss specimens. A set of duplicate specimens is at COLO. We thank Richard H. Zander for the determination of the *Pseudocrossidium* by review of the duplicate at COLO. Collector and field numbers are in brackets.

PHYLUM: BRYOPHYTA (Mosses)

BRYACEAE

Bryum argenteum Hedw.
[Worthington 21694].

FUNARIACEAE

Funaria flavicans Michx.
[Worthington 21688].

GRIMMIACEAE

Grimmia pulvinata (Hedw.) Sm.
[Worthington 21665].
Jaffueliobryum wrightii (Sull.) Ther.
[Worthington 21664, 21691].

POTTIACEAE

Pseudocrossidium crinitum (Bartr.) Zand.
Tortula aurea Bartr.
[Lieb s.n.; Worthington 21690].

Syntrichia ruralis (Hedw.) Web. & Mohr
Tortula ruralis (Hedw.) Gaertn., Meyer & Scherb.
[Worthington 21686, 21687, 21696].
Tortula mucronifolia Schwaegr.
[Worthington 21692].
Weissia ligulaefolia (Bartr.) Grout
[Worthington 21697].

PHYLUM: HEPATOPHYTA (Liverworts)

AYTONIACEAE

Plagiochasma rupestre (Forst.) Steph.
[Worthington 21685].

VASCULAR PLANTS

Revised and expanded since Lieb et al. (1996) by Richard Worthington.

We have selected one or more common names for each species drawing on the standardized common names in the National Plants Database. An asterisk (*) indicates the species is non-native. Indented names are synonyms that are commonly encountered in the literature. Collectors name and field number if given are in brackets. The voucher specimens are in UTEP Herbarium. This list and the preceding list of cryptogams are part of an ongoing inventory by the above authors and that was last published in 1996 (Lieb et al., 1996).

PHYLUM: PTERIDOPHYTA (Ferns)

PTERIDACEAE (Brake Family)

Adiantum capillus-veneris L. — Southern Maidenhair
[Worthington 25507].
Note: This species grows among rocks in streambed at Squaw Spring.

Astrolepis cochisensis (Goodd.) Benham & Windham — Cochise Scaly Cloakfern
[Lieb 814, 846].

Astrolepis integerrima (Hook.) Benham & Windham — Wavyleaf Cloakfern
[Lieb 931].

Astrolepis sinuate (Lagasca *ex* Swartz) Benham & Windham — Bulb Lipfern
[Worthington 13568, 21644].

Cheilanthes eatonii Baker — Eaton's Lipfern
[Lieb 932; Worthington 21646].

Cheilanthes feei T. Moore — Slender Lipfern, Fee Lipfern
[Lieb 928].

Pellaea intermedia Mett. *ex* Kuhn — Creeping Cliffbrake
[Lieb 937; Worthington 30682].

PHYLUM: LYCOPODIOPHYTA (Spikemosses)

SELAGINELLACEAE (Spikemoss Family)

Selaginella lepidophylla (Hook & Greville) Spring in Martius *et al.* — Resurrection Plant
[Lieb 930].
Note: Common on north-facing conglomerate near ranch House.

Selaginella peruviana (J. Milde) Hieron — Peruvian Spikemoss
[Worthington 31920].

CONIFEROPHYTA (Conifers)

CUPRESSACEAE (Cypress Family)

Juniperus pinchotii Sudworth — Red Berry Juniper
[Lieb 933].
Note: Most common on east side of IMRS near east gate and Corral.

GNETOPHYTA (Gnetophytes)

EPHEDRACEAE (Mormon-tea Family; Joint-fir Family)

Ephedra aspera Engelm. *ex* S. Wats. — Boundary Ephedra; Popotillo; Pitamoreal
[Lieb s.n., 1079, 1355].
Note: One collection from near Flat Top Mountain (Worthington 30676) may be a different species.

MAGNOLIOPHYTA (Flowering Plants)

MAGNOLIOPSIDA (Dicots)

ACANTHACEAE (Acanthus Family)

Ruellia parryi Gray — Parry's Wild-petunia
[Lieb 985, 1298; Worthington 23342].

Stenandrium barbatum Torr. & Gray — Early Shaggytuft
[Lieb s.n., 1018]

AMARANTHACEAE (Amaranthus Family)

******Amaranthus blitoides* S. Wats. — Prostrate Pigweed
[Worthington 25933].

Amaranthus palmeri S. Wats. — Palmer's Amaranth; Pigweed
[Lieb 1352].

Froelichia arizonica Thornb. — Arizona Snakecotton
[McGoldrick 53].

Tidestroemia lanuginose (Nutt.) Stand. — Espanta Vaquero; Wooly Honeysweet
[McGoldrick 50].

Tidestroemia suffruticosa (Torr.) Standl. — Shrubby Honeysweet
[Lieb 1208].

ANACARDIACEAE (Sumac Family)

Rhus microphylla Engelm. *ex* Gray — Littleleaf Sumac
[Lieb 1116].

Rhus virens Lindheimer *ex* Gray — Evergreen Sumac
[Lieb 929; Worthington 17842].

APOCYNACEAE (Dogbane Family)

Telosiphonia macrosiphon (Torr.) Henr. — Rock-trumpets; Flor de San Juan
Macrosiphonia macrosiphon (Torr.) Heller
[Lieb 824].

ARISTOLOCHIACEAE (Pipevine Family; Birthwort Family)

Aristolochia wrightii Seemann — Wright's Dutchman's-pipe
[Lieb 808].

ASCLEPIADACEAE (Milkweed Family)

Asclepias macrotis Torr. — Long-hoof Milkweed
[Lieb 991].

Asclepias subverticillata (Gray) Vail — Horsetail Milkweed
[Lieb 1001].

Sarcostemma crispum Bentham — Wavyleaf Milkvine
[Lieb 1183].

ASTERACEAE [COMPOSITAE] (Sunflower Family)

Ageratina wrightii (Gray) King & Robins. — Wright's Snakeroot
[*Eupatorium wrightii* Gray]
[Lieb 1181].

Ambrosia confertiflora DC. — Weak-leaf Ragweed
[Lieb 1006; Worthington 17949].

Aphanostephus ramosissimus DC. var. *humilis* (Benth,) Turner & Birdsong — Low Faintcrown
[McGoldrick 58].

Artemisia ludoviciana Nutt. — Wormwood
[Worthington 17473].

Baccharis salicifolia (Ruiz & Pavon) Persoon — Willow Baccharis; Mule's Fat
Baccharis glutinosa Persoon
[Worthington 17469].

Baccharis salicina Torr. & Gray — Great Plains Seep Willow
[Lieb 1011; Worthington 17479].

Bahia absinthifolia Bentham var. *dealbata* Gray — Hairy-seed Bahia
[Worthington 17454].

Bahia pedata Gray — Blunt-scale Bahia
[Lieb 1140].

Baileya multiradiata Harvey & Gray *ex* Gray — Desert Marigold
[McGoldrick 64].

Chaetopappa ericoides (Torr.) Nesom — Sand Aster; Heath Aster
Leucelene ericoides (Torr.) Greene
[Lieb 1213].

Chrysactina mexicana Gray — Damianita
[Lieb 1211].

Cirsium ochrocentrum Gray ssp. *ochrocentrum* — Yellow-spine Thistle
[Worthington 17490].

Cirsium undulatum (Nutt.) Spreng. — Wavy-leaf Thistle
[Lieb 856, 1044].

Conoclinium greggii (Gray) Small — Mist-flower
Eupatorium greggii Gray
[Lieb 1045; Worthington 17452].

**Conyza canadensis* (L.) Cronq. — Canadian Horseweed
[Worthington 17461].

Erigeron colomexicanus A. Nels. — Running Fleabane Daisy
[Lieb 810, 1201].

Erigeron divergens Torr. & Gray — Spreading Fleabane Daisy
[Lieb 1102, 1211].

Erigeron modestus Gray — Plains Fleabane Daisy
[Lieb s.n., 1241].

Evax verna Raf. — Spring Cudweed
Evax multicaulis DC.
[Lieb 1097, 1124; Worthington 30681].

Flourensia cernua DC. — Tarbush
[Lieb 1344].

Gaillardia pinnatifida Torr. — Red-dome Blanket-flower
[Lieb 1215].

Gutierrezia microcephala (DC.) Gray — Thread-leaf Snakeweed
[Worthington 17466].

Gutierrezia sphaerocephala Gray — Round-head Snakeweed
[Lieb 1179].

Gymnosperma glutinosum (Spreng.) Lessing — Gumhead
[Worthington 17485].

Hedosyne ambrosiifolia (Gray) Strother — Ragged Marsh-elder
Iva ambrosiifolia (Gray) Gray
[Lieb 1035].

Helenium microcephalum DC. var. *microcephalum* — Small-head Sneezeweed
[Lieb 1012].

Helianthus ciliaris DC. — Texas Blueweed
[Lieb 1197].

Isocoma pluriflora (Torr. & Gray) Greene — Southern Jimmyweed
Isocoma wrightii (Gray) Woot. & Standl.
[Lieb 1032].

Jefea brevifolia (Gray) Strother — Boss Daisy
Zexmenia brevifolia Gray
[Worthington 17465].

Laennecia coulteri (Gray) Nesom — Coulter's Woolwort
*Conyza coulteri*Gray
[Worthington 23364].

Machaeranthera pinnatifida (Hook.) Shinners var. *pinnatifida* — Lacy Spine-aster
[Lieb 830; Worthington 17457].

Machaeranthera tanacetifolia (H.B.K.) Nees — Tahoka-daisy
[Lieb 1219].

Melampodium leucanthum Torr. & Gray — Plains Blackfoot-daisy
[Lieb s.n.].

Nicolletia edwardsii Gray — Edward's Nicollet
[McGoldrick 11, 21].

Packera tampicana (DC.) C. Jeffrey — Great Plains Ragwort
Senecio greggii Rydb.; *Senecio tampicanus* DC.
[Lieb 934, 935, 1091].

Parthenium confertum Gray var. *lyratum* (Gray) Rollins — Gray's Feverfew
[McGoldrick 70].

Parthenium incanum H.B.K. — Mariola
[McGoldrick 42].

Pectis angustifolia Torr. — Lemonweed; Lemoncillo
[McGoldrick 13, 49].

Porophyllum scoparium Gray — Trans-Pecos Poreleaf
Note: The species grows in arroyos near the ranch house but is not vouchered.

Psathyrotopsis scaposa (Gray) Robins. — Naked Turtleback
Psathyrotes scaposa Gray
[Lieb s.n.].

Pseudognaphalium stramineum (Kunth) W. A. Weber — Cotton-batting-plant
Gnaphalium chilense Spreng.
[Worthington 17478].

Psilactis asteroids Gray — New Mexico Ray-aster
Machaeranthera boltoniae (Greene) Turner & Horne
[Lieb 1195].

Psilostrophe gnaphalioides DC. — Dudweed
[Worthington 32537].

Sartwellia flaveriae Gray — Thread-leaf Glow-wort
[Lieb 1198].

Senecio flaccidus Lessing var. *flaccidus* — Thread-leaf Groundsel
Senecio douglasii DC. var. *longilobus* (Benth.) Benson
[Lieb s.n., 1100].

**Sonchus oleraceus* L. — Common Sow-thistle
[Worthington 23362].

Symphyotrichum subulatum (Michaux.) Nesom — Seaside Aster
Aster subulatus Michx.
[Lieb 1349; Worthington 17455].

Tetraneuris scaposa DC. var. *scaposa* — Naked Rubberweed
Hymenoxys scaposa (DC.) Parker
[Lieb 1139].

Thelesperma longipes Gray — Long-stalk Greenthread
[Lieb 835].

Thelesperma megapotamicum (Spreng.) Kuntze — Navajo-tea; Hopi-tea
[Worthington 17475].

Thymophylla acerosa (DC.) Strother — Prickle-leaf Dogweed
Dyssodia acerosa DC.
[Lieb 845, 1263].

Thymophylla pentachaeta (DC.) Small — Parralena
Dyssodia pentachaeta (DC.) Robins.
[Lieb 839; McGoldrick 65].

Trixis californica Kellogg — California Threefold
[Lieb 927].

Verbesina encelioides (Cav.) Bentham & Hook. f. *ex* Gray — Cowpen Daisy
[Lieb 1021].

Viguiera dentata (Cav.) Spreng. — Toothed Goldeneye
[Lieb 1037; Worthington 17470].

Viguiera stenoloba Blake — Skeleton Goldeneye; Resinbush
[Worthington 17476].

Xanthium strumarium L. — Rough Cocklebur
[Lieb 1004].

Zinnia acerosa (DC.) Gray — Desert Zinnia
[Lieb 998, 1038].

BERBERIDACEAE (Barberry Family)

Berberis trifololiata Moric. — Laredo Oregon-grape
Mahonia trifoliolata (Moric.) Fedde
[Worthington 13564].

BIGNONIACEAE (Catalpa Family; Bignonia Family)

Chilopsis linearis (Cav.) Sweet — Desert-willow
[Lieb 1309].

Tecoma stans (L.) Jussieu *ex* H.B.K. var. *angustata* Rehder — Yellow Trumpet-bush
[Lieb 1328].

BORAGINACEAE (Borage Family)

Cryptantha crassisepala (Torr.& Gray) Greene var. *elachantha* — Thick-sepal Cat's- eye
I. M. Johnst.
[Lieb 1095].

Cryptantha mexicana (Brandeg.) I. M. Johnst. — Mexican Cat's-eye
[Lieb 1114].

Heliotropium curassavicum L. — Seaside Heliotrope
[Lieb 1010; McGolderick 44].

Lappula occidentalis (S. Wats.) Greene — Spiny Sheepbur
Lappula redowskii (Hornem.) Greene
[Lieb 1135].

Lithospermum incisum Lehmann — Fringed Groomwell
[Lieb 1077; Worthington 21642].

Tiquilia canescens (DC.) A. Richards. var. *canescens* — Wooly Crinklemat
[Lieb 831].

Tiquilia gossypina (Woot. & Standl.) A. Richards. — Texas Crinklemat
[Worthington 32436].

Tiquilia greggii (Torr.) A. Richards. — Plumed Crinklemat
[Lieb 844].

Tiquilia hispidissima (Torr.) A. Richards. — Hairy Crinklemat
[Worthington 32533].

BRASSICACEAE [CRUCIFERAE (Mustard Family)

Descurainia pinnata (Walt.) Britt. — Tansy Mustard
[Lieb 1073].

Dimorphocarpa wislizeni (Engelm.) Rollins — Spectacle-pod
[McGoldrick 63].

Draba cuneifolia Nutt. *ex* Torr. & Gray var. *cuneifolia* — Wedgeleaf Ehitlow-grass
[Worthington 21649].

**Eruca vesicaria* (L.) Cav. ssp. *sativa* (Miller) Thellung — Garden Rocket
[Lieb 1117].

Lepidium alyssoides Gray — Mesa Pepperweed
[Lieb 917, 1118].

Lepidium lasiocarpum Nutt. var. *wrightii* (Gray) C. L. Hitchc. — Wright's Pepperweed
[Lieb 1078].

Lesquerella fendleri (Gray) S. Wats. — Fendler's Bladderpod
Physaria fendleri (Gray) O'Kane & Al-Shehbaz
[Lieb 822].

Lesquerella gordoni (Gray) S. Wats. — Gordon's Bladderpod
Physaria gordonii (Gray) O'Kane & Al-Shehbaz
[McGoldrick 57].

Lesquerella purpurea (Gray) S. Wats. — Purple Bladderpod
Physaria purpurea (Gray) O'Kane & Al-Shehbaz
[Lieb 936, 1090].

Nerisyrenia camporum (Gray) Greene — Bicolored Fan-mustard
[Lieb 1072, 1084].

**Sisymbrium irio* L. — London Rocket
[Worthington 21653].

Streptanthus carinatus Wright *ex* Gray ssp. *carinatus* — Lyer-leaf Jewel-flower
[Lieb 1076].

BUDDLEJACEAE (Butterfly-bush Family)

Buddleja scordioides H.B.K. — Escobilla
[Lieb 1036].

CACTACEAE (Cactus Family)

Ariocarpus fissuratus (Engelm.) K. Schum. — Living Rock
[Worthington 17493].

Coryphantha dasyacantha (Engelm.) Orcutt.
[Anderson (photographic voucher)].

Cylindropuntia leptocaulis (DC.) Kunth — Desert Christmas Cactus
Opuntia leptocaulis DC.
[Lieb 1295].
Note: As many as three additional species in this genus remain to be vouchered.

Echinocactus horizonthalonius Lemaire — Eagle-claw Cactus; Turk's Head
[Worthington 21655].

Echinocereus coccineus Engelm. var. *gurneyi* (Benson) Heil & Brack — Scarlet Hedgehog Cactus
Echinocereus triglochidiatus Engelm. var. *gurneyi* Benson
[Lieb 1052],

Echinocereus enneacanthus Engelm. var. *enneacanthus* Pitaya
Echinocereus enneacanthus Engelm. var. *dubius* (Engelm.) L. Benson
[Anderson (photographic voucher)].
Echinocereus pectinatus (Scheidw.) Engelm. var. *dasyacanthus* Rainbow Hedgehog Cacuts
(Engelm.) Taylor
Echinocereus dasyacanthus Engelm.
[Lieb 1230].
Echinocereus stramineus (Engelm.) F. Seitz Strawberry Hedgehog Cactus
Echinocereus enneacanthus Engelm. var. *stramineus* (Engelm.) Benson
[Lieb 1222].
Epithelantha micromeres (Engelm.) Weber *ex* Britt. & Rose ssp Ping-pong-ball Cactus
micromeres
[Worthington 21657; Anderson (photographic voucher)].
Escobaria tuberculosa (Engelm.) Britt. & Rose White Foxtail Cactus
Coryphantha strobiliformis (Poselger) Orcutt
[Lieb 851].
Mammillaria heyderi Muehlenpfordt var. *meiacantha* (Engelm.) L. Benson Little Nipple-cactus
[Anderson (photographic voucher)].
Mammillaria lasiacantha Engelm. Lacy-spine Nipple-cactus
[Lieb 956].
Opuntia engelmannii Salm-Dyck *ex* Engelm. var. *engelmannii* Engelmann's Prickly-pear
[Lieb 1226].
Opuntia macrocentra Engelm. Purple Prickly-pear
[Lieb 1050].
Opuntia phaeacantha Engelm. Plains Prickly-pear
[Lieb 1221].
Sclerocactus warnockii (Benson) N. P. Taylor Warnock's Fishhook
Neolloydia warnockii Benson
[Lieb 1144].
Sclerocactus uncinatus (Galeotti) Taylor ssp. *wrightii* (Engelm.) Chihuahuan Fish-hook Cactus
Taylor
Ancistrocactus uncinatus (Galeotti) Benson
[Lieb 1108; Worthington 21656].

CAPPARIDACEAE [CAPPARACEAE] (Caper Family

Polanisia dodecandra (L.) DC. ssp. *uniglandulosa* (Cav.) Iltis Red-wisker Clammyweed
[McGoldrick 24]

CARYOPHYLLACEAE (Pink Family)

Spergularia marina (L.) Griseb. Salt-marsh Sand-spurrey
[Lieb 1101]

CHENOPODIACEAE (Goosefoot Family)

Atriplex canescens (Pursh) Nutt. Four-wing Saltbush
[McGoldrick 43]
Chenopodium incanum (S. Wats.) Heller Mealy Goosefoot
[Worthington 17477]

CONVOLVULACEAE (Morning Glory Family)

Evolvulus alsinoides L. var. *angustifolia* Torr. Slender Morning-glory
[Lieb 1205]

CROSSOSOMATACEAE (Crossosoma Family)

Glossopetalon spinescens Gray Spiny Greasebush
Forsellesia spinescens (Gray) Greene
[Worthington 13570]

CUCURBITACEAE (Gourd Family)

Ibervillea tenuisecta (Gray) Small Deer-apples
[Lieb 976]

CUSCUTACEAE (Dodder Family)

Cuscuta indecora Choisy — Large-seed Dodder
[Lieb 1359]

EUPHORBIACEAE (Spurge Family)

Argythamnia neomexicana Mull. Arg. — New Mexico Silverbush
Ditaxis neomexicana (Muell. Arg.) Heller
[Lieb 1127]

Bernardia obovata I. M. Johnst. — Desert Bernardia
[Lieb s.n.]

Croton dioicus Cav. — Grassland Croton
[Lieb 838]

Croton fruticulosus Engelm. *ex* Torr. — Bush Croton
[Lieb 1042; Worthington 17464]

Croton pottsii (Klotzsch) Mull. Arg. — Leatherweed
[Lieb 925]

Chamaesyce arizonica (Engelm.) Arthur — Arizona Spurge
[Lieb 1089]

Chamaesyce fendleri (Torr. & Gray) Small — Fendler's Spurge
[Lieb 1110]

Chamaesyce lata (Engelm.) Small — Hoary Spurge
[*Lieb 1138*]

Chamaesyce serpyllifolia (Persoon) Small — Thyme-leaf Spurge
[McGoldrick 47]

Chamaesyce stictospora (Engelm.) Small — Slim-seed Spurge
[Lieb 1022]

Euphorbia antisyphilitica Zucc. — Candelilla
[*Lieb 1279*]

Euphorbia exstipulata Engelm. — Square-seed Spurge
[McGoldrick 22]

Euphorbia spathulata Lamarck — Warty Spurge
[*Lieb 1096*]

Jatropha dioica Sesse *ex* Cerv. — Sangre de Drago; Leather Stem
[Lieb 832]

Phyllanthus polygonoides Nutt. *ex* Spreng. — Smartweed Leaf-flower
[Lieb 834A, 1326]

Tragia amblyodonta (Mull. Arg.) Pax & K. Hoffm. — Dog-tooth Noseburn
[Lieb 1312]

FAGACEAE (Oak Family)

Quercus pungens Leibman — Sandpaper Oak
[Lieb 1311; Worthington 21645]

FABACEAE [LEGUMINOSAE] (Legume Family)

Acacia constricta Bentham — Western White-thorn Acacia
[Lieb 848]

Acacia greggii Gray — Catclaw
[Lieb 849, 1003]

Acacia neovernicosa Isely — Eastern White-thorn Acacia
[Lieb 1229]

Astragalus emoryanus (Rydb.) Cory — Red-stemmed Peavine; Emory's Milkvetch
[Lieb 1272]

Astragalus nuttallianus DC. var. *austrinus* (Small) Barneby — Nuttall's Milkvetch
[Lieb 1093, 1106]

Calliandra conferta Bentham — Rio Grande Stickpea
[Lieb 989]

Dalea formosa Torr. — Feather-plume
[Lieb 947, 1088]

Dalea neomexicana (Gray) Cory — New Mexico Prairie-clover
[Lieb 1112]
Dalea wrightii Gray — Wright's Prairie-clover
[*Lieb 1223*]
Lupinus havardii S. Wats. — Big Bend Bluebonnet
[Lieb 809]
Mimosa borealis Gray — Fragrant Mimosa
[Lieb 818; McGoldrick s.n.]
Mimosa emoryana Bentham — Emory's Mimosa
[Lieb 843]
Mimosa turneri Barneby — Desert Mimosa
[Lieb 993; Anderson 56]
Prosopis glandulosa Torr. — Honey Mesquite
[Lieb 1209]
Prosopis pubescens Bentham — Screwbean Mesquite; Tornillo
[Worthington 17480]
Rhynchosia senna Gillies *ex* Hook. var. *texana* (Torr. & Gray) M. C. Johnst. — Texas Snout-bean
[Lieb 990]
Senna durangensis (Rose) Irwin & Barneby — Durango Senna
[Lieb 1141]

FOUQUIERIACEAE (Ocotillo Family)

Fouquieria splendens Engelm. — Ocotillo
[Lieb 1220]

GENTIANACEAE (Gentian Family)

Eustoma exaltatum (L.) Salisbury *ex* G. Don — Prairie Gentian
[Worthington 17452]

GERANIACEAE (Geranium Family)

Erodium texanum Gray — Texas Filaree
[Lieb s.n.]

HYDROPHYLLACEAE (Waterleaf Family)

Nama havardii Gray — Havard's Fiddleaf
[Lieb 1276]
Nama hispidum Gray — Purple Roll-leaf; Sandbells
[Lieb 1076]
Phacelia coerulea Greene — Notched Scorpion-weed
[McGoldrick 55]
Phacelia integrifolia Torr. — Gypsum Scorpion-weed
[Lieb 1130, 1080]

KOEBERLINIACEAE (Crucifixion-thorn Family)

Koeberlinia spinosa Zucc. var. *spinosa* — Crucifixion-thorn; Crown-of-thorns
[Lieb 1296]

KRAMERIACEAE (Ratany Family)

Krameria erecta Willd. *ex* Schultes — Range Ratany
Krameria glandulosa Rose & Painter
[Lieb 823]
Krameria grayi Rose & Painter — White Ratany
[Lieb 994]

LAMIACEAE [LABIATAE] (Mint Family)

Hedeoma drummondii Bentham — Drummond's False-pennyroyal
[Lieb 1131]
Hedeoma nana (Torr.) Briq. — Dwarf False-pennyroyal
[Lieb 840]
**Marrubium vulgare* L. — Horehound
[Lieb 1002]

Salvia reflexa Hornem. Lanceleaf Sage
[Lieb 1346]

LINACEAE (Flax Family)

Linum puberulum (Engelm.) Heller Plains Flax
[Lieb 1120; McGoldrick 73]
Linum rupestre (Gray) Engelm. *ex* Gray Rock Flax
[Lieb 984]

LOASACEAE (Stick Leaf Family)

Cevallia sinuate Lagasca Stinging-serpent; Shirley's Nettle; Stinging Cavallia
[McGoldrick 46]
Mentzelia multiflora (Nutt.) Gray Adonis Blazingstar
[Lieb 1109]
Mentzelia saxicola H. J. Thompson & Zavortink El Paso Blazingstar
[Lieb 1324]

MALPIGHIACEAE (Malpighia Family)

Janusia gracilis Gray Propeller-plant
Note: This species is not yet been vouchered but has been seen a number of times. It grows northeast of the ranch HQ in Bailey Evans Arroyo that drains to the west side of the ranch house.

MALVACEAE (Mallow Family)

Abutilon malacum S. Wats. Yellow Indian-mallow
[Lieb 1239]
Abutilon parvulum Gray Dwarf Indian-mallow
[Worthington 2593; Anderson s.n.]
Hibiscus coulteri Harvey *ex* Gray Desert Rose-mallow
[Anderson s.n.; Worthington 32528]
Hibiscus denudatus Bentham Palefaces
[McGoldrick 27]
Malvella lepprosa (Ortega) Krapov. Alkali Mallow
[Anderson s.n.; Worthington 32103]
Sida abutifolia Miller Spreading Fan-petal
Sida filicaulis Torr. & Gray; *Sida procumbens* Swartz
[McGoldrick 14]
Sphaeralcea angustifolia (Cav.) G. Don Copper Globemallow
[McGoldrick 3]
Sphaeralcea fendleri Gray Fendler's Globemallow
[Lieb 1214]

NYCTAGINACEAE (Four O'Clock Family)

Aclesanthes chenopodioides (Gray) Levin Goosefoot Moonpod
Ammocodon chenopodioides (Gray) Stand.
[Lieb 1033]
Acleisanthes longiflora Gray Angel's Trumpets
[Mcgoldrick 19; Lieb 837; Worthington 11948]
Allionia incarnate L. Trailing Windmills
[Lieb 1017]
Boerhavia anisophylla Torr.
[Worthington 23346]
Boerhavia intermedia M. E. Jones Five-wing Spiderling
[Lieb 1030; McGoldrick 18]
Cyphomeris gypsophiloides (Mart. & Galeotti) Standl. Delicate Darling
[Lieb 1200]
Nyctaginea capitata Choisy Devil's Bouquet
[Lieb 1016]

OLEACEAE (Olive Family)

Forestiera angustifolia Torr. — Texas Swampprivet
[Lieb 1047; Worthington 13569]

Menodora scabra Gray — Rough Menodora
[McGoldrick 52]

ONAGRACEAE (Primrose Family)

Camissonia chamaenerioides (Gray) Raven — Fireweed Suncup
[Lieb 1283]

Gaura mollis James — Velvet-weed
Gaura parviflora Dougl. *ex* Hook.
[Lieb 1218]

Oenothera brachycarpa Gray — Desert Evening-primrose
[Lieb 816, 992; McGoldrick s.n.]

Oenothera primiveris Gray ssp. *primiveris* — Early Evening-primrose
[Lieb 1081]

OROBANCHACEAE (Broomrape Family)

Orobanche cooperi (Gray) Heller ssp. *cooperi* — Desert Broom-rape
[Lieb 825, 1051, 1353]

PAPAVERACEAE (Poppy Family)

Argemone chisosensis Ownbey — Chisos Mountain Pricklypoppy
[Lieb 1126; McGoldrick 72]

PEDALIACEAE (Benne Family)

Proboscidea parviflora (Woot.) Woot. & Standl. — Wooton's Devil's-claw
[McGolderick 41]
Note: Some retain this in the family Martyniaceae.

PLANTAGINACEAE (Plantain Family)

Plantago patagonica Jacquin — Wooly Plantain
[Lieb 1082]

POLEMONIACEAE (Phlox Family)

Giliastrum acerosum (Gray) Rydb. — Spiny Blue-bowls
[*Gilia rigidula* Benth. ssp. *acerosa* (Gray) Wherry]
[Lieb 1360]

Gilia stewartii I. M. Johnst. — Stewart's Gilia
[Lieb 1113, 1284]

Ipomopsis longiflora (Coulter) V. Grant — Blue Trumpets
[Lieb 1029]

POLYGALACEAE (Milkwort Family)

Polygala barbeyana Chodat — Blue Milkwort
Polygala longa Blake
[Lieb 981, 999; Worthington 23344]

Polygala macradenia Gray — Glandular Milkwort
[Lieb 1143]

Polygala scoparioides Chodat — Broom Milkwort
[Lieb 833, 1085]

POLYGONACEAE (Knotwort Family; Buckwheat Family)

Eriogonum abertianum Torr. in Emory — Abert's Wild-buckwheat
[McGoldrick 60]

Eriogonum rotundifolium Bentham — Saucer-leaf Wild-buckwheat
[Lieb 1104]

Eriogonum tenellum Torr. — Tall Wild-buckwheat
[Worthington 23350]

**Polygonum aviculare* L. — Yard Knotweed
[Lieb 1111, 1225; Worthington 23366]

Polygonum pennsylvanicum L. — Pinkweed
[Lieb 926]
Rumex maritimus L. — Golden Dock
[Lieb 1009]

PORTULACACEAE (Purslane Family)

***Portulaca oleracea* L.** — Garden Purslane; Hogweed
[Worthington 17481]
Portulaca pilosa L — Kiss-me-quick
[Worthington 17481]
Portulaca suffrutescens Engelm. — Shrubby Purslane
[McGoldrick 4]
Talinum aurantiacum Engelm. — Orange Fameflower
[Lieb 1299]

RANUNCULACEAE (Crowfoot Family; Buttercup Family)

Clematis drummondii Torr. & Gray — Drummond's Virgin's-bower
[Lieb 1237]

RESEDACEAE (Mignonette Family)

Oligomeris linifolia (Vahl.) J. F. Macbr. — Lineleaf Whitepuffs
[Lieb 1103, 1123]

RHAMNACEAE (Buckthorn Family)

Condalia ericoides (Gray) M.C.Johnst. — Javalena-bush
[Lieb 1119]
Ziziphus obtusifolia (Hook. *ex* Torr. & Gray) Gray — Lotebush
[Worthington 25508]

ROSACEAE (Rose Family)

Fallugia paradoxa (D. Don) Endl. *Ex* Torr. — Apache-plume
[Lieb 828]

RUBIACEAE (Madder Family)

Galium proliferum Gray — Limestone Bedstraw
[Lieb 1132]
Stenaria nigricans (Lamarck) Terrell — Diamond Flower
Hedyotis nigricans (Lamarck) Fosberg
[Worthington 30680]

RUTACEAE (Citrus Family)

Thamnosma texana (Gray) Torr. — Texas Rue
[Lieb 834]

SALICACEAE (Willow Family)

Salix gooddingii Ball — Goodding's Willow
[Lieb 817]

SCROPHULARIACEAE (Figwort Family)

Castilleja integra Gray — Southwestern Indian Paintbrush
[Lieb 815]
Castilleja nervata Eastw. — Trans-Pecos Indian Paintbrush
[Lieb 982; Worthington 32564]
Leucophyllum minus Gray — Big Bend Texas Sage
[Lieb 987]
Veronica perigrina L. var. *xalapensis* (H.B.K.) Pennell — Neckweed
[Lieb 1122]

SOLANACEAE (Potato Family; Nightshade Family)

Chamaesaracha crenata Rydb. — Toothed Five Eyes
[Lieb 977, 1105; McGolderick 16]
Chamaesaracha edwardsiana Averett — Edwards Plateau Five Eyes
[Lieb 821]

Chamaesaracha villosa Rydb. — Trans-Pecos Five Eyes
[Anderson s.n.]
Lycium puberulum Gray — Downy Desert-thorn
[Lieb 1115]
Lycium torreyi Gray — Torrey's Wolfberry
[Lieb 1281; McGoldrick 75]
Nicotiana trigonophylla Dunal — Desert Tobacco
[Lieb 1044]
Quincula lobata (Torr.) Raf. — Chinese Lanterns
Physalis lobata Torr.
[Lieb 1125; McGoldrick 20]
Solanum elaeagnifolium Cav. — Silverleaf Nightshade
[Lieb 1310]
Solanum triquetrum Cav. — Texas Nightshade
[Worthington 25939; Anderson s.n.]

TAMARICACEAE (Tamarisk Family)

***Tamarix chinensis* Loureiro** — Saltcedar
[*Tamarix ramosissima* Ledebour]
[Lieb 1007; Worthington 17453]
Note: Grove along the Rio Grande and introduced to Squaw Creek near Squaw Spring.

ULMACEAE (Elm Family)

Celtis reticulata Torr. — Western Hackberry
[Worthington 23369]

VERBENACEAE (Vervain Family)

Aloysia gratissima (Gillies & Hook.) Troncoso — White Beebush
[Lieb 1216]
Aloysia wrightii (Gray) Heller *ex* Abrams — Wright's Beebush
[Lieb 1328]
Glandularia bipinnatifida (Nutt.) Nutt. var. *ciliata* (Bentham) Turner — Dakota Vervain
Verbena wrightii Gray
[Lieb 1092]
**Phyla nodiflora* (L.) Greene — Turkey-tangle
Phyla incisa Small
[Lieb 1008; Worthington 17460]
Tetraclea coulteri Gray — Coulter's Wrinklefruit
[McGoldrick 23]
Verbena bracteata Lag. & Rod. — Carpet Vervain
[Lieb 1034; Worthington 32560]

VISCACEAE (Mistletoe Family)

Phoradendron serotinum (Raf.) M. C. Johnst. ssp. *tomentosum* (DC.) Kuijt — Christmas Mistletoe
[Lieb 1041]

VITACEAE (Grape Family)

Vitis arizonica Engelm. — Arizona Grape; Canyon Grape
[Lieb 1280]

ZYGOPHYLLACEAE (Caltrop Family)

Kallstroemia grandiflora Torr. *ex* Gray — California Caltrop
[McGoldrick 1]
Larrea tridentata (Sesse & Mocino *ex* DC) Coville var. *tridentata* — Creosote-bush
[Worthington 32557]
**Peganum harmala* L. — African-rue
[Lieb 1023, 1212]
Note: A stand of this toxic plant is established at Double Tank Corral.

LILIOPSIDA (Monocots)

AGAVACEAE (Agave Family)

Agave lechuguilla Torr. Lechuguilla
Note: Although this species is not yet vouchered it is quite abundant on the ranch. Lechuguilla scrub is one of the more common plant communities.

Agave parryi Engelm. var. *neomexicana* (Woot. & Standl.) B. Ullrich New Mexico Agave
Agave neomexicana Woot. & Standl.
[Johnson s.n.]
Note: This species is quite rare on the ranch, but occurs in the canyon W of Double Tank Corral along the road.

Yucca faxoniana Sargent Eve's Needle
[Lieb 1048]

Yucca treculiana Carrierre Torrey's Yucca
Yucca torreyi Shafer
[Lieb 1049, 1046]
Note: Hybrids may occur on the ranch between this and the preceeding species.

COMMELINACEAE (Spiderwort Family)

Commelina erecta L. var. *angustifolia* (Michx.) Fernald White-mouth Dayflower
[McGoldrick 17]

CYPERACEAE (Sedge Family)

Eleocharis microformis S. Buckley
[Worthington 17456]

Eleocharis palustris (L.) Roemer & Schultes Marshy Spike-rush
[Lieb 622; Worthington 32556]
Note: We are indebted to Stanley Jones for the determinations of the above specimens.

JUNCACEAE (Rush Family)

Juncus torreyi Coville Torrey's Rush
[Lieb 852]

LILIACEAE (Lilly Family)

Allium macropetalum Rydb. Arizona Onion
[McGoldrick 56]

NOLINACEAE

Dasylirion leiophyllum Engelm. *ex* Trelease Green Sotol
[Lieb 1297, 1300; Worthington 17468]

Nolina erumpens (Torr.) Wats. Foothill Nolina; Beargrass
[Worthington 17491]

POACEAE (GRAMINEAE) (Grass Family)

Aristida purpurea Nutt. var. *nealleyi* (Vasey) Allred Nealley's Threeawn
[McGoldrick 7, 31, 36; Lieb 1031; Worthington 17467, 17486]
Note: Other varieties of this variable species may be representen in this lot of specimens and from elsewhere on IMRS.

Bothriochloa laguroides (DC.) Herter ssp. *torreyana* (Steudel) Allred & Gould Silver Bluestem
[Worthington 17463]

Bouteloua barbata Lagasca Sixweeks Grama
[McGoldrick 35]

Bouteloua breviseta Vasey Gyp Grama
[McGoldrick 34]

Bouteloua eriopoda (Torr.) Torr. Black Grama
[*McGoldrick 30*]

Bouteloua gracilis (Willd. *ex* Kunth) Lagasca *ex* Griffiths Blue Grama
[McGoldrick 9]

Bouteloua trifida Thurb. *ex* S. Wats. Red Grama
[Worthington 32534]

*_Chloris virgata_ Swartz — Showy Windmillgrass
[Lieb 1020; McGoldrick 39]

*_Cynodon dactylon_ (L.) Persoon — Bermudagrass
[Lieb 1343; Worthington 17472]

Dasyochloa pulchella (Kunth) Willd. _ex_ Rydb. — Fluffgrass
Erioneuron pulchellum (Willd. _ex_ Rydb.) Tateoka.; _Tridens pulchellus_ (Willd. _ex_ Rydb.) Hitchc.
[McGoldrick 40]

Digitaria californica (Bentham) Henrard — Arizona Cottontop
Trichachne californica (Bentham) Chase
[McGoldrick 29A]

*_Echinochloa colona_ (L.) Link — Jungle-rice
[Worthington 17496]

*_Echinochloa crus-galli_ (L.) Beauvois — Large Barnyardgrass
[Lieb 1025]

*_Eragrostis cilianensis_ (Allioni) Latati _ex_ Janchen — Stinkgrass
[Lieb 1026]

Erioneuron pilosum (Buckley) Nash — Hairy Tridens
[Lieb 820]

Heteropogon contortus (L.) Beauv. _ex_ Roem. & Schult. — Tanglehead
[Lieb 924]

Leptochloa dubia (Kunth) Nees — Green Sprangletop
[Lieb 1347; Worthington 17471]

Leptochloa fusca (L.) Kunth ssp. _fascicularis_ (Lam.) N. Snow — Bearded Sprangletop
Leptochloa fascicularis (Lam.) Gray
[Lieb 1024]

Muhlenbergia arenacea (Buckley) A. S. Hitchc. — Ear Muhly
[Lieb 1187]

Muhlenbergia fragilis Swallen — Delicate Muhly
[Worthington 25937]

*_Panicum antidotale_ Retzius — Blue Panicum
[McGoldrick 2]

Panicum hallii Vasey var. _hallii_ — Hall's Panicum
[Worthington 32539]

Panicum hirticaule Presl. var. _hirticaule_ — Mexican Witchgrass
[McGoldrick 28]

Panicum obtusum Kunth — Vine Mesquite
[Lieb 1019]

*_Pennisetum ciliare_ (L.) Link — Buffelgrass
Cenchrus ciliaris L.
[McGoldrick 6]
Note: This exotic species is establisherd around the HQ buildings, especially in the old corral near the new multipurpose buiding.

*_Polypogon viridis_ (Gouan) Breistroffer — Water Polypogon
Agrostis semiverticillata (Forsskal) Christensen
[Lieb 813]

Scleropogon brevifolius Philippi — Burrograss
[McGoldrick 10]

Setaria leucopila (Scrib. & Merr.) Schum. — Plains Bristlegrass
[McGoldrick 33]

Sporobolus airoides (Torr.) Torr. — Alkali Sacaton
[Worthington 17474]

Sporobolus contractus A. S. Hitchc. — Spike Dropseed
[Worthington 17489]

Sporobolus cryptandrus (Torr.) Gray — Sand Dropseed
[Worthington 17487; McGoldrick 29B]

Sporobolus flexuosus (Thurber *ex* Vasey) Rydb. Mesa Dropseed
[McGoldrick 38]
Tridens albescens (Vasey) Woot. & Standl. White Tridens
[Worthington 17497]
Tridens muticus (Torr.) Nash var. *muticus* Slim Tridens
[Lieb 1342; McGoldrick 37]

POTAMOGETONACEAE (Pondweed Family)

Stackenia pectinata (L.) Borner Sago Pondweed
Potamogeton pectinatus L.
[Lieb 1227]
Note: We thank C. B. Hellquist for this determination.

TYPHACEAE (Cattail Family)

Typha domingensis Persoon Southern Cattail
[Worthington 17458]
Note: Common around Squaw Spring.

PROTOZOANS

Phylum PROTOZOA

Subphylum: SPOROZOA

Order: COCCIDIA

[The Eimerida]

Eimeria sexlineata
[Carranza, 1997]
Note: This coccidian is reported to infect *Aspidoscelis inornata* at IMRS.

FLATWORMS

Phylum: PLATYHELMINTHES

Class: TREMATODA (Tapeworms)

ANOPLOCEPHALIDAE

Oocharistica sp.
Note: Reported by Carranza (1997) to infect *Aspidoscelis inornata, A. exsanguis* and *A. tessellata* at IMRS.

ROUNDWORMS

Phylum: NEMATODA

OXYURIDAE

Pharyngodon warneri

Note: Reported by Carranza (1997) to infect *Aspidoscelis exsanguis* and *A. inronata* at IMRS.

Pharyngodon cnemidophori

Note: Mata-Silva et al. (2008) reported one individual from an *Aspidoscelis mormorata* at IMRS.

PHYSALOPTERIDAE

Abbreviata terrapenis

Note: Reported by Carranza (1995) to infect *Aspidoscelis inornata, A. exsanguis* and *A. tessellata* and by Mata-Silva et al. (2008) to infect *Aspidoscelis marmorata* and *A. tesselata* on IMRS.

ROTIFERS

Phylum: ROTIFERA

Class: MONOGONONTA

Contributed by Elizabeth Walsh

[Not assigned to family]

Brachionus angularis

Localities: Road Tank

Brachionus quadridentatus

Localities: Road Tank

Cephalodella sp.

Localities: Road Tank

Encentrum sp.

Localities: Squaw Spring

Euchlanis dilatata

Localities: Road Tank

Hexarthea sp.

Localities: Squaw Spring

Note: This represents perhaps three undescribed species

Lucane luna

Localities: Road Tank

Lucane quadridentata

Localities: Road Tank

Polyarthra vulgaris

Localities: Road Tank; Squaw Spring

Proales sp.

Localities: Squaw Spring

Trichocerca similes

Localities: Road Tank

ANNELIDS

Phylum: ANNELIDA

Class: HIRUDINEA (Leeches)

ERPOBDELLIDAE

Erpobdella punctata (Leidy, 1870)

Record: Pirtle Tank, [Lieb (UTEP)]

Note: We thank Donald J. Klemm for this determination.

MOLLUSKS

Phylum: MOLLUSCA

Compiled by Richard D. Worthington

Order: BASOMMATOPHORA

PHYSIDAE

Physella virgata (Gould, 1855)

Record: Squaw Spring [Worthington (UTEP)].

PLANORBIDAE

Planorbella tenuis (Dunker)

Records: Double Tank Corral [Worthington (UTEP)]; Red Tank [Worthington (UTEP)].

Order: STYLOMMATOPHORA

BULIMULIDAE

Rabdotus alternatus (Say, 1830)

[Lieb (UTEP)]

HELICODISCIDAE

Helicodiscus singleyanus (Pilsbry, 1889) (Smooth Coil)

Record: In drift near Double Tank Corral [Worthington (UTEP)].

HUMBOLDTIANIDAE

****Humboldtiana sp.*

Note: Underwood and Wilson (1974) report fossil shells from early Oligocene volcanic tuff from a site on or very near the ranch.

PUPILLIDAE

Gastrocopta ashmun (Sterki, 1898) (Sluice Snaggletooth)

Record: From drift near Double Tank Corral [Worthington (UTEP)]

SUCCINEIDAE

Succineecorde:Ragrosvenori Lea, 1864 (Santa Rita Ambersnail)

Record: Limestone talus at upper wall of Echo Canyon [Worthington (UTEP)].

Note: The identification is tentative as living material is required for positive identification.

Succinea luteola Gould, 1848 Mexico Ambersnail
Record: Double Tank Corral [Worthington (UTEP)].

UROCOPTIDAE

Holospira pasonis Dall, 1895
Record: Base of rimrock on Flat Top Mountain [Worthington (UTEP)].
Metastoma roemeri roemeri (Pfeifer, 1848)
Record: Base of limestone cliffs at Squaw Spring and upper Echo Canyon [Worthington (UTEP)].

ZONITIDAE

Hawaiia minuscule (Binney, 1841) (Minute Gem)
Record: From drift near Double Tank Corral [Worthington (UTEP)].

ARTHROPODS

Phylum: ARTHROPODA

Note: Lenhart et al. (2010) identified arthropods and other animals eaten by Pallid Bats, *Antrozous pallidus*, on IMRS.

Subphylum: CHELICERATA

Order: SCORPIONES (Scorpions)

BUTHIDAE (Buthid Scorpions)

Centruroides vittatus (Say) Striped Centuroides
[Maldonado st al., 2006; Gardea and Hill, 1996; Grimsley et al., 1991].
[Mata-Silva (UTEP); Johnson (UTEP)].

VAEJOVIDAE (Vaejovid Scorpions)

Paruroctonus gracilior (Hoffman)
[Maldonado et al., 2006; Grimsley et al., 1991].
Uroctonus apacheanus Gertsch and Soleglad
[Maldonado et al., 2006; Gardea and Hill, 1996; Grimsley et al, 1991].
Vaejovis coahuilae Williams
[Maldonado et al., 2006; Gardea and Hill, 1996; Grimsley et al,, 1991];
[Mata-Silva (UTEP)].
Vaejovis crassimanus Pocock
[Mata-Silva (UTEP)].
Vaejovis intermedius (Borelli)
[Maldonado et al., 2006; Gardea and Hill, 1996; Grimsley et al., 1991].
Record: talus N of Peccary Tank [Lieb (UTEP)].
Note: We thank Mark Zillig for this determination.
Vaejovis russelli Williams
[Maldonado et al., 2006; Grimsley et al., 1991].
Vaejovis springerus (Wood) Striped-tailed Scorpion
[Maldonado et al., 2006; Grimsley et al, 1991].

Note: Grimsley visited the station and collected most of the above species in 1991. The scorpions collected by Gardea and Hill and Mata-Silva were identified by D. Sissom. Maldonado et al. (2006) produced a photographic atlas depicting all species but *V. crassimanus*.

Order: AMBLYPYGI (Whip Spiders)

PHRYNIDAE

Phrynus operculatus Pocock — Tailless Whip Spider
[Maldonado et al., 2006]. [Johnson and Riveroll (UTEP)]
det. P. A. Lenhart.
Note: These interesting spiders were found near IMRS HQ in pit-fall traps.

Order: UROPYGI (Vinegaroons)

THELYPHONIDAE

Mastigoproctus giganteus (Lucas, 1835) — Giant Vinegaroon
[Maldonado et al., 2006)
Note: The species is occasional on IMRS (UTEP).

Order: ARANEAE (Spiders)

ARANEIDAE

Neoscona oaxacensis (Keyserling) — Orb Weaver
[Maldonado et al., 2006].
[Worthington (UTEP)].

FILISTATIDAE

Kukulcania hibernalis — Southern House Spider
[Maldonado et al, 2006].
[Worthington (UTEP)].

GNAPHOSIDAE (Ground Spiders)

[Maldonado et al., 2006].

HETEROPODIDAE (Crab Spiders)

Olios sp.
[Maldonado et al., 2006].

LYCOSIDAE (WOLF SPIDERS)

Geolycosa sp. — Burrowing Wolf Spider
[Maldonado et al., 2006).

Pardosa sp. — Thin-Legged Wolf Spider
[Maldonado et al., 2006).
[Worthington (UTEP)].

PHOLCIDAE (Daddy-Longleg Spiders)

Polcus sp. — Daddy-Longleg Spider
[Maldonado et al., 2006).

SALTICIDAE (Jumping Spiders)

Metacyrba taeniola
[Maldonado et al., 2006].

SELENOPIDAE

Selenops actophilus
[Maldonado et al., 2006].

SICARIIDAE (Recluse Spiders)

Loxosceles blanda (Gertsch & Ennick) — Big Bend Recluse
[Maldonado et al., 2006; as L. sp.]
Note: Our material is at New Mexico State Univ. for verification.
The species is commonly encountered in pit-fall traps; it is venomous.

TETRAGNATHIDAE (Longjawed Orbweavers)

Tetragnatha laboriosa Hentz — Silver Longjawed Orbweaver
[Maldonado et al., 2006].
[Worthington (UTEP)].

Tetragnatha nitens (Aud. In Savigey)
[Maldonado et al., 2006].
[Worthington (UTEP)].

Tetragnatha sp.
[*Lieb* (UTEP)].

THERAPHOSIDAE (Tarantulas)

Aphonopelma sp.
[Maldonado et al., 2006].

THERIDIIDAE (Cobweb Weavers)

Latrodectus hesperus Chamberlin & Ivie — Western Black Widow
[Maldonado et al., 2006].
[Worthington (UTEP)].

Steatoda sp. — Cobweb Spider
[Maldonado et al., 2006].

THOMISIDAE (Crab Spiders)

Misumenops sp.
[Maldonado et al., 2006].
[Worthington (UTEP)].

Xysticus sp.
[Maldonado et al., 2006].

Note: We express our thanks to David Richman (NMSU) for the above identifications.

Order: OPILIONES (Harvestmen)

SCLEROSOMATIDAE

Eurybunus sp. (undescribed)
[Maldonado et al., 2006].
[Mackay et al., 1992].

Trachyrhinus marmoratus Banks — Desert Harvestman
[Maldonado et al., 2006].
[MacKay et al., 1992].

Order: PSEUDOSCORPIONES (Pseudoscorpions)

Note: We have one collection awaiting determination.

Order: SOLIFUGAE (Windscorpions; Sun Spiders)

EREMOBATIDAE

Eremobates sp. — Windscorpion
[Maldonado et al., 2006].
Note: Two families and 26 species are reported from Texas. One large species that is likely *Eremobates* is frequently seen at night foraging around IMRS HQ. We have collections awaiting determination.

Order: ACARI (Mites)

ERYTHRAEIDAE

Leptus sp.

[Maldonado et al., 2006; Mackay et al., 1992].

Note: This mite is parasitic on the desert harvestmen, *Trachyrhinus marmoratus*.

TROMBIDIOIDEA (Velvet Mites)

Dinothrobium sp.

[Maldonado et al., 2006].

[Lenhart (UTEP)].

Note: Collections are not yet determined to species.

AGRASIDAE (Soft Ticks)

[Lenhart (UTEP)].

Note: Collections are not yet determined. These ticks are parasitic on mammals, including the rock pocket mouse, *Chaetodipus intermedius*.

Subphylum: DIANTENNATA

Class: CRUSTACEA (Crustaceans)

Subclass: BRANCHIOPODA

Note: We thank D. Christopher Rogers for the identifications of our Anostraca andNotostraca.

Order: ANOSTRACA (Fairy Shrimp)

STREPTOCEPHALIDAE

Streptocephalus mackini Moore

Records: Red Tank [Worthington (UTEP)].

Order: NOTOSTRACA (Tadpole Shrimp)

APODIDAE

Triops cf. longicaudatus (LeConte)

Records: Red Tank [Worthington (UTEP)].

Order: CLADOCERA (Water Fleas)

DAPHNIDAE

Ceriodaphnia reticulate (Jurine)

Note: Reported by Elizabeth Walsh.

Simocelphalus sp.

Note: Reported by Elizabeth Walsh.

Subclass: OSTRACODA

Note: Ostracods are in the waters coming from Squaw Spring but no attempt has been made to identify them.

Subclass: COPEPODA

Subclass: MALACOSTRACA

Subphylum: TRACHEATA

Class: MYRIAPODA

Subclass: CHILOPODA (Centipedes)

SCUTIGERIDAE

Scutigera coleopterata House Centepede
[Maldonado et al, 2006].

SCOLOPENDRIDAE

Arthrorhabdus pygmaeus Pocock
[Maldonado et al, 2006; Maldonado, 1998].

Scolopendra heros Girard
[Maldonado et al., 2006; Maldonado, 1998].
Note: Collections from IMRS belong to subspecies *arizonensis* (Maldonado, 1998). A photographic voucher is in Maldonado's thesis. Johnson, Johnson, and Riveroll, Jr. (2007), described a *S. heros* eating a Ground Snake, *Sonora semiannulata*.

Scolopendra polymorpha Wood
[Maldonado et al., 2006; Maldonado, 1998].
Note: A photographic voucher is in Maldonado's thesis.

Note: Maldonado (1998) collected the above three species at IMRS, but the disposition of the vouchers are unknown to us.

Subclass: DIPLOPODA (Millipedes)

SPIROSTREPTIDAE

Orthoporus ornatus (Girard) Desert Millipede
[Maldonado et al., 2006].
[Lieb (UTEP)].
Note: This large brown millipede is common throughout the region and seen crawling on the ground after rains.

Class: INSECTA (Insects)

Compiled primarily by Richard D. Worthington, Paul A. Lenhart, and entomologists that participated in the Texas A&M University (TAMU) Entoblitz 2002 field trip to IMRS, 12-13 April 2002. Entomologist from all over Texas participated. Voucher specimens for species cited below are assumed to be in the TAMU entomology Collection, but exact localities on IMRS where they were found are not given.

Order: COLEOPTERA (Beetles)

ANOBIIDAE

Gastrallus fasciatus White
E. G. Riley, TAMU Entoblitz 2002.

Tricorynus estriatus (Horn)
E. G. Riley, TAMU Entoblitz 2002.
Tricorynus sp.
E. G. Riley, TAMU Entoblitz 2002.

ANTHICIDAE (Antlike flower Beetle family)

Neoeurygenius sp.
E. G. Riley, TAMU Entoblitz 2002.
Notoxus calcaratus Horn
[Lenhart (UTEP)].
Vacusus confinis (LeConte)
E. G. Riley, TAMU Entoblitz 2002.

BOSTRICHIDAE (Horned Powder-post Beetle Family)

Note: Collections from IMRS are not yet identified.

BUPRESTIDAE (Metallic Wood-boring Beetle Family)

Acmaeodera mixta lEc.
[Worthington (UTEP)].
Acmaeodera quadrivittatoides Nelson & Westcott
[Worthington (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.
Agrilus pulchellus Bland
E. G. Riley, TAMU Entoblitz 2002.
Chrysoborthris exesa LeConte
E. G. Riley, TAMU Entoblitz 2002.
Chrysoborthris lateralis Waterhouse
E. G. Riley, TAMU Entoblitz 2002.
Chrysobothris merkelii Horn
E. G. Riley, TAMU Entoblitz 2002.
Gyascutus caelatus LeConte
[Lenhart (UTEP)].
Lampetis drummondi (Laporte & Gory)
[McClure (UTEP)].
Thrincopyge alacris LeConte
E. G. Riley, TAMU Entoblitz 2002.

Note: We thank S. G. Wellso and E. G. Riley for determinations of Buprestidae.

BRACHYPSECTRIDAE (Texas Beetle Family)

Brachypsectra fulva LeConte
[Lenhart (UTEP)].
Note: Very rare beetle. The predaceous larvae have been found under yucca logs. Adults can be attracted to UV lights.

CANTHARIDAE (Soldier Beetle Family)

Cantharis sp.
[Herrera (UTEP)].
Cauliognathus basalis LeC.
[McClure (UTEP); Worthington (UTEP)].

CARABIDAE (Ground Beetle Family)

Agonum extensicolle (Say)
[Lenhart (UTEP)].
Bembidion sp. (2X spp.)
E. G. Riley, TAMU Entoblitz 2002.
Brachinus sp.
[Lenhart (UTEP)].
Bradycellus sp.
E. G. Riley, TAMU Entoblitz 2002.
Calosoma peregrinator Guerin-Meneville
[Lenhart (UTEP)].

Cicindella lemniscata LeConte
[Lenhart (UTEP)].
Cicindella oscellata Kluge
[Worthington (UTEP)].
Cicendela sedecimpunctata Kluge
[Perez (UTEP); Herrera (UTEP); McClure (UTEP); Worthington (UTEP)].
Discoderus impotens (LeConte)
E. G. Riley, TAMU Entoblitz 2002.
Elaphropus sp.
E. G. Riley, TAMU Entoblitz 2002.
Megacephala Carolina L.
[Leaton (UTEP); McClure (UTEP)].
Chaenius sp.
[Lenhart (UTEP)].
Helluomorphoides sp.
[Lenhart (UTEP)].
Lebia sp.
[Lenhart (UTEP)].
Panagaeus sallei Chaudoir
[Lenhart (UTEP)].
Note: Additional collections are not yet determined to species.

CERAMBYCIDAE (Long-horned Beetle Family)

Crossidius coralinus (LeConte)
[Worthington (UTEP)].
Derobrachus geminatus LeConte
[V. Mata-Silva (UTEP)].
Haplidus laticeps Knull
E. G. Riley, TAMU Entoblitz 2002.
Monielema armatum Bland
[McClure (UTEP); V. Mata-Silva (UTEP)].
Oncideres rhodostricta Bates
[Lenhart (UTEP)].
Taranomis bivittata (Dupont)
[Perez (UTEP); Lieb (UTEP); Leaton (UTEP)].
Tragidion sp.
[Lenhart (UTEP)].
Note: Mimic of tarantula hawk wasp, *Pepsis* sp.
Additional species remain to be identified.

CHRYSOMELIDAE (Leaf Beetles)

Acanthoscelides sp. (2X sp.)
E. G. Riley, TAMU Entoblitz 2002.
Algarobius prosopis (LeConte)
E. G. Riley, TAMU Entoblitz 2002.
Calligrapha sp.
[Lenhart (UTEP)].
Chaetocnema sp.
[Worthington (UTEP)].
Chaetocnema ectypa Horn
E. G. Riley, TAMU Entoblitz 2002.
Diabrotica sp.
[Lenhart (UTEP)].
Disonycha sp.
[Lenhart (UTEP)].
Epitrix hirtipennis (Melsheimer)
E. G. Riley, TAMU Entoblitz 2002.

Glyptina sp.
E. G. Riley, TAMU Entoblitz 2002.
Monoxia sp.
E. G. Riley, TAMU Entoblitz 2002.
Pachybrachis sp. (3X sp.)
E. G. Riley, TAMU Entoblitz 2002.
Pachybrachis haematodes Suffrian
E. G. Riley, TAMU Entoblitz 2002.
Pachybrachis subvittatus (LeConte)
E. G. Riley, TAMU Entoblitz 2002.
Paranapiacaba tricinera (Say)
[Worthington (UTEP); Herrera (UTEP)].
Phyllotreta sp.
E. G. Riley, TAMU Entoblitz 2002.
Pteleon brevicornis (Jacoby)
[Lieb (UTEP)].
Stator sp.
E. G. Riley, TAMU Entoblitz 2002.
Note: We thank E. G. Riley for help with the above determinations.

CLERIDAE (Checkered Beetle Family)

Cymatodera sp. (2X sp.)
[Lenhart (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.
Cymbatodera dietrichi W. Barr
E. G. Riley, TAMU Entoblitz 2002.
Phyllobaenus sp.
E. G. Riley, TAMU Entoblitz 2002.
Phyllobaenus mexicanus Wolcott
E. G. Riley, TAMU Entoblitz 2002.

COCCINELLIDAE (Ladybird Beetle Family)

Anovia virginalis (Wickham)
E. G. Riley, TAMU Entoblitz 2002.
Chilocoris cacti (Linnaeus)
[Worthington (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.
Coleomegilla maculate DeG.
[Worthington (UTEP)].
Hippodamia convergens Guerin-Méneville
[Worthington (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.
Hyperaspidius sp.
E. G. Riley, TAMU Entoblitz 2002.
Hyperaspis sp.
E. G. Riley, TAMU Entoblitz 2002.
Olla v-nigra (Mulsant)
[Worthington (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.
Rhizobius lophanthae (Blaisdell).
E. G. Riley, TAMU Entoblitz 2002.
Scymnus sp.
E. G. Riley, TAMU Entoblitz 2002.
Selvadius sp.
E. G. Wiley, TAMU Entoblitz 2002.
Stethorus sp.
E. G. Wiley, TAMU Entoblitz 2002.

COLYDIIDAE

Bitoma gracilis Sharp
E. G. Riley, TAMU Entoblitz 2002.

CRYPTOPHAGIDAE

Anchicera sp.
E. G. Riley, TAMU Entoblitz 2002.
Cryptophagus sp.
E. G. Riley, TAMU Entoblitz 2002.

CURCULIONIDAE (Snout Beetle and Weevil Family)

Cleonidius quadrilineatus (Chevrolat)
[Worthington (UTEP)].
Gerstaeckeria sp.
[Lenhart (UTEP)].
Ophyrastes sp. (2X sp.)
[Lenhart (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.
Pandeleteinus elytroplanatus A. Howden
E. G. Riley, TAMU Entoblitz 2002.
Peltohorus polymitus suffuses (Casey)
E. G. Riley, TAMU Entoblitz 2002.
Sibinia sp.
E. G. Riley, TAMU Entoblitz 2002.
Yuccaborus frontalis (LeConte)
E. G. Riley, TAMU Entoblitz 2002.
Note: Additional spcies remain to be identified.

DERMESTIDE (Carpet Beetle Family)

Cryptorhopalum sp.
E. G. Riley, TAMU Entoblitz 2002.
Novelsis sp.
E. G. Riley, TAMU Entoblitz 2002.
Dermestes marmoratus Say
[Lenhart (UTEP)].
Note: Found on carrion.

DYTISCIDAE (Predaceous Diving Beetle Family)

Arabus semivitatus LeConte
E. G. Riley, TAMU Entoblitz 2002.
Bidessus sp.
[Davis, 2003].
Deronectus sp.
[Davis, 2003].
Eretes sticticus L.
[Davis, 2003].
[Perez (UTEP)].
Laccophilus fasciatus terminalis Sharp
E. G. Riley, TAMU Entoblitz 2002.
Laccophilus horni Van den Branden
E. G. Riley, TAMU Entoblitz 2002.
Laccophilus pictus coccinelloides Regimbart
E. G. Riley, TAMU Entoblitz 2002.
Neoclypeodytes sp.
E. G. Riley, TAMU Entoblitz 2002.
Neoclypeodytes cinctellus (LeConte)
E. G. Riley, TAMU Entoblitz 2002.
Rhantus gutticollis (Say)
E. G. Riley, TAMU Entoblitz 2002.
Thermonectus marmoratus (Hope)
[Davis, 2003]. E. G. Riley, TAMU Entoblitz 2002.
[Herrera (UTEP); Worthington (UTEP)].
Uvarus sp.
E. G. Riley, TAMU Entoblitz 2002.

ELATERIDAE (Click Beetle Family)

Paradonis sp.

[Lenhart (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.

Note: Some collections are not yet determined.

ENDOMYCHIDAE

Holoparamecus sp.

E. G. Riley, TAMU Entoblitz 2002.

HALIPLIDAE

Peltodytes dirspersus Roberts

E. G. Riley, TAMU Entoblitz 2002.

GEOTRUPIDE (Earth-Boring Dung Beetle Family)

[Lenhart (UTEP)].

Note: Collections are not yet determined.

GYRINIDAE (Whirligig Beetle Family)

Dineutes sp.

[Lenhart (UTEP].

Gyrinus sp.

[Lenhart (UTEP)].

HALIPLIDAE (Crawling Water Beetle Family)

Peltodytes disperses

[Davis, 2003].

HETEROCERIDAE (Variegated Mud-Loving Beetle Family)

Heterocerus sp.

[Lenhart (UTEP)].

HISPIDAE (Clown Beetle Family)

Hololepta sp.

[Lenhart (UTEP)].

Note: Found on carrion. Additional collections are not yet determined.

HYBOSORIDAE (Scavenger Scarab Beetle Family)

Hybosorus illigera Reiche

[Worthington (UTEP)].

HYDROPHILIDAE (Water Scavenger Beetle Family)

Berosus sp. (3X sp.)

[Davis, 2003]. E. G. Riley, TAMU Entoblitz 2002.

Berosus blechrus Leech

E. G. Riley, TAMU Entoblitz 2002.

Berosus hoplites (Sharp)

E. G. Riley, TAMU Entoblitz 2002.

Berosus miles LeConte

E. G. Riley, TAMU Entoblitz 2002.

Chaetarthria sp.

E. G. Riley, TAMU Entoblitz 2002.

Helochares sp.

E. G. Riley, TAMU Entoblitz 2002.

Paracymus sp.

E. G. Riley, TAMU Entoblitz 2002.

Hydrophilus triangularis Say

[Lenhart (UTEP)].

Tropisternus ellipticus (LeCone)

E. G. Riley, TAMU Entoblitz 2002.

Tropisternus lateralis numbatus (Say)

E. G. Riley, TAMU Entoblitz 2002.

Note: Additional collections are not yet determined.

LAEMOPHLOEIDAE

Cryptolestes sp.
E. G. Riley, TAMU Entoblitz 2002.

LAMPYRIDAE (Firefly Beetle Family)

Lucidota punctata LeConte
[Worthington (UTEP)].

Pleotomus nigripennis LeConte
[Lenhart (UTEP)].

LATRIDIIDAE

Melanophthalma sp.
E. G. Riley, TAMU Entoblitz 2002.

LYCIDAE (Net-winged Beetle Family)

Note: Our collections are not yet determined.

MELOIDAE (Blister Beetle Family)

Epicauta corvine LeConte
[McClure (UTEP); Hollebeke (UTEP)].

Lytta sp.
[Lenhart (UTEP)].

cf. *Pleurospasta* sp.
[Worthington (UTEP)]

Nemognatha nigripennis LeConte
E. G. Riley, TAMU Entoblitz 2002.

Note: Additional collections are not determined.

MELYRIDAE (Soft-winged Flower Beetle Family)

Attalus sp. (2X sp.)
E. G. Riley, TAMU Entoblitz 2002.

Attalus rufiventris Horn
E. G. Riley, TAMU Entoblitz 2002.

Attalus serraticornis Fall
E. G. Riley, TAMU Entoblitz 2002.

Attalusinus sp.
E. G. Riley, TAMU Entoblitz 2002.

Callops sp. (2X sp.)
[Worthington (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.

Cradytes sp.
E. G. Riley, TAMU Entoblitz 2002.

Dasytes sp.
E. G. Riley, TAMU Entoblitz 2002.

Radalus lecontei Casey
E. G. Riley, TAMU Entoblitz 2002.

MONOMMATIDAE

Hyporhagus sp.
E. G. Riley, TAMU Entoblitz 2002.

MORDELLIDAE (Tumbling Flower Beetle Family)

Note: Our collections are not yet determined.

MYCERIDAE

Mycterus canescens Horn

NITIDULIDAE (Sap-Feeding Beetle Family)

Carpohilus sp.
E. G. Riley, TAMU Entoblitz 2002.

Conotelus sp.
E. G. Riley, TAMU Entoblitz 2002.

Cybocephalus sp.
E. G. Riley, TAMU Entoblitz 2002.
Note: Additional collections are not yet determined.
Commonly found in *Opuntia* flowers.

OEDEMERIDAE (False Blister Beetle Family)
Note: Our collections are not yet determined.

PHENGODIDAE (Glowworm Beetle Family)
Phengodes sp.
[Lenhart (UTEP)].
Note: The orange and black stripped larvaeform females are specialist predators on Millipedes. Males are rare and possess reduced elytra, plumose antennae, and sickle-shaped mandibles. Additional collections are not yet determined.

RHIPIPHORIDAE
Rhipiphorus sp.
E. G. Riley, TAMU Entoblitz 2002.

SALPINGIDAE
Elacatis sp.
E. G. Riley, TAMU Entoblitz 2002.

SCARABAEIDAE (Lamellicorn Beetle Family)
Ataenius sp.
E. G. Riley, TAMU Entoblitz 2002.

Subfamily: AMPHODIINAE (Amphodiine Dung Beetles)
[Lenhart (UTEP)].
Note: Collections are not yet determined.

Subfamily: CETONIINAE (Flower Chafers)
Cotinus mutabilis Gory & Percheron
[Herrera (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.
Euphoria sp.
[Lenhart (UTEP)].

Subfamily: DYNASTINAE (Rhinocerus Beetles)
Oxygrylius ruginasus (LeConte)
[Worthington (UTEP)].

Subfamily: MELOLONTHINAE (May Beetles)
Diplotaxus sp. (2X sp.)
[Worthington (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.
Phyllophaga ignava (Horn)
[Worthington (UTEP)].

Subfamily: SCARABAEINAE (Dung Beetles)
Canthon sp.
[Lenhart (UTEP)].
Onthophagus gazelle (Fabricius)
[Lenhart (UTEP)]
Note: We thank E. G. Riley for making determinations.

SCRAPTIIDAE
Canifa sp.
E. G. Riley, TAMU Entoblitz 2002.
Naucles sp.
E. G. Riley, TAMU Entoblitz 2002.
Pentaria sp.
E. G. Riley, TAMU Entoblitz 2002.
Scraptia sp.
E. G. Riley, TAMU Entoblitz 2002.

SILPHIDAE (Carrion Beetle Family)

Nicrophorus marginatus Fabricius
[Lenhart (UTEP)].
Note: The partial remains of this beetle were found in a pit-fall trap at IMRS HQ.

STAPHYLINIDAE (Rover Beetle Family)

Note: Collections are not yet determined.

TENEBRIONIDAE (Darkling Beetle Family)

Agroporis rufipes Champion
[Lenhart (UTEP)].
Blapstinus sp.
E. G. Riley, TAMU Entoblitz 2002.
Centrioptera texana Blaisdell
[Lieb (UTEP)].
Cynaeus angustus (LeConte)
E. G. Riley, TAMU Entoblitz 2002.

Eleodes sp.
[Lenhart (UTEP)].
Eleodes spinipes macrurus Champion
E. G. Riley, TAMU Entoblitz 2002.
Embaphion contestum LeConte
[Lenhart (UTEP)].

Glyptoasida sordida (LeConte)
[Lenhart (UTEP)].
Hymenorus sp.
E. G. Riley, TAMU Entoblitz 2002.
Megasida obliterate (Champion)
[Lenhart (UTEP)]. E. G. Riley, TAMU Entoblitz 2002.
Triophus laevis LeConte
[V. Mata-Silva (UTEP)].
Triorophus nodiceps LeConte
E. G. Riley, TAMU Entoblitz 2002.
Note: Additional collections are not yet determined.

TROGIDAE (Hide Beetle Family)

Omorgus suberosus (F.)
[Herrera (UTEP)].
Note: Found on carrion.

TROGOSSITIDAE (Bark-Gnawing Beeting Family)

Note: Collections are not yet determined.

Order: DERMAPTERA (Earwigs)

ANISOLABIDIDAE

Euborellia annulipes (Lucas)
[Lenhart (UTEP)].

LABIDURIDAE (Striped Earwig Family)

Labidura reparia (Pallas)
[Perez (UTEP)]. Det. Lenhart (UTEP).

LABIIDAE (Little Earwig Family)

Spongovostox apicidentatus (Caudell)
[Lenhart (UTEP)].

Order: DICTYOPTERA (Mantids and Cockroaches)

Suborder: MANTODEA

MANTIDAE (Mantids)

Litaneutria sp.
[Lenhart (UTEP)].

Stagmomantis californica Rehn & Hebard
[McClure (UTEP)].

Suborder: BLATTARIA

BLATELLIDAE

Blatella sp.
[Lenhart (UTEP)].

POLYPHAGIDAE (Sand Cockroaches)

Arenivaga sp. Desert Cockroach
[Lenhart (UTEP)].
Note: Our collections are not yet determined to species.

Eremoblatta sp.
[Lenhart (UTEP)].
Note: Males in this family are winged and attracted to lights at night. Females are wingless and burrow in sandy areas. Our collections are not yet determined to species.

Order: DIPTERA (Flies)

ASILIDAE (Robber Fly Family)

Efferia argyrosoma (Hine)
[Worthington (UTEP)].

Efferia kelloggi Wilcox
[Worthington (UTEP)].

Efferia luna Wilcox
[Worthington (UTEP)].

Efferia tuberculata (Coquillet)
[Worthington (UTEP)].
Note: We are indebted to Gregg Forbes for the above determinations.

Mallophora sp.
[Lenhart (UTEP)].

Ospriocerus sp.
[Lenhart (UTEP)].

Proctacanthella exquisite
[Lenhart (UTEP)].
Note: We thank Eric Fisher for this determination.

BIBIONIDAE (March Fly Family)
[Lenhart (UTEP)].
Note: Our collections are not yet determined.

BOMBYLLIDAE (Bee Fly Family)
[Lenhart (UTEP)].
Note: Our collections are not yet determined.

CALLIPHORIDAE (Blow Fly Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

CHIRONOMIDAE (Midge Family)

Chironomus sp.

[Davis, 2003].

Pentaneura sp.

[Davis, 2003].

CULICIDAE (Mosquito Family)

Anopholes sp.

[Davis, 2003].

Chaoborus sp.

[Davis, 2003].

Culista inornata (Williston)

[Davis, 2003].

Uranotaenia sp.

[Davis, 2003]

DOLICHOPIDIDAE (Longlegged Fly Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

DROSOPHILIDAE (Fruit Fly Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

MUSCIDAE (House Fly Family)

Musca domestica Linnaeus House Fly

[Lenhart (UTEP)].

Stomoxyz calcitrans (Linnaeus) Stable Fly

[Lenhart (UTEP)]

Note: additional collections are not yet determined.

MYDIDAE (Mydas Fly Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

NERIIDAE (Cactus Fly Family)

Odontoloxozus longicornis (Coquillett) Longhorn Cactus Fly

[Lenhart (UTEP)].

NYCTERIBIIDAE (Bat Fly Family)

Basilia antrozoi (Townsend)

[Lenhart (UTEP)].

Note: These wingless spider-like flies are ecotparasites of Pallid Bats, *Antrozous pallidus*, which have a night roost at entrance to HQ bathrooms.

OESTERIDAE (New World Skin Bot Fly Family)

Cuterebra sp.

[Lenhart (UTEP)].

Note: The larvae, which can be 2.5 cm long, of these large flies infest the skin of Mammals. Adults are short lived, do not feed, and are seldom seen.

SARCHOPHAGIDAE (Flesh Fly Family)

Sarcophaga sp.

[Lenhart (UTEP)].

Note: Additional collections are not yet determined.

SIMULIIDAE (Black Fly Family)

Simulium sp.

[Davis, 2003].

STRATIOMYIDAE (Soldier Fly Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

SYRPHIDAE (Flower Fly Family)

Copestylum Mexicana (Macquart)

[Lenhart (UTEP)].

Eristalis tenax (Linnaeus)

[Barton, López, and Villaseñor, UTEP Field Biology, 2007).

Note: Additional collections are not yet determined.

TABANIDAE (Horse and Deer Fly Family)

Tabanus punctifer Osten Sacken Western Horse Fly

[Lenhart (UTEP)].

TIPULIDAE (Crane Fly Family)

Prionocera sp.

[Davis, 2003].

TACHINIDAE (Tachinid Fly Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

Order: EPHEMEROPTERA (May flies)

Note: Our collections are not yet determined.

Order: HETEROPTERA (True Bugs)

Suborder: AUCHENORRHYNCHA

CICADELLIDAE (leafhooper Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

CICADIDAE (Cicada Family)

Beameria venosa (Uhler)

[V. Mata-Silva (UTEP), P. Lenhart (UTEP)].

Cacama valvata (Uhler)

[Worthington (UTEP), Lenhart (UTEP)].

Diceroprocta eugraphica (Davis)

[V. Mata-Silva (UTEP), Lenhart (UTEP)].

Tibicens townsendi (Uhler)

[Lenhart (UTEP)].

Note: We thank Allen F. Sandborn for these determinations.

CIXIIDAE (Cixiid Planhopper Family)

[Dash (UTEP)].

Note: Our collections are not yet determined.

DELPHACIDAE (Delphacid Planthopper Family)

[Dash (UTEP)].

Note: Our collections are not yet determined.

DERBIDAE (Derbid Planthopper Family)

Cedusa sp.

[Dash and Lenhart (UTEP)].

Note: Our collections are not yet determined.

FULGORIDAE (Fulgorid Family)

Publicia sp.

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

MEMBRACIDAE (Treehopper Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

PSEUDOCOCCIDAE (Plant Bug Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

Suborder: STERNORRHYNCHA

APHIDIDAE (Aphid Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

DACTYLOPHIIDAE (Cochineal Scale Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

Suborder: HETEROPTERA

ALYDIDAE (Broad-Headed Bug Family)

[Lenhart (UTEP)].

Note: Our collections are not yet determined.

BELASTOMATIDAE (Giant Water Bug Family)

Lepthocerus Uhleri (Montandon) Giant Water Bug

[Davis, 2003].

[Herrera (UTEP); McClure (UTEP); Worthington (UTEP)].

Note: This large predaceous bug inhabits Squaw Spring and occasionally Double Tank, Red Tank, and occasionally is attracted to lights near IMRS HQ.

COREIDAE (Leaffotted Bug Family)

Acanthocephala thomasi Uhler

[Lenhart (UTEP)].

Chelinidea vittiger Uhler

[Lenhart (UTEP)].

Leptoglossus sp.

[Lenhart (UTEP)].

Narnia sp.

[Lenhart (UTEP)].

Note: Additional collections are not yet determined.

CORIXIDAE (Water Boatman Bug Family)

Graptocorixa abdominalis (Say)

[Davis, 2003].

Note: Collected at Squaw Spring and identified at Texas A&M; a second collection was not identified to species.

CYDNIDAE (Burrowing Bugs)

Pangaeus bilineatus (Say)

[Worthington (UTEP)].

GERRIDAE (Water Strider Bug Family)

Gerris marginatus Say

[Davis, 2003].

Note: Collected at Squaw Spring and identified at Texas A&M.

GELASTOCORIDAE (Toad Bug Family)

Gelastocoris rotundus Champion
[Davis, 2003].
Note: Collected at Squaw Spring and identified at Texas A&M.

LARGIDAE (Largid Bug Family)

Largus sp.
[Lenhart (UTEP)].

MIRIDAE (Plant Bug Family)

(Lenhart (UTEP)].
Note: Our collections are not yet determined.

NABIDAE (Damsel Bug Family)

[Lenhart (UTEP)].
Note: Our collections are not yet determined.

NAUCORIDAE (Creeping Water Bug Family)

Ambrysus circumcinctus Montandon
[Davis, 2003].
[Worthington (UTEP)].
Note: Collected at Squaw Spring and identified at Texas A&M.

NEPIDAE (Waterscorpion Family)

Ranatra sp.
[Lenhart (UTEP)].

NOTONECTIDAE (Backswimmer Bug Family)

Buenoa sp.
[Lenhart (UTEP)].
Notonecta lobata Hungerford
[Davis, 2003].
[Squaw Spring, Worthington (UTEP)].
Note: We thank Fred Truxal for this determination.
Notonecta unifasciata Guerin-Meneville
[Davis, 2003].
Note: Collected at Squaw Spring and identified at Texas A&M.

PENTATOMIDAE (Stink Bug Family)

Brochymena sp.
[Lenhart (UTEP)].
Chlorochroa sp.
[Lenhart (UTEP)].
Mecidea sp.
[Lenhart (UTEP)].
Murgantia histrionica (Hahn) Harlequin Bug
[Lenhart (UTEP)].
Pitedia sp.
[Worthington (UTEP)].

REDUVIIDAE (Assasin Bug Family)

Apiomerus sp. Bee Assassin
[Lenhart (UTEP)].
Phymata sp. Ambush Bug
[Lenhart (UTEP)].
Rasahus sp.
[Lenhart (UTEP)].
Rhiginia sp.
[Lenhart (UTEP)].
Sinea sp.
[Lenhart (UTEP)].

Triatoma rubida (Uhler) Bloodsucking Conenose
[Lenhart (UTEP)].
Zelus renardii Kolenati
[Worthington (UTEP)].

VELIIDAE (The Small Water Striders)

Microvelia sp.
[Davis, 2003].
Note: Collected at Squaw Spring and identified at Texas A&M.

Order: HYMENOPTERA (Bees, Ants and Wasps)

ANDRENIDAE

Perdita stathamae
John Neff, TAMU Entoblitz 2002.

APIDAE (Bees)

Anthophora californica
John Neff, TAMU Entoblitz 2002.
Apis mellifera Honeybee
[Mata-Silva, Johnson, and Juarez-Reina, 2006, reported honeybee killing a Texas Earless Lizard, *Cophosaurus texanus*].
John Neff, TAMU Entoblitz 2002.
Centris atripes
John Neff, TAMU Entoblitz 2002.
Ceratina neomexicana
John Neff, TAMU Entoblitz 2002.
Nomada sp.
John Neff, TAMU Entoblitz 2002.
Townsendiella pulchra
John Neff, TAMU Entoblitz 2002.
Xylocopa californica arizonensis
John Neff, TAMU Entoblitz 2002.
Note: Additional collections are not yet determined.

BETHYLIDAE (Bethylid Wasp Family)

[Lenhart (UTEP)].
Note: Our collections are not yet determined.

BRACONIDAE (Braconid Wasp Family)

[Lenhart (UTEP)].
Note: Our collections are not yet determined.

BRADYNOBAENIDAE (Bradynobaenid Wasp Family)

[Lenhart (UTEP)].
Note: Our collections are not yet determined.

CHRYSIDIDAE (Cuckoo Wasp Family)

[Lenhart (UTEP)].
Note: Our collections are not yet determined.

COLLETIDAE (Yellow Faced Bee Family)

Colletes salcicola
John Neff, TAMU Entoblitz 2002.
Hylaeus episcopalis coquilletti
John Neff, TAMU Entoblitz 2002.
Note: Other collections are not yet determined.

FORMICIDAE (Ants)

Aphaenogaster cockerelli Andre
[Hollebeke, 1991].
[Riveroll (UTEP); Mata-Silva (UTEP)]

Camponotus festinates (Buckley)
[Hollebeke, 1991].

Camponotus ulcerosus Wheeler
[Riveroll & Lenhart (UTEP)].

Conomryma insane
[Hollebeke, 1991].

Crematogaster depilis Wheeler
[Morgan (UTEP)].

Crematogaster laeviuscula Mayr
[Morgan (UTEP)].

Crematogaster larrea Buren
[Morgan (UTEP)].

Cyphomyrmex weeleri Forel
[Lenhart (UTEP).

Forelius analis
[Hollebeke, 1991].

Forelius foetidus
[Hollebeke, 1991].

Forelius pruinosus (Roger)
[Mata-Silva (UTEP)].

Hypoponera opacicepts (Mayr)
[Dash (UTEP)].

Leptothorax bristoli Mackay
[Mackay, 2000].
Note: The type locality is from the IMRS.

Leptothorax liebi Mackay
[Mackay, 2000].
Note: Known only from the IMRS, the type locality.

Monomorium cyaneum Wheeler
[Hollebeke, 1991].

Myrmecocystus depilis Forel
[Hollebeke, 1991].

Myrmecocystus (near) *flavaceps*
[Hollebeke, 1991].

Myrmecocystus mimicus Wheeler
[Hollebeke, 1991].

Myrmecocystus romainei Snelling
[Mata-Silva (UTEP)].

Neivamyrmex sp.
[Dash (UTEP)].
Note: Raiding swarms of these army ants have been observed at Squaw Spring. The Male “sausage flies” are attracted to lights.

Odontomachus clarus Roger
[Mackay (UTEP)].

Pheidole soritis Wheeler
[*Pheidole sitarches* Wheeler]
[Hollebeke, 1991].

Pogonomyrmex apache (Wheeler)
[*Riveroll* (UTEP)].

Pogonomyrmex barbatus (Smith)
[Mata-Silva (UTEP)].

Pogonomyrmex imberbiculus Wheeler
[Worthington (UTEP); Mata-Silva (UTEP)].
Pogonomyrmex maricopa Wheeler
[Riveroll (UTEP)].
Pogonomyrmex rugosus (Emery)
[Riveroll (UTEP)].
Solenopsis aurea Wheeler
[Hollebeke, 1991].
Solenopsis molesta (Say)
[Hollebeke, 1991].
Tetramorium hispidum (Wheeler)
[Mata-Silva (UTEP)].
Note: The survey by Hollebeke (1991) yielded specimens that were verified by W. A. Mackay. Presumably the vouchers are in the Mackay collection.

HALICTIDAE (Sweat Bee Family)

Lasioglossum pruinosiformis
John Neff, TAMU Entoblitz 2002.
Lasioglossum morrilli
John Neff, TAMU Entoblitz 2002.
Note: Other collections are not yet determined.

ICHNEUMOPNIDAE (Ichneumon Wasp Family)

[Lenhart (UTEP)].
Note: Our collections are not yet determined.

MEGACHILIDAE (Leaf-Cutter Bee Family)

Anthidium sockerelli
John Neff, TAMU Entoblitz 2002
Ashmeadiella erema
John Neff, TAMU Entoblitz 2002.
Ashmeadiella bigeloviae
John Neff, TAMU Entoblitz 2002.
Lithurgus sp.
(Lenhart (UTEP)].
Note: We thank Eric Eaton for this determination.
Other species have not yet been determined.
Megachile odontostoma
John Neff, TAMU Entoblitz 2002.
Megachile prosopidis
John Neff, TAMU Entoblitz 2002.
Megachile gentilis
John Neff, TAMU Entoblitz 2002.
Megachile lippiae
(Dash [UTEP]). John Neff, TAMU Entoblitz 2002.
Megachile newberryae
John Neff, TAMU Entoblitz 2002.
Megachile policris
John Neff, TAMU Entoblitz 2002.
Megachile sidalceae
(Dash [UTEP]).
Note: Near IMRS Headquarters. We thank J. S. Ashe for this determination.
Osmia sp.
John Neff, TAMU Entoblitz 2002.
Osmia subfasciata
John Neff, TAMU Entoblitz 2002.

MELITTIDAE

Hesperapis larreae
John Neff, TAMU Entoblitz 2002.

MUTILLIDAE (Velvet Ant Family)

Dasymutilla sp.
[Lenhart (UTEP)].

Dasymutilla gloriosa (Saussure) Thistldown Velvet Ant
[Lenhart (UTEP)].

Note: Additional collections are not yet determined.

POMPILIDAE (Spider Wasp Family)

Pepsis sp.
[Lenhart (UTEP)].

Note: Additional collections are not yet determined.

SCOLIIDAE (Scoliid Wasp Family)

Scolia sp.
[Lenhart (UTEP)].

Note: Additional collections are not yet determined.

SPHECIDAE (Threadwaisted Wasp Family)

Ammophila sp.
[Lenhart (UTEP)].

Sceliphron caementarium (Drury) Black and yellow Muddauber
[Lenhart (UTEP)].

Sphecius grandis Western Cicada Killer
[Lenhart (UTEP)].

Note: Additiional collections are not yet determined.

TIPHIIDAE (Tiphiid Wasp Family)

[Lenhart (UTEP)].
Note: Our collections are not yet determined.

VESPIDAE (Wasps)

Eumenes sp.
[Lenhart (UTEP)].

Eurodynerus sp.
[Lenhart (UTEP)].

Polistes comanchus Saussure
[Lenhart (UTEP)].

Polistes flavus Cresson
[Dash, Lenhart (UTEP)].

Note: Additional collections have not yet been determined.

Order: ISOPTERA (Termites)

Note: Termites made up the majority of the food items eaten by two Teiid lizards, *Aspidoscelis marmorata* and *A. tesselata* on IMRS (Mata-Silva, 2005).

TERMITIDAE (Higher Termites)

Gnathamitermes sp. Tube-Building Termites
[Lenhart (UTEP)].

Note: Additional collections are not yet determined.

RHINOTERMITIDAE (Subterranean Termites)

[Lenhart (UTEP)].
Note: Our collections are not yet determined.

Order: LEPIDOPTERA (Moths and Butterflies)

ARCTIIDAE (Tiger Moth Family)

Cisthene angelus (Dyar)
[Worthington (UTEP)].
Pygarctia murina (Stretch)
[Worthington (UTEP)].

GEOMETRIDAE (Geometer Moth Family)

Chlorospilates bicoloraria Pack.
[Worthington (UTEP)].
Glaucinia sp.
[Worthington (UTEP)].
Semiothisa cyda Grt.
[Worthington (UTEP)].
Semiothisa sp.
[Worthington (UTEP)].

LYCAENIDAE (Hairstreak, Copper, and Blue Butterfly Family)

Hemiargus isola alce (Edws.)
[Worthington (UTEP)].

HESPERIIDAE (Skipper Family)

Copaeodes aurantiacus (Hewitson)
[Worthington (UTEP)].
Pygrus albescens Plotz
[Worthington (UTEP)].

NOCTUIDAE (Noctuid Moth Family)

Basiolodes chrysopsis Grt.
[Worthington (UTEP)].
Cobubantha orthozona (Hamp.)
[Worthington (UTEP)].
Copanarta aurea (Grt.)
[Worthington (UTEP)].
Euscirrhopterus cosyra (Druce)
[Worthington (UTEP)].
Helicoverpa zea (Boddie)
[Worthington (UTEP)].
Lacinipolia buscki (B. & Benj.)
[Worthington (UTEP)].
Leucocnemis perfundis (Sm.)
[Worthington (UTEP)].
Marathyssa inflicta (Wlk.)
[Worthington (UTEP)].
Mastigramma rubosuffusa Grt.
[Worthington (UTEP)].
Tarachidia cuta (Sm.)
[Worthington (UTEP)].
Tarachidia libedis (Sm.)
[Worthington (UTEP)].

NYMPHALIDAE (Brush-footed Butterfly Family)

Danaus gilippus (Cramer) Queen
[Lenhart (UTEP)].
Phycioides phaon (Edws.)
[Worthington (UTEP)]
Thessalia chinatiensis (Tinkham)
[Perez (UTEP); McClure (UTEP)].

Vanessa atalanta (Linnaeus) Red Admiral
[Lenhart (UTEP)].

PAPILIONIDAE (Swallowtail Butterfly Family)

Papilio polyxenes Fabricius Black Swallowtail
[Lenhart (UTEP)].

PIERIDAE (Sulphur, White, and Orange-tip Butterfly Family)

Colias caesonia Stoll
[Worthington (UTEP)].
Nathalia isole Boisduval
[Worthington (UTEP)].
Phoebis sennae marcellina (Carmen)
[Worthington (UTEP)].

PYRALIDAE (Snout Moth Family)

Epipagis harmonalis
[Worthington (UTEP)].
Mimoschinia rufofascialis
[Worthington (UTEP)]

SPHINGIDAE (Hawk Moth Family)

Hyles lineate (Fabricius)
[Worthington (UTEP)].
Manduca quinquemaculata (Haworth)
[Lenhart (UTEP)].
Manduca rustica (Fabricius)
[Lenhart (UTEP)].
Sphinx asella
[(UTEP)].

YPONOMEUTIDAE (Erimine Moth Family)

Atteva punctella (Cramer)
[Lenhart (UTEP)].

Order: MICROCORYPHIA (Jumping Bristletails)

MACHILIDAE

Note: Our material is presently at New Mexico State University awaiting determination. A single species is represented that shows up in pit-fall traps. It may be a very significant find.

Order: NEUROPTERA (Antlions, Lacewings and allies)

BEROTHIDAE

Lomamyia spp.
John Oswald, TAMU Entoblitz 2000

CHRYSOPIDAE (Green Lacewing Family)

Chrysoperla plorabunda
John Oswald, TAMU Entoblitz 2002.
Chrysoperla rufilabris
John Oswald, TAMU Entoblitz 2002.
Eremochrysa punctinervis
John Oswald, TAMU Entoblitz 2002.

CONIOPTERYGIDAE

Aleuropteryx spp.
John Oswald, TAMU Entoblitz 2002.

Coniopteryx spp. (2X spp.)
Neoconis spp. (probably *N. marginata*)
John Oswald, TAMU Entoblitz 2002.
Semidalis spp.
John Oswald, TAMU Entoblitz 2002.

HEMERORBIIDAE (Brown Lacewing Family)

Hemerobius discretus
John Oswald, TAMU Entoblitz 2002.
Megalomus moestus
John Oswald, TAMU Entoblitz 2002.
Micromus variolosus
John Oswarld, TAMU Entoblitz 2002.
Sympherobius killingtoni
John Oswald, TAMU Entoblitz 2002.
Sympherobius perparvus
John Oswald, TAMU Entoblitz 2002.

MANTISPIDAE (Mantislike Lacewing Family)

Climaciella brunnea (Say)
[Lenhart (UTEP)].
Note: This mantisfly closely mimics the paperwasp, *Polistes comanchus* on IMRS. Larvae are predators on spider egg sacs.

MYRMELEONTIDAE (Antlion Family)

Brachynemurus sackeni Hagen
John Oswald, TAMU Entoblitz 2002.
Chaetolon pusillus (Currie)
Clathroneuria coquilletti (Currie)
Gnopholeon delicatulus (Currie)
Myrmeleon arizonicus
Paranthaclisis hageni (Banks)
Psammoleon sp.
Scotolion longipalpis (Hagen)
Scotolion nigrescens (Strange)

Note: We are indebted to Dr. John Oswald, Texas A & M University, for most of the above determinations. The vouchers are at Texas A&M University.

Order: ODONATA (Dragonflies; Damselflies)

AESHNIDAE (Darner Family)

Aeshna multicolor Hagen
[Chee (UTEP)]. J. C. Abbott, TAMU Entoblitz 2002.
Note: Found at Double Tank Corral.
Anax sp.
[Mata-Silva and Lenhart (UTEP)].

CALOPTERYGIDAE (Broad-Winged Damselfy Family)

Hetaerina sp.
[Lenhart (UTEP)].

COENAGRIONIDAE (Narrow-Winged Damselfly Family)

Argia hinei Kenedy
[Worthington (UTEP)]. J. C. Abbott, TAMU Entoblitz 2002.
Note: Found at Squaw Spring.

Argia leonorae
[Worthington (UTEP)].
Note: Found at Squaw Spring.
Enallagma civile (Hagen)
[Worthington (UTEP)].
Note: Found at Double Tank Corral.
Ischnura denticollis (Burmeister)
[Worthington (UTEP)].
Note: Found at Double Tank Corral.
Laestes disjunctus australis
[Worthington (UTEP)].
Note: Found at Double Tank Corral.

LESTIDAE (Spreadwing Damselfly Family)

Archilestes grandis (Rambur) Giant Spreadwing
[Davis, 2003]. J.C. Abbott, TAMU Entoblitz 2002.

LIBELLULIDAE (Common Skimmer Family)

Libellula pulchella Drury
[Perez (UTEP)].
Note: Found at Double Tank Corral.
Libellula saturata
J. C. Abbott, TAMU Entoblitz 2002.
Paltothemis lineatipes Karsch
[Herrera (UTEP)].
Sympetrum corruptum (Tarnestrum)
[Worthington (UTEP)].
Note: Found at Double Tank Corral.
Tramea onusta Hagen
[Worthington (UTEP)].
Note: Found at Double Tank Corral.

Note: We thank John C. Abbott and O. S. Flint for the above determinations.

Order: ORTHOPTERA (Grasshoppers)

ACRIDIDAE (Short-horned Grasshopper Family)

Subfamily: COPIOCERINAE

Clematodes larreae Scudder Grey Creosotebush Grasshopper
[Lenhart (UTEP)].

Subfamily: CYRTACANTHACRIDINAE (Bird Grasshoppers)

Schistocerca nitens (Thunberg) Gray Bird Locust
[Worthington (UTEP)].

Subfamily: MELANOLPLINAE (Spur-throated Grasshoppers)

Melanoplus bivittatus (Say) Two-striped Grasshopper
[Worthington (UTEP)].
Melanoplus herbaceous Brunner
[Lenhart (UTEP)].
Melanoplus differentialis (Thomas) Differential Grasshopper
[Perez (UTEP)].

Subfamily: GOMPHOCERINAE (Slant-faced Grasshoppers)

Acantherus piperatus Slender Range Grasshopper
[Lenhart (UTEP)].

Acrolophitus maculipennis (Scunner) Point Headed Grasshopper
[Worthington (UTEP)].
Bootettix argentatus Bruner Creosotebush Grasshopper
[Worthington (UTEP)].
Cibolacris parviceps (Walker) Cream Grasshopper
[Worthington (UTEP)].
Mermiria bivittata (Serville) Mermiria Grasshopper
[Worthington (UTEP)].
Mermiria texana Bruner
[Worthington (UTEP)].
Opeia obscura (Thomas) Obscure Grasshopper
[Herrera (UTEP)].
Psoloessa texana (Scudder) Texas Spotted Range Grasshopper
[Lenhart (UTEP)].
Syrbula admirabilis (Uhler) Slant-faced Grasshopper
[Worthington (UTEP)].

Subfamily: OEDIPODINAE (Band-winged Grasshoppers)

Arphia conspersa (Scudder) Speckled Rangeland Grasshopper
[Lenhart (UTEP)].
Arphia pseudonietana (Thomas) Red-winged Grasshopper
[Worthington (UTEP)].
Derotmema laticinctum Scudder
[Worthington (UTEP)].
Encoptolophus subgracilis Caudell
[Lenhart (UTEP)].
Hippopedon capito (Stahl)
[Worthington (UTEP); Lenhart (UTEP)].
Mestobregma plattei (Thomas) Platte Range Grasshopper
[Worthington (UTEP)].
Trimerotropis californica Bruner Strenuous Grasshopper
[Worthington (UTEP)].
Trimerotropis pallidipennis (Burmeister) Pallidwinged Grasshopper
[Worthington (UTEP)].
Trimerotropsis pistrinaria Saussure Barren Land Grasshopper
[Lenhart (UTEP)].

GRYLLIDAE (TRUE CRICKET Family)

Gryllus sp. Field Cricket
[Lenhart (UTEP)].
Oecanthus sp. Tree Cricket
[Lenhart (UTEP)].

RHAPHIDOPHORIDAE (Camel Cricket Family)

Ceuthophilus sp.
[Lenhart (UTEP)].

ROMALEIDAE (Lubber Grasshopper Family)

Phrynotettix robustus (Bruner) Robust Toad Hopper
[Worthington (UTEP)].
Taeniopoda equs (Burmeister) Horse Lubber
[McClure (UTEP)].

TETTIGONIIDAE (Katydid Family)

Capnobotes fuliginosus (Thomas) Sooty Longwing
[Lenhart (UTEP)].
Insara elegans Scudder Mesquite Katydid
[Worthington (UTEP)].
Pediodectes tinkhami Hebard Tinkhams Shieldback
[Lenhart (UTEP)].

Scudderia sp. Bush Katydid
[Lenhart (UTEP)].

TETRIGIDAE (Pygmy Grasshopper Family)

Paratettix aztecus (Saussure) Aztec Pigmy Grasshopper
[Lenhart (UTEP)].
Paratettix brevipennis (Hancock)
[Lenhart (UTEP)].
Peratettix mexicanus (Saussure) Mexican Pygmy Grasshopper
[Lenhart (UTEP)].
Paratettix toltecus (Saussure) Toltec Pygmy Grasshopper

Order: PHASMATODEA (Walkingsticks)

HETERONEMIIDAE (Common Walkingstick Family)

Diapheromera covillea R. & H. Creosote Walkingstick
[Herrera (UTEP); Worthington (UTEP)].
Parabacillus coloradus (Scudder) Clorado Shorthorned Walkingstick
[Worthington (UTEP)].
Pseudosermyle straminea (Scudder) Gray Walkingstick
[Lenhart (UTEP)].

Order: SIPHONOPTERA (Fleas)

[Lenhart (UTEP)].
Note: Our collections are not yet determined. Fleas have been found on the Cactus Mouse, *Peromyscus eremicus.*

Order: TRICHOPTERA (Caddisflies)

HYDROPSYCHIDAE (Common Net-spinning Caddisfly Family)

Cheumatopsyche sp.
[Worthington (UTEP)].
Note: Found at Squaw Spring.

ODONTOCERIDAE (Mortarjoint Casemaker Caddisfly Family)

Marilia flexuosa Ulmer
[Worthington (UTEP)].
Note: Found at Squaw Spring.We express our thanks to Steve Moulton for the above determinations. Davis (2003) identified all caddisflies she found as belonging to the family Limnephilidae (Limnephilus sp.).

VERTEBRATES

Class: AMPHIBIA (Amphibians)

Compiled by Carl S. Lieb and Jerry D. Johnson

Order: ANURA (Frogs and Toads)

Note: The following classification and common names follows that recommended by The Center for North American Herpetology (www.cnah.org).

BUFONIDAE (True Toad Family)

Comment: The genus for all species of bufonid toads (Nearctic Toads) occurring on IMRS was changed from *Bufo* to *Anaxyrus* by Frost et al. (2006).

Anaxyrus cognatus Say — Great Plains Toad
[Johnson (UTEP)].
Records: One individual was found at IMRS HQ.

Anaxyrus debilis Girard — Green Toad
[Johnson (UTEP)].
Records: Pirtle Tank; on road to Squaw Spring N IMRS HQ, Mata-Silva.

Anaxyrus punctatus Baird and Girard — Red-spotted Toad
Records: This is the most abundant amphibian on IMRS; the Species breeds in pools in the canyons during rainy periods. It is very common around the HQ buildings after rains.

Anaxyrus speciosus Girard — Texas Toad
[Johnson (UTEP)].
Records: One found at Pirtle Tank.

MICROHYLIDAE (Narrowmouth Toad Family)

Gastrophryne olivacea (Hallowell) — Great Plains Narrowmouth Toad
[Dilks, Johnson, and Mata-Silva (UTEP)].
Records: One individual found near Peccary Tank, 26 July 2008. A large choruses observed on 21 August 2009 at Echo Canyon Twin Tanks, Peccary Tank, and Rattlesnake Tank after a heavy afternoon rain storm. July 2010.

SCAPHIOPODIDAE (Southern Spadefoot Toad Family)

Scaphiopus couchi Baird — Couch's Spadefoot
[Johnson (UTEP)].
Records: IMRS HQ area; Road Tank; Pirtle Tank; Red Tank; Peccary Tank.

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Order CAUDATA (Salamanders)

Note: The Barred Tiger Salamander (*Ambystoma mavortium*) is expected to occur on IMRS, but has yet to be observed.

Reptiliaforms (Turtles, Reptiles, Birds, and Mammals)

Compiled by Carl S. Lieb and Jerry D. Johnson

Note: The following Classification and common names mostly follows that recommended by The Center for North American Herpetology (www.cnah.org).

Class CHELONIA (Turtles)

EMYDIDAE (Box and Pond Turtle Family)

Terrapene ornata Agassiz — Ornate Box Turtle
Records: Collected on one occasion near Double Tank Corral (UTEP).

KINOSTERNIDAE (Mud and Musk Turtle Family)

Kinosternon flavescens Agassiz — Yellow Mud Turtle

Records: The species is known from a shell fragment found at Red Tank. The species has been observed in a tank along Green River Road a few miles northeast of IMRS.

Class REPTILIA (Reptiles)

Order: SQUAMATA (Lizards and Snakes)

Suborder: LACERTILIA (Lizards)

CROTAPHYTIDAE (Collard and Leopard Lizard Family)

Crotaphytus collaris Say — Eastern Collared Lizard

Records: Known from several locations, including IMRS HQ Area; Echo Canyon; and on road to Squaw Spring (UTEP).

GEKKONIDAE (Gecko Family)

Coleonyx brevis Stejneger — Texas Banded Gecko

[Johnson et al., 2004].

Records: Several locations, including IMRS HQ (UTEP).

PHRYNOSOMATIDAE (Spiny Lizard Family)

Cophosaurus texanus Troschel — Greater Earless Lizard

[Axtell, 1991; Mata-Silva et al., 2006].

Records: Squaw Spring; IMRS HQ areas (UTEP).

Note: The most abundant lizard on IMRS. Known for death feigning when picked up.

Phrynosoma cornutum (Harlan) — Texas Horned Lizard

[Axtell, 1996].

Records: Known from a single specimen (SRSU, Axtell, 1996); origin on IMRS is unknown, but most likely from near Double Tank Corral area.

Phrynosoma modestum Girard — Roundtail Horned Lizard

Records: IMRS HQ area (UTEP).

Sceloporus poinsettii Baird and Girard — Crevice Spiny Lizard

Records: Several specimens from throughout IMRS, especially near Squaw Spring and in Baily Evens Canyon (UTEP).

Sceloporus cowelsi — Southern Plateau Lizard

Records: IMRS HQ area; Squaw Creek Canyon; and Double Tank Corral (UTEP).

Note: The species was elevated from a subspecies of *S. undulatus* by Leache and Reeder (2002). Almost entirely found on rocky cliff faces and large rocks with crevices.

Urosaurus ornatus (Baird and Girard) — Tree Lizard

[Axtell, 1997].

Records: Squaw Spring; IMRS HQ; Agate Hill (UTEP).

Uta stansburiana (Baird and Girard) — Side-blotched Lizard

Records: IMRS HQ, Squaw Creek Canyon (UTEP).

SCINCIDAE (Skink Family)

Note: The genus of skinks in the New World, formerly known as *Eumeces*, was changed to *Plestiodon* independently by Smith (2005) and Brandley et al. (2005).

Plestiodon obsoletus Baird and Girard — Great Plains Skink
[Axtell, 2000].
Records: IMRS HQ area and Squaw Spring (UTEP).

Plestiodon tetragrammus brevilineatus (Cope) — Four-lined Skink
[Johnson and Johnson, 1999; Axtell 2001].
Records: Known only from Squaw Spring area (UTEP).

TEIIDAE (Whiptail, Racerunner, and Ameiva Family)

Note: The genus of whiptail lizards in most of North America, formerly known as *Cnemidophorus*, was changed to *Aspidoscelis* by Reeder et al. (2002).

Aspidoscelis exsanguis (Lowe) — Chihuahua Spotted Whiptail
[Carranza, 1997; Axtell, 2003].
Records: Mostly found on eastern side of IMRS in canyons draining directly into Green River; rarely seen at Squaw Spring (UTEP).
Note: Unisexual parthenogenetic species (3n).

Aspidoscelis inornata (Baird) — Little Striped Whiptail
[Axtell, 1994; Carranza, 1997].
Records: IMRS HQ area; Double Tanks Corral (UTEP).
Note: Bisexual species.

Aspidoscelis tessellata (Baird) — Colorado Checkered Whiptail
[Carranza, 1997; Hotchkin and Riveroll, 2005; Mata-Silva, 2005; Mata-Silva et al., 2008, 2010].
Records: Numerous records from throughout IMRS (UTEP).
Note: Unisexual parthenogenetic species (2n).

Aspidoscelis marmorata (Baird and Girard) — Western Marbled Whiptail
[Hotchkin and Riveroll, 2005; Mata-Silva, 2005; Mata-Silva et al., 2008, 2010].
Records: Known from throughout IMRS (UTEP).
Note: Bisexual species. Recognized as *A. tigris marmorata* by some. Most Abundant whiptail on IMRS

Suborder: SERPENTES (Snakes)

COLUBRIDAE (Harmless Egg-Laying Snake Family)

Arizona elegans Kennicott — Glossy Snake
Records: One from west of IMRS HQ, Johnson (UTEP).

Bogertophis subocularis (Brown) — Trans-Pecos Rat Snake
Records: IMRS HQ area; Peccary Tank; Echo Canyon; Flat Top Mountain; and Black Diamond Mine (UTEP).

Gyalopion canum Cope — Western Hook-nosed Snake
Records: Near Purple Sage Mine (UTEP).

Lampropeltis alterna (Brown) — Gray-banded King Snake
Records: Near Red Tank; Prospect Pits area (UTEP).

Masticophis flagellum Shaw — Coachwhip
Records: River Road south of Campo Bonito (UTEP); HQ area; Peccary Tank; Carpenter Mine area.

Masticophis taeniatus Hallowell — Striped Whipsnake
Records: IMRS HQ area (UTEP); probably throughout in rocky areas.

Pituophis catenifer Blainville — Gopher Snake
Records: East side of IMRS (UTEP); Peccary Tank.

Rhinocheilus lecontei Baird and Girard — Longnose Snake
Records: From hills east of Main Road; Purple Sage Mine

Roads (UTEP); IMRS HQ area.

Salvadora deserticola Schmidt — Big Bend Patchnose Snake
Records: River Road; Double Tank Corral (UTEP); Rattlesnake Tank; IMRS HQ area.

Salvadora grahamiae Baird and Girard — Mountain Patchnose Snake
Records: Several from west side IMRS (UTEP); Echo Canyon.

Sonora semiannulata Baird and Girard — Ground Snake
[Johnson, Johnson, and Riveroll, Jr., 2007].
Records: Near IMRS HQ area (UTEP) in pit-fall traps.

Tantilla hobartsmithi Taylor — Southwestern Blackhead Snake
Records: Several from IMRS HQ area (UTEP); often found under fallen yuccas and in pit-fall traps.

Tantilla nigriceps Kennicott — Plains Blackhead Snake
Note: The occurrence of this species on IMRS needs to be confirmed.

Trimorphodon vilkinsonii Cope — Chihuahuan Lyre Snake
[J. D. Johnson (UTEP)].
Records: Double Tanks Corral, 2 May 1992; 12 July 2008 near Prospect Pits (UTEP).
Note: There is a photograph of the Double Tank Corral record on Centennial Museum, Chihuahuan Desert Website. The specific epithet was changed from *T. biscutatus* by LaDuc and Johnson (2003).

CROTALIDAE (Pitviper Family)

Note: At least one other species of rattlesnake likely occurs on IMRS (*Crotalus scutulatus*), because they are frequently observed along the Green River Road to the east and northeast of the station.

Crotalus atrox Baird and Girard — Western Diamondback Rattlesnake
Records: Several locations (UTEP); ubiquitous and frequently encountered at Peccary Tank, Red Tank, IMRS HQ, Squaw Spring and Double Tank Corral.

Crotalus lepidus Kennicott — Rock Rattlesnake
[Rael et al., 1992; Dominguez, 2000; Campbell and Lamar, 2004 (photograph); Price, 2009 (photographs); Mata-Silva et al., 2010].
Records: Several locations (UTEP); ubiquitous and frequently encountered in canyons and along rocky draws.

Crotalus molossus Baird and Girard — Black-tailed Rattlesnake
[Miranda et al., 2008].
Records: Several locations (UTEP); ubiquitous on IMRS in rocky areas.

DIPSADIDAE (Slender Rear-Fanged Snake Family)

Diadophis punctatus L. — Ringneck Snake
Records: Vic. IMRS HQ area; mostly found under fallen yucca trunks and In pit-fall traps (UTEP); near Peccary Tank, 19 June 09 (UTEP).

Hypsiglena jani (Dugès) — Chihuahuan Night Snake
[Mata-Silva et al., 2010]
Records: Several have been taken near IMRS HQ (UTEP); often found under fallen yucca and in pit-fall traps.
Note: The specific epithet for this species was changed from *H. torquata* by Mulcahy (2008).

LEPTOTYPHLOPIDAE (Blind Snake Family)

Rena humilis (Baird and Girard) — Western Blind Snake
Records: Known from IMRS HQ area where it is frequently taken in pit-fall traps (UTEP).
Note: The genus was changed from *Leptotyphlops* by Adalsteinsson et al. (2009).

NATRICIDAE (Harmless Live-Bearing Snake Family)

Thamnophis cyrtopsis (Kennicott) Blackneck Garter Snake

Records: Squaw Spring; East Well Draw; IMRS HQ area; Peccary Tank; Red Tank (UTEP).

Note: This species is not restricted to wetlands on IMRS.

Class: Aves (Birds)

Contributed by Scott Cutler, Carl Lieb, and Jerry D. Johnson.

Most of the following observations on the avifauna were taken from the field notes of Scott Cutler who visited the ranch 19-21 May 1995 and 15-16 July 2000. Merged in are observations listed on the web site for past field classes and observations by Terry Hibbits and Jerry D. Johnson. The order of the families and nomenclature follows the Texas Parks and Wildlife "A Checklist of Texas Birds" 6th ed. (2003).

The avifauna of the area between Indian Hot Springs and Presidio was reported to consist of 160 species, of which 30 are residents (West, 1976). The remainder uses the area seasonally or is migratory.

ARDEIDAE (Bittern, Heron and Egret Family)

Ardea herodias Great Blue Heron

Egretta thula Snowy Egret

Nycticorax nycticorax Black-crowned Night-heron

CATHARTIDAE (Vulture Family)

Cathartes aura Turkey Vulture

Observations: Squaw Spring, May 1995, July 2000, Cutler; SE of Ranch HQ, July, 2000, Cutler; IMRS; 2-3 May 1992, Hibbits; IMRS, Field Biology Class, March 1995. Common throughout IMRS, J. D. Johnson.

Note: Turkey Vultures usually arrive on IMRS early in April.

ANATIDAE (Duck and Geese Family)

Anas crecca Green-winged Teal

Observations: IMRS, 16 March 1991, Field Biology Class.

Anas diazi Mexican Duck

Anas strepera Gadwall

Observations: IMRS, 5 April 1991, Field Biology Class.

ACCIPITRIDAE (Hawk, Kite, and Eagle Family)

Aquila chrysaetos Golden Eagle

Observations: A pair was observed S of IMRS near the Box Canyon, May 2009 by G. W. Johnson. Occasionally observed near Echo Canyon.

Buteo jamaicensis Red-tailed Hawk

Observations: SE of IMRS HQ, July 2000, Cutler; Squaw Spring, July 2000, Cutler; IMRS, 2-3 May 1992, Hibbits; IMRS, Field Biology Class, March 1995; Squaw Spring, 12 June 2001. J. D. Johnson.

Buteo regalis Ferruginous Hawk

Observations: IMRS HQ, 3 May 2008, S. Dash.

Buteo swainsoni Swainson's Hawk

Circus cyaneus Northern Harrier

Observations: IMRS, March-April 1991, Field Biology Class.

Elanus leucurus White-tailed Kite
Observations: IMRS HQ, May 2008. J. D. Johnson; verified from photograph by Cutler.
Pandion haliaetus Osprey
Observations: IMRS HQ area, April 2006 and May 2008, J. D. Johnson.

FALCONIDAE (Falcon and Kestrel Family)

Falco sparverius American Kestrel
Observations: IMRS, 2-3 May 1992, Hibbits.

ODONTOPHORIDAE (Quail Family)

Callipepla gambelii Gambel's Quail
Callipepla squamata Scaled Quail
Observations: IMRS HQ area, July 2000, Cutler; IMRS, 2-3 May 1992, Hibbits; IMRS, Apr. 1995, Field Biology Class; common around IMRS HQ.

RALLIDAE (Coot and Rail Family)

Fulica americana American Coot

CHARADRIIDAE (Plover and Killdeer Family)

Charadrius vociferous Killdeer
Observations: IMRS, 2-3 May 1992, Hibbits.

SCOLOPACIDAE (Sandpipers, Snipes, Phalaropes et al.)

Gallinago gallinago Common Snipe
Observations: IMRS, 2-3 May 1992, Hibbits.
Tringa solitaria Solitary Sandpiper
Observations: IMRS, 5 Apr. 1991, Field Biology Class.

COLUMBIDAE (Dove and Pigeon Family)

Columbina inca Inca Dove
Note: This species needs to be documented on IMRS.
Zenaida asiatica White-winged Dove
Observations: IMRS HQ area; May 1995, Cutler; Squaw Spring, July 2000, Cutler; IMRS, 2-3 May 1992, Hibbits; common around IMRS HQ.
**Steptopelia orientalis* Oriental Turtle Dove
Observations: IMRS HQ, May 2005, J. D. Johnson, with flock of White-winged Doves.
Zenaida macroura Mourning Dove
Observations: Squaw Spring, May 1995, July 2000, Cutler; IMRS, 2-3 May 1992, Hibbits. Common around IMRS HQ.

CUCUILDAE (Roadrunner, Cuckoo Family)

Geococcyx californianus Greater Roadrunner
Observations: SE of IMRS HQ, July 2000, Cutler; IMRS, 2-3 May 1992, Hibbits; IMRS HQ, May 2009, 12 June 2010, J. D. Johnson. A nesting pair with nest high in a Catclaw Acacia near old ranch house, 14 August 2010.

STRIGIDAE (Owl Family)

Athene cunicularia Burrowing Owl
Note: This species needs to be documented on IMRS.
Bubo virginianus Great Horned Owl
Note: Commonly heard around HQ
Micranthene whitneyi Elf Owl
Observations: IMRS HQ, 25 May 2010, J. D. Johnson, in a Honey Mesquite.

CAPRIMULGIDAE (Nighthawk, Poor-will Family)

Chordeiles acutipennis Lesser Nighthawk
Note: This species needs to be documented on IMRS.

Chordeiles minor Common Nighthawk
Observations: IMRS HQ, May 1995, Cutler. Common around IMRS HQ.
Phalaenoptilus nuttallii Common Poorwill
Observations: IMRS, 2-3 May 1992, Hibbits.

APODIDAE (Swift Family)

Aeronautes saxatalis White-throated Swift
Observations: IMRS, 2-3 May 1992, Hibbits.

TROCHILIDAE (Hummingbird Family)

Archilochus alexandri Black-chinned Hummingbird
Observations: Squaw Spring, May 1995, Cutler; IMRS, Apr. 1990, Field Biology Class; IMRS, 2-3 May 1992, Hibbits. IMRS HQ, 7 June 2008, 16 June 2009, J. D. Johnson.

PICIDAE (Woodpecker Family)

Colaptes cafer Red-shafted Flicker
Observations: Common near IMRS HQ, J. D. Johnson.
Picoides scalaris Ladder-backed Woodpecker
Observations: road from IMRS HQ to Squaw Spring, July 2000, Cutler. IMRS HQ, 7 June 2008, J. D. Johnson.

TYRANNIDAE (Flycatcher, Kingbird and Phoebe Family)

Contopus cooperi [in some books as *C. borealis*] Olive-sided Flycatcher
Observations: Squaw Spring, May 1995, Cutler.
Myarchus cinerascens Ash-throated Flycatcher
Observations: Double Tank Corrals, May 1995, Cutler; Squaw Spring, May 1995, Cutler; IMRS HQ, May 1995, Cutler; May 1992, Hibbits.
Pyrocephalus rubinus Vermillion Flycatcher
Observations: IMRS HQ, 18 April 2010, J. D. Johnson.
Sayornis saya Say's Phoebe
Observations: Nests annually on buildings at IMRS HQ, J. D. Johnson.
Tyrannus verticalis Western Kingbird
[Gardea and Mena, 1992].
Observations: Area of IMRS HQ, March 1992; May 1992,Hibbits.

LANIIDAE (Shrike Family)

Lanius ludovicianus Loggerhead Shrike
[Gardea and Mena, 1992].
Observations: IMRS Headquarters, April 1990, March 1992, Field Biology. Commonly observed around IMRS HQ, J. D. Johnson.

VIREONIDAE (Vireo Family)

Vireo solitarius Blue-headed Vireo
Note: This species needs to be documented on IMRS.
Vireo vicinior Gray Vireo
Observations: IMRS, March 1995, Field Biology Class.

CORVIDAE (Jay, Crow, Raven Family)

Aphelocoma californica Western Scrub Jay
Observations: IMRS HQ, 11, 18 April 2010, G. W. Johnson, J. D. Johnson.
Corvus cryptoleucus Chihuahuan Raven
Observations: IMRS, 2-3 May 1992, Hibbits. IMRS HQ, 18 April 2010, J. D. Johnson.

ALAUDIDAE (Horned Lark Family)

Eremophila alpestris Horned Lark

HIRUNDINIDAE (Martin and Swallow Family)

Hirundo rustica Barn Swallow

Observations: IMRS, May 1995, field trip group.

Petrochelidon pyrrhonota Cliff Swallow

[*Hirundo pyrrhonota*]

REMIZIDAE (Verdin Family)

Auriparus flaviceps Verdin

Observations: IMRS, Apr. 1990, March-April, 1995, Field Biology Class; IMRS HQ, June 2009, J. D. Johnson.

TROGLODYTIDAE (Wren Family)

Campylorhynchus brunneicapillus Cactus Wren

Observations: Calling at Squaw Spring, May 1995, Cutler; along the road to Squaw Spring, July 2000, Cutler; IMRS, April 1990; IMRS, 2-3 May 1992, Hibbits; IMRS, March 1990, Field Biology Class; IMRS HQ, June 2007, J. D. Johnson.

Catherpes mexicanus Canyon Wren

Note: Needs to be verified.

Salpinctus obsoletus Rock Wren

Observations: area of IMRS HQ, March 1992 [Gardea and Mena, 1992]; IMRS, 2-3 May 1992, Hibbits.

Thryomanes bewickii Bewick's Wren

Observations: Squaw Spring, July 2000, Cutler; area of IMRS HQ, March 1992 [Gardea and Mena, 1992]; IMRS, Apr. 1992, Field Biology Class.

SYLVIIDAE (Gnatcatcher Family)

Polioptila melanura Black-tailed Gnatcatcher

Observations: Squaw Spring, May 1995, Cutler; IMRS HQ area, May 1995, Cutler; March 1992, [Gardea and Mena, 1992]; July 2009, J. D. Johnson; IMRS, April 1990, Field Biology Class.

TURDIDAE (Thrush, Robin, Solitaire, and Bluebird Family)

Catharus guttatus Hermit Thrush

Observations: IMRS, May 1995, Herp Field Trip.

Sialia mexicana Western Bluebird

Observations: IMRS HQ, 23 May 2010, G. W. Johnson

Turdus migratorius American Robin

Observations: IMRS HQ, 12 March 2010, J. D. Johnson.

MIMIDAE (Thrashers and Mockingbird Family)

Mimus polyglottos Northern Mockingbird

Observations: Double Tank Corral, May 1995, Cutler; Squaw Spring, May, 1995, Cutler; IMRS HQ area, May 1995, Cutler. Common around IMRS HQ during breeding season.

Toxostoma crissale Crissal Thrasher

Observations: Squaw Spring, May 1995, Cutler; Double Tank Corral, May 1995, Cutler; area of IMRS HQ, March 1992 [Gardea and Mena, 1992].

Toxostoma curvirostre Curve-billed Thrasher

Observations: IMRS HQ, 12 March 2010, J. D. Johnson

PTILOGONATIDAE (Phainopepla Family)

Phainopepla nitens Phainopepla

Observations: Squaw Spring, May 1995, Cutler; IMRS HQ, June 2006, J. D. Johnson.

MOTACILLIDAE (Pipit Family)

Anthus rubescens American Pipit

Observations: IMRS, 4 April 1991, Field Biology Class.

BOMBYCILLIDAE (Waxwing Family)

Bombycilla cedrorum Cedar Waxwing
Observations: IMRS, May 1995, Herp Field Trip.

PARULIDAE (Warbler Family)

Dendroica coronata Yellow-rumped Warbler
Observations: Squaw Spring, May 1995, Cutler.

Geothlypis trichas Common Yellowthroat

Oporornis tolmiei MacGillivray's Warbler
Observations: Squaw Spring, May 1995, Cutler.

Vermivora virginiae Virginia's Warbler
Observations: IMRS, May 1995, Herp Field Trip; Red Tank, 7 June 2008 (dead on ground), J. D. Johnson.

Wilsonia pusilla Wilson's Warbler
Observations: IMRS, 2-3 May 1992, Hibbits.

THRAUPIDAE (Tanager Family)

Prianga ludoviciana Western Tanager
Observations: Squaw Spring, May 1995, Cutler; The Box, 17 July 2010, J. D. Johnson .

Prianga rubra Summer Tanager
Observations: Squaw Spring, May 1995, Cutler.

EMBERIZIDAE (Sparrow and Towhee Family)

Aimophila ruficeps Rufous-crowned Sparrow
Observations: area of IMRS HQ, March 1992 [Gardea and Mena, 1992]; IMRS, Apr. 1990, Field Biology Class; IMRS 2-3 May 1992, Hibbits. Common around IMRS HQ.

Amphispiza bilineata Black-throated Sparrow
Observations: IMRS HQ area, May 1995, Cutler; Squaw Spring, July 2000, Cutler; area of IMRS HQ, March 1992 [Gardea and Mena, 1992]; IMRS, April 1990, Field Biology Class; common around IMRS HQ.

Calamospiza melanocorys Lark Bunting
Observations: IMRS, April 1990, Field Biology Class; IMRS HQ 11 April 2010, 7 August 2010, J. D. Johnson.

Junco hyemalis Dark-eyed Junco
Note: Needs to be verified.

Pipilo chlorurus Green-tailed Towhee
Observations: IMRS, 2-3 May 1992, Hibbits; IMRS HQ, 8 May 2010, J. D. Johnson.

Pipilo erythrophthalamus Eastern Towhee
Observations: IMRS, April 1990, Field Biology Class.

Pipilo fuscus Canyon Towhee
Observations: road to Squaw Spring, May 1995, Cutler; IMRS, March 1995, Field Biology Class.

Spizella atrogularis Black-chinned Sparrow
Observations: IMRS HQ, March 1992 [Gardea and Mena, 1992].

Spizella breweri Brewer's Sparrow
Observations: IMRS HQ, March 1992 [Gardea and Mena, 1992]; IMRS, April 1991, March 1995, Field Biology Classes.

Spizella passerine Chipping Sparrow
Observations: are of IMRS HQ, March 1992 [Gardea and Mena, 1992]; IMRS, 2-3 May 1992, Hibbits.

Zonotrichia leucophrys White-crowned Sparrow
Observations: Squaw Spring, May 1995, Cutler; IMRS HQ area, March, 1992 [Gardea and Mena, 1992].

CARDINALIDAE (Grosbeak, Cardinal, and Bunting Family)

Cardinalis sinuatus Pyrrhuloxia

Observations: IMRS HQ, May 1995, Cutler; Squaw Spring, May 1995, Cutler; 1.5 mi. SE of IMRS HQ, July 2000, Cutler; IMRS, April 1990, Field Biology Class; IMRS, 2-3 May 1992, Hibbits. Common around IMRS HQ and Squaw Spring, J, D. Johnson.

Passerina caerulea Blue Grosbeak

Observations: IMRS, May 1995, Herp Field Trip. IMRS HQ, 2 May 2010, J. D. Johnson; Squaw Spring, 12 June 2010, J. D. Johnson.

` *Passerina versicolor* Varied Bunting

Observations: Squaw Spring, May 1995, Cutler.

Pheucticus melanocephalus Black-headed Grosbeak

Observations: Road to Squaw Spring, July 2000, Cutler.

ICTERIDAE (Blackbird, Meadowlark, Cowbird, and Oriole Family)

Ageliaus phoeniceus Red-winged Blackbird

Euphagus cyanocephalus Brewer's Blackbird

Observations: IMRS HQ area, May 1995, Cutler: IMRS, 2-3 May 1992, Hibbits; IMRS, March 1995, Field Biology Class.

Icterus cucullatus Hooded Oriole

Observations: IMRS HQ, 7 June 2008, S. Dash.

Icterus parisorum Scott's Oriole

Observations: Squaw Spring, May 1995, July 2000, Cutler; IMRS HQ, March-April 1991, March 1995, Field Biology Classes; IMRS, 2-3 May 1992, Hibbits. Common around IMRS HQ.

Molothrus ater Brown-headed Cowbird

Observations: HQ area, July 2000, Cutler; IMRS, 2-3 May 1992, Hibbits. Common around IMRS HQ.

Molothrus aeneus Bronzed Cowbird

Observations: IMRS HQ, 6 June 2009, G. W. Johnson, J. D. Johnson. IMRS HQ, Summer 2010, J. D. Johnson.

Sturnella neglecta Western Meadowlark

Note: This species needs to be documented at IMRS.

Quiscalus mexicanus Great-tailed Grackle

Observations: IMRS HQ, 18 April 2010, J. D. Johnson.

Xanthocephalus xanthocephalus Yellow-headed Blackbird

Observations: IMRS HQ, summers 2004, 2006, 2008, 2010, J. D. Johnson. Usually with flocks of Brown-headed Cowbirds.

FRINGILLIDAE (Finch, Crossbill, Goldfinches Family)

Carpodacus mexicanus House Finch

Observations: Squaw Spring, May 1995, July 1995, Cutler; area of IMRS HQ, March 1992 [Gardea and Mena. 1992]; IMRS, 2-3 May 1992, Hibbits; IMRS, April 1990, March 1995, Squaw Spring, 12 June 2010, J. D. Johnson.

MAMMALS

Class: Mammalia

Compiled by Carl Lieb
[With update remarks from Art Harris, Jerry D. Johnson and Richard Worthington]

Order: DIDELPHIMORPHIA (Opposums)

DIDELPHIDAE (Opossum Family)

Didelphis virginiana Kerr — Virginia Opossum
Records: photo (shows tail only) [Brewer, 2004].

Order: INSECTIVORA (Shrews and Moles)

SORICIDAE (Shrew Family)

Notiosorex crawfordi (Coues) — Desert Shrew
Records: 1996, one from pit-fall trap near IMRS HQ, J. D. Johnson (UTEP).

Order: CHIROPTERA (Bats)

MOLOSSIDAE (Free-tailed Bat Family)

Tadarida brasiliensis (I. Geof. St. Hilaire) — Brazilian Free-tailed Bat Records:
Record: Observed and photographed at Road Tank by R. Todorovich, May 2009 (UTEP).

VESPERTILIONIDAE (Vespertilionid Bat Family)

Antrozous pallidus (Le Conte) — Pallid Bat
[Lenhart et al., 2010].
Records: Photo [Brewer, 2007] Squaw Spring and IMRS HQ area (UTEP); Squaw Spring, 2001, Jim Mueller.
Note: Night roost in entrance to HQ bath rooms.

Corynorhinus townsendii (Cooper) — Townsend's Big-eared Bat
Records: Photo. IMRS HQ, J. D. Johnson 2004, 2007.

Myotis californicus (Audubon and Bachman) — California Myotis
Records: Squaw Spring, 2001, Jim Mueller.

Myotis thysanodes Miller — Fringed Myotis
Records: Squaw Spring, 2001, Jim Mueller.

Parastrellus hesperus (H. Allen) — Western Pipistrelle
Records: Prospect Pits area (UTEP); Squaw Spring, 2001, Jim Mueller.
Note: Recently placed into the monotypic genus *Parastrellus* by Hoofer et al. (2006).

Order: LAGOMORPHA (Rabbits and Hares)

LEPORIDAE (Rabbit and Hare Family)

Lepus californicus Gray — Black-tailed Jackrabbit
Records: Photo [Brewer, 2004; 2007], IMRS HQ, 2008, 2009, 2010, J. D. Johnson.
Note: Common around IMRS HQ.

Sylvilagus audubonii (Baird) — Desert Cottontail
Records: IMRS HQ, 2008, 2009, 2010, J. D. Johnson.
Note: Common around IMRS HQ.

Order: RODENTIA (Rodents)

CRICETIDAE (Mouse and Rat Family)

Note: The resurrection of family name Cricetidae from Muridae follows Wilson and Reeder (2005)

Neotoma leucodon Merriam — Eastern White-throated Woodrat
[Brewer, 2004, 2007].

Records: IMRS HQ area, J. D. Johnson.

Peromyscus eremicus (Baird) Cactus Mouse
[Brewer, 2004, 2007].
Records: IMRS HQ area; Campo Bonito; Squaw Spring; Rd Tank (UTEP).
Peromyscus leucopus (Rafinesque) White-footed Mouse
Records: Peccary Tank (UTEP).
Note: Questionable record.
Peromyscus maniculatus (Wagner) Deer Mouse
Records: Red Tank (UTEP); IMRS HQ area.
Reithrodontomys megalotus (Baird) Western Harvest Mouse
Records: Red Tank (UTEP).
Sigmodon hispidus Say and Ord Hispid Cotton Rat
Records: Red Tank (UTEP).

GEOMYIDAE (Pocket Gopher Family)

Thomomys bottae (Eydoux & Gervais) Botta's Pocket Gopher
Records: Red Tank (UTEP), 2008, J. D. Johnson; IMRS HQ,
8 May 2010. J. D. Johnson.
Note: Pocket gopher mounds have been observed throughout IMRS.
Occasionally found in pit-fall traps after rain storms.

HETEROMYIDAE (Pocket Mouse and Kangaroo Rat Family)

Chaetodipus intermedius Merriam Rock Pocket Mouse
[Brewer, 2004, 2007].
Records: Red Tank (UTEP); IMRS HQ; Squaw Spring.
Note: Most common mouse on IMRS.
Dipodomys merriami Mearns Merriam's Kangaroo Rat
[Brewer, 2004, 2007].
Records: Squaw Spring; Red Tank; IMRS HQ (UTEP).

SCIURIDAE (Squirrel, Chipmunk, and Prairie Dog Family)

Ammospermophilus interpres (Merriam) Texas Antelope Squirrel
[Brewer, 2004, 2007].
Records: Campo Bonito (UTEP); IMRS HQ, J. D. Johnson.
Otospermophilus variegatus (Erxleben) Rock Squirrel
[Brewer, 2004, 2007].
Records: Common in rocky canyons throughout IMRS.
Note: Genus name changed from *Spermophilus* by Helgen et al. (2009).

Order: CARNIVORA (Carnivores)

CANIDAE (Dog Family)

Canis latrans Say Coyote
Records: Echo Canyon overlook (UTEP).
Note: Often heard vocalizing around IMRS HQ.
Urocyon cinereoargenteus (Schreber) Common Gray Fox
Records: Eagle Canyon Narrows (UTEP); Echo Canyon; IMRS HQ,
J. D. Johnson.
Vulpes macrotis (Say) Kit Fox
Records: Prospect Pits, photo [Brewer, 2007]; East Well (UTEP).
Note. Mercure et al. (1993), using mDNA, came to the conclusion that
the Kit Fox was a full species independent from *V. velox*.

MEPHITIDAE (Skunk Family)

Note: Skunks were removed from Mustelidae by Dragoo and Honeycutt (1999).

Spilogale gracilis Merriam — Western Spotted Skunk
Records: Prospect Pits, Photo [Brewer, 2004, 2007].

MUSTELIDAE (Weasel, Ferret, Mink, Badger, and Otter Family)

Taxidea taxus (Schreber) — Badger
Records: Prospect Pits, Photo [Brewer, 2004, 2007]; IMRS HQ, May 2008, L. Miranda.

FELIDAE (Cat Family)

Puma concolor L. — Mountain Lion, Cougar
Records: Known from tracks near IMRS HQ and in Clay Bluffs Draw; Cougar Cave, July 2001, G. W. Johnson and H. Riveroll, July 2002, A. S. Davis.
Note: The use of the genus name *Puma* instead of *Felis* follows Wilson and Reeder (2005).

Lynx rufus (Schreber) — Bobcat
Records: Photo [Brewer, 2007], IMRS HQ; Palmas Well (UTEP).

PROCYONIDAE (Raccoon and Ringtail Family).

Bassariscus astutus Lichtenstein — Ringtail
Records: Eagle Canyon (UTEP); observed near the IMRS HQ, Photo [Brewer, 2007]. Residents live under old ranch house building, J. D. Johnson.

Order: ARTIODACTYLA (Even-toed Ungulates)

BOVIDAE (Bovid Family)

**Ammotragus lervia* (Pallas) — Barbary Sheep
Records: this species appears to be established at IMRS, sighted near Squaw Spring.

Ovis canadensis Shaw — Mountain Sheep, Bighorn Sheep
Records: observed near the Purple Sage Mine, Buck Nix, personal communication to J.D. Johnson. Photo, Geology Field Camp, 2008 on Flattop Mountain..

CERVIDAE (Elk and Deer Family)

Cervus elaphus Erxleben — Elk, Wapiti
Records: occasionally wanders onto the ranch from the Eagle Mts.; Echo Canyon, 2006, Buck Nix, personal communication to J. D. Johnson.

Odocoileus hemionus (Rafinesque) — Mule Deer
Records: Photo [Brewer, 2007].
Echo Canyon overlook; Red Tank (UTEP); IMRS HQ; Squaw Spring.
Note: Commonly observed throughout IMRS.

Odocoileus virginianus (Boddaert) — White-tailed Deer
Records: Known to have occasionally been on the IMRS from an antler (UTEP).

TAYASSUIDAE (Peccary Family)

Pecari tajacu (L.) — Collared Peccary
Records: Photo [Brewer, 2007]. Resident herds present on IMRS; Red Tank; Squaw Spring; Cougar Cave; IMRS HQ, J. D. Johnson.

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IMRS GAZETTEER

Compiled by Carl Lieb and Jerry D. Johnson

Modified from the 1996 version; most elevations and coordinates are extrapolated from USGS 7.5' topographic maps or GPS devices. (**) indicates latitude and longitude are from USGS on-line gazetteer service. Origins of place names are reference by numbers in brackets and refer to the following:

1. USGS 7.5' topographic maps (Bramlett Ranch, Mesquite Spring, Eagle Mts. SE, and Lobo NE)
2. Wynn Anderson (informal designations)
3. Carl Lieb (informal designations)
4. USGS 15' geological map of the area
5. Jack Bristol (informal designations)
6. USGS geological map loaned from Betsy Julian
7. UTEP Field Biology Class (informal designations)
8. Jerry D. Johnson (informal designation)

Access Rd. (= IMRS Access Rd): see Main Road.

Agate Hill: Small hill composed of igneous rock along River Road, west of Flat Top Mtn. (30º 44'25"N, 105º 00'10"W), 4050 ft. elev. [2].

Anderson Learning Center: Room attached to Indio Ranch House that was enlarged and screened in 2003 [3, 5, 7]. Named after Wynn Anderson, former Assistant to UTEP Presidents and Director of the Chihuahuan Desert Gardens at the Centennial Museum. Wynn was instrumental in getting IMRS designated as a desert research facility.

Bailey Evens Arroyo: The arroyo after leaving Bailey Evens Canyon that leads to the Rio Grande [8].

Bailey Evens Canyon: The canyon and arroyo directly north of dormitory and bathroom building at IMRS Headquarters [8]. The arroyo eventually terminates in the Rio Grande near The Box .

Bailey Evans Peak: Highest mountain peak located ENE of Indio Ranch House (30º 46'54"N, 105º 00'15"W), 4792 ft. elev. [2]. Also Referred to as Mt. Everest [8].

Black Diamond Mine: Abandoned mine, ca. 1.75 km (air) SE of Indio Ranch House; developed by Walter Rossman in the late 1940's; consists of a 100 ft. deep vertical shaft (30º 46'05"N, 105º 00'05"W), 4200 ft. elev. [1].

"The" Box: Eastern opening of canyon of the Rio Grande near S end of Indio Mts. On the O'Connor Ranch (30º 39'50"N, 104º 59'25"W), 3150 ft. elev. [1].

Bramlett Ranch: Principal land holdings to the north and west of the IMRS boundary.

Campo Bonito: Abandoned at a partially dismantled windmill on the River Road, ca. 2 rd. mi. S jct. with Eagle Canyon Road (30º 42'28"N, 104º 58'08"W), 3740 ft. elev. [6, replaces "South Well" of 3].

Carpenter Mine: Abandoned mine and mining company headquarters (ruins only) on Purple Sage Mine Road, ca. 2 km (air) SSW Indio Ranch House; ruins and mine near 30º 45'38"N, 105º 01'22"W, 4000 ft. elev.; yielded a small amount or ore containing 2.5% copper [1].

Clay Bluffs Draw: Large arroyo system with high vertical banks just east of River Road and draining into Green River; principal access (by foot) is ca. ½ km E of Campo Bonito [3].

Cottonwood Canyon Tank: Cattle tank just off NW corner of IMRS boundary (30º 47'10"N, 104º 59'00"W), ca. 4220 ft. elev. [2].

Cougar Cave: Found in arroyo that crosses road to Squaw Springs (before road splits) about ½ mile N of Headquarters [8].

Double Tank: see Pirtle Tank and Road Tank.

Double Tank Corral: Abandoned cattle corral along Main Road, just west of East Gate and near Pirtle and Road Tanks (30º 47'10"N, 104º 59'00"W), 4390 ft. elev. [3].

Eagle Canyon: Rugged canyon system on east side of IMRS, draining south into Rio Grande west of The Box; contains Palmas Well and The Narrows [1, replaces "Snake Canyon" of 4].

Eagle Canyon Road: Bulldozed track/gravel road running NE-SW from vicinity of Double Tank Corral over Eagle Pass and down through upper Eagle Canyon to junction with River Road [3].

Eagle Pass: Head of Eagle Canyon, ca. 1.75 km (air) S of East Gate (30º 46'10"N, 104º 58'45"W), ca. 4650 ft. elev. [3].

East Gate: Principal access gate to IMRS on Main Road, 3.2 rd. mi. W jct. with Green River Road, just east of Double Tanks Corral (30º 47'12"N, 104º 58'35"W), 4400 ft. elev. [2].

East Well: Defunct well and metal tank on east side of Indio Mts., ca. 3.3 km (air) se of East Gate (30º 46'05"N, 104º 57'10"W), 4075 ft. elev. [2 and 3].

East Well Arroyo: East draining arroyo immediately north of East Well, washes out East Well Road ca. 1.5 mi. S of jct. with main Road [2 and 3].

East Well Road: Primitive road extending from Main Road (jct. is 2.7 rd. mi. W of Green River Road jct.) south through bed of Grassy Tank, past Lost Well, to East Well; then east to Green River Road proper (road is impassable at East Well Draw, ca. 1.5 rd. mi. S of Main Road) [2 and 3].

Echo Canyon: Southwest draining canyon along Main Road on east side of Indio Mts. below Indio Pass [1].

Echo Canyon Overlook: Westward-looking observation point along Main Road just west of the top of Indio Pass, ca. ¾ rd. mi. W of Double Tank Corral (30º 47'00"N, 104º 59'40"W), 4560 ft. elev. [3].

Echo Canyon TwinTanks: Two adjacent seasonally dry impoundments along main road in Echo Canyon, just NE of jct. with road to Black Diamond Mine (30º 46'25"N, 105º 00'00"W), ca. 3900 ft. elev. [8]. Also called **North Twin Tanks** [8].

Flat Top Mountain: Mesa and ridge system NNW of Red Tank; maximum elevation is 4455 ft. at S end (30º 44'20"N, 104º 59'35"W) [4].

Glenn Creek: see Green River.

Green Peak: Summit of ridge sse of Indio Pass, ca. 2 km (air) S of Double Tank Corral, 0.5 km W of Eagle Pass (30º 46'10"N, 104º 49'03"W), 5130 ft. elev. [4]

Green River: Large dry wash forming east boundary of Indio Mts. [1, preferred over "Glenn Creek" on the USGS 1:250,000 topo map).

Green River Road: Gravel road forming main access to IMRS from the east; passes through Wolf Creek Ranch south of Scott's Crossing and extends into O'Connor Ranch (locked gate); follows bed of Green River to vicinity of The Box.

Grassy Tank: Dry impoundment 2.7 mi. (by Main Road) W of jct. with Green River Road; East Well Road Passes through the bed ca. 0.1 mi. S of its jct. with Main Road (30º 47'08"N, 104º 58'14"W), 4280 ft. elev. [2 and 3].

Indio Fault: A long NW-SE fault that divides the Indio Mts. Into a higher eastern block and a lower western block; fault is crossed 50 meters east of the junction of Main Road with River Road; fault is about 100 meters east of the ranch house.

Indio Mountains: Southern spur of Eagle Mountains, Hudspeth County, Texas; bounded by Oxford Canyon (N), Rio Grande (S), Red Light Draw (W), and Green River (E) [4].

Indio Pass: Pass over Indio Mts. traversed by Main Road; summit is just east of Echo Canyon Overlook [6].

Indio Ranch House [Headquarters]: old Bailey Evans Ranch House and central structure of IMRS Headquarters, 6.8 rd. mi. W and N of East Gate (30º 46'36"N, 105º 00'57"W**), ca. 1230 m elev. [1]. Other facilities at the Headquarters include two dorms and bathrooms, a small sleeping building, an assembly hall that includes a kitchen, and a shed holding ATVs. All buildings and the water sources are powered with solar generated electricity [8].

IMRS: Abbreviation for UTEP's Indio Mountains Research Station.

Lost Tank: Abandoned tank and adobe retaining wall, along East Well Road, ca. 0.25 mi. S jct. with Main Road [2 and 3].

Main Road: Gravel road from Green River Road, through East Gate, Echo Canyon, to Indio Ranch House, and then NNW toward North Gate, Oxford Canyon, and Squaw Spring.

Mesquite Tank: Tank near Bailey Evens Arroyo located ca. 2.78 km WSW of IMRS Headquarters (30.76167ºN, 105.03085ºW), 1,167m elev.

Monroe's Nose: Angular prominence ca. .75 km S of Squaw Spring, ca. 1.5 km (air) NW and visible from Echo Canyon Overlook (30º 44'00"N, 105º 00'30"W), 4640 ft. elev. [2].

The Narrows: Narrow declivity of Eagle Canyon through which River Road passes, just E of Red Tank and just W of jct. with Eagle Canyon Road (30º 44'00"N, 104º 59'02"W), 4640 ft. elev. [3].

North Gate: Gate across main road north of Woodpecker Well on the way to Oxford Canyon, at fence separating IMRS lands from Bramlet Ranch lands to the north.

O'Connor Ranch: Previous Lado Ranch holdings off southern and southwestern boundary of IMRS property including terminus of the River Road and the mouth of Green River. Access is by locked gate across Green River Rd. just S of jct. with Main Road, or by IMRS South Gate. Lado Ranch was sold to Louise O'Connor of Victoria, Texas in 2005 [8].

Oxford Canyon: Draw at north end of the Indio Mts. That separates the Indio from the Eagle Mts.; most of the canyon is part of the Bramlet Ranch.

Painted Cliffs: Eroded ash formation on N-facing arroyo slope ca. 1.75 km (air) SSW of jct. of Green River and Main Roads; not on IMRS (30º 46'50"n, 104º 56'45"W) [5].

Palmas Well: A once solar–powered water well and wreckage of older abandoned well and holding tank on west-facing slope of Eagle Canyon (30º 44'43"N, 104º 58'18"W**), 4150 ft. elev. [1].

Peccary Tank: Seasonally dry impoundment along River Road, ca. 1.8 rd. mi. S of IMRS Headquarters (30º45'20"N, 105º 00'15"W), 3980 ft. elev. [3].

Pirtle Tank: Southeasternmost of the two seasonally dry impoundments in the Double Tank Corral area adjacent to the Main Road near the jct. with Eagle Canyon Road (30º 47'05"N, 104º 59'00"W), 4380 ft. elev. [6]; also called **Bull Tank** [8].

Prospect Pits: A complex of prospect digs and partially finished mine shafts north of Echo Canyon and ca. 1 km (air) SW of the IMRS Headquarters (30º 46'20"N, 105º 00'30"W), 4200 ft. elev. [3].

Purple Sage Mine: Abandoned mine ca. 3 km (air) S of IMRS Headquarters; it has a 175 ft. deep vertical shaft that was sunk in the 1950s (30º 44'58"N, 105º 01'31"W), 3860 ft. elev. [1].

Purple Sage Mine Road: Gravel road extending SSW from Main Road south of IMRS Headquarters to Carpenter and Purple Sage Mines [3].

Rattlesnake Tank: Seasonally dry impoundment at head of small east draining canyon ca. 1 km (air) ENE of summit of Red Mountain and 0.25 km W of River Road (30º 44'47"N, 105º 00'30"W), 3930 ft. elev. Also called Trap Tank [6].

Redetzke's Knob: South-facing ridge at summit of Flat Top Mountain [3].

Red Mountain: Isolated ridge and peak ca. 3.5 km (air) S of IMRS Headquarters, 1 km W of Agate Hill (30º 43'48"N, 104º 59'18"W), 4378 ft. elev. [4].

Red Tank: Large seasonally dry impoundment along River Road just W of Eagle Canyon (30º 43'48"N, 104º 59'18"W), 3920 ft. elev. [1].

River Road: Gravel road running from Green River near The Box north via South Gate, Campo Bonito, The Narrows, Agate Hill, and finally junctioning with Main Road ca. 1 km (air) S of the Indio Ranch House [3].

Road Tank: Northernmost of two seasonally dry impoundments near Double Tank Corral, near the head of jeep trail/track leading to upper Squaw Spring Canyon; it often has water early and/or late in the year (30º 47'13"N, 104º 59'08"W), 4380 ft. elev.

Scott's Crossing: Where Green River Road crosses the Southern Pacific Railroad tracks 7.5 road miles SSE of jct. of Laurel Street and I-10 in Van Horn [1].

South Gate: Gate across River Road south of Campo Bonito and north of The Box at a fence separating IMRS from the O'Connor Ranch lands (30°42'28"N, 104°58'11.66"W), ca. 3700 ft. elev.

South Well: See Campo Bonito.

Snake Canyon: See Eagle Canyon.

Squaw Creek: See Squaw Creek Canyon.

Squaw Creek Canyon: Major arroyo draining SW to the Rio Grande; head is ca. 3 km (air) NNW of Double Tank Corral area; contains Squaw Spring [1, modified by 3; this usage is preferred over "Squaw Creek" and "Squaw Spring Canyon"].

Squaw Pass: Pass through Squaw Ridge located 0.75 km (air) WNW of Squaw Peak (30º 49'30"N, 105º 00'24"W**), 4650 ft. elev. [1].

Squaw Peak: Highest and somewhat isolated peak in the Indio Mountains (ca. 1,600 m elev.) located several km north of Squaw Spring near the northcentral boundary of IMRS. It can be seen from Van Horn.

Squaw Ridge: Ridgeline extending ESE and WNW from Squaw Peak [4].

Squaw Spring: Permanent or near permanent spring in Squaw Creek Canyon ca. 2.5 km (air) N of Indio Ranch House (30º 47'49"N, 105º 00'38"W), 4160 ft. elev. [1].

Squaw Spring Canyon: See Squaw Creek Canyon.

Trap Tank: See Rattlesnake Tank.

Tres Amigos: A group of three hills at west entrance to Oxford Canyon on the Bramlet Ranch; south peak (30º 49'20"N, 105º 04'07"W), 4456 ft. elev.; northeast peak (30º 49'55"N, 104º 04'05"W), 4423 ft. elev.; northwest peak (30º 44'10"N, 104º 59'00"W), 4420 ft. elev. [3].

Twin Tanks: Two seasonally dry impoundments ca. 0.25 km (air) north of River Road at the Narrows (30º44'10"N, 104º 59'00"W), 3950 ft. elev. [3]. Also called **South Twin Tanks** [8].

Viejo Seep: Natural spring off IMRS on the Wolf Creek Ranch ca. 1.75 km (air) WNW jct. Green River and Main Roads (30º 47'35"N, 104º 57'00"W), 4020 ft. elev. [2].

Willoughby Creek: Dry arroyo NNW of Squaw Ridge that drains into the Green River; creek head is ca. 1 km (air) N of Squaw Peak [4].

Woodpecker Well: Dysfunctional water well on Main Road that is SW of Yucca Ridge and 5.75 km (air) NW of the Indio Ranch House (30º 49'00"N, 105º 03'10"W), 4086 ft. elev. [2].

Wolf Creek Ranch: Ranch holdings north and northeast of IMRS; principal access to IMRS is through these lands via the Green River Road and Main Road.

Wrong Red Tank: See Echo Canyon Tank.

Yucca Ridge: Ridge running NW-SE between Oxford and Squaw Creek Canyons ca. 1.5 km S and parallel to Squaw Ridge [2].